agriculture,
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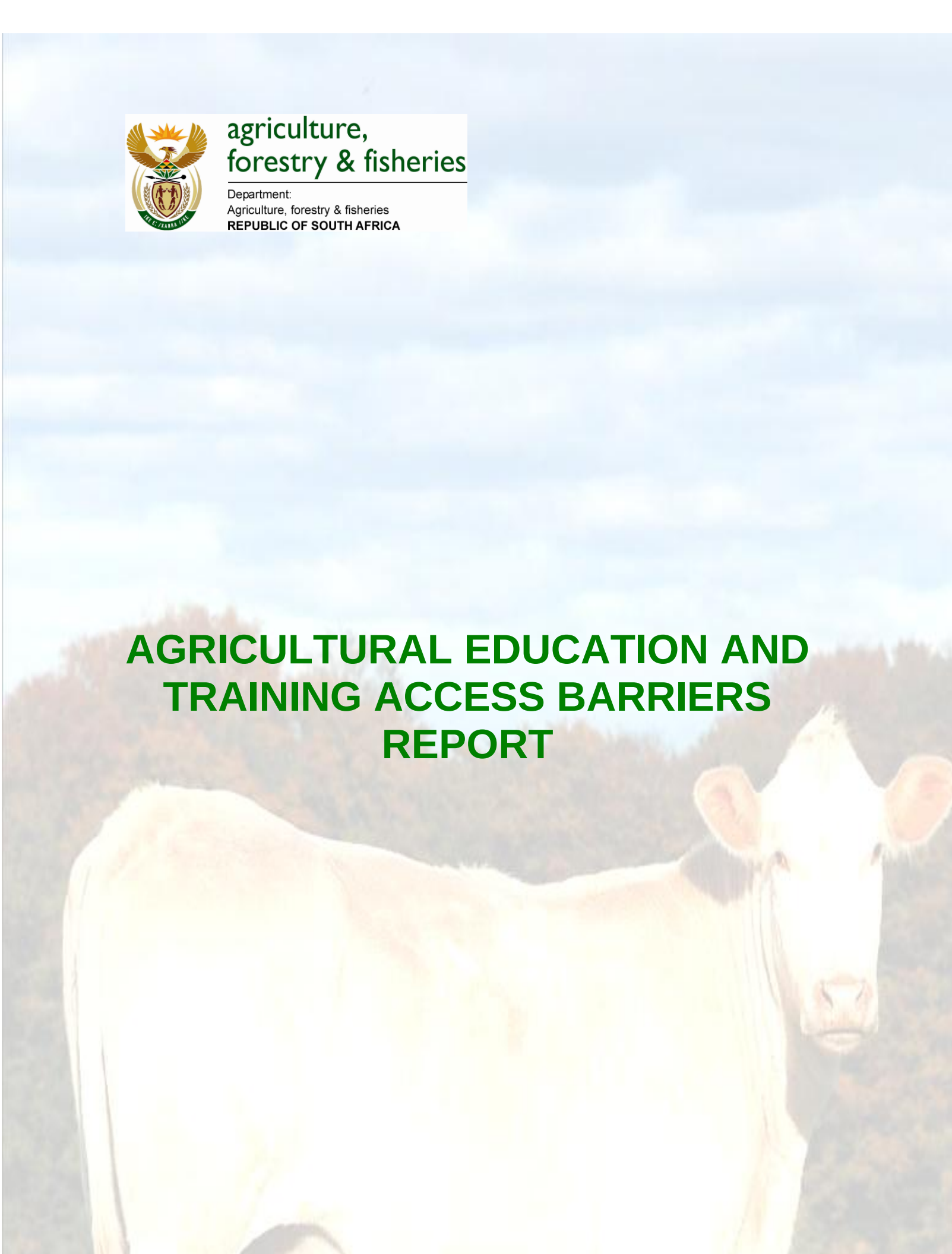
Department:
Agriculture, forestry & fisheries
REPUBLIC OF SOUTH AFRICA

AGRICULTURAL EDUCATION AND TRAINING ACCESS BARRIERS REPORT



1 BACKGROUND OF THE STUDY

The mission of Agricultural Education and Training (AET) in Africa is to work toward improved, relevant, and effective teaching, research and extension in the 21st century. Therefore improving human capital in Agriculture is especially important where the shortage of trained human resources is a major limiting factor to development (Lindley et al., 1996). One of the main challenges that constrain quality provision of AET in South Africa is lack of access mostly by previously disadvantaged groups (DoA, 2007). Recent studies of Agricultural Education and Training in Sub-Saharan Africa suggest that many agricultural education curricula have shortcomings as they are unresponsive to socio-economic, technological, physical and environmental changes in the rural sector and are inappropriate for the local context. Furthermore, many curricula for both formal and non-formal AET do not involve any form of systematic training needs analysis and often adopt delivery modes and mechanisms that fail to suit the reality of the situation of people in their community context. This situation extends beyond the sub-Saharan region to many countries throughout the world, including South Africa (Wallace et al., 1996). Generally the improvement of a country's human resource capacity for productivity is a prerequisite for social, economic and technological development. Thus both formal and non-formal education is essential for improving agricultural and rural development.

Since the establishment of the democratic South African government in 1994, visionary policies and programmes, strategies and Agricultural education, and training governance structures have been established (Didiza, 2005). These are supported by sound legislation. In 2005, the National Agricultural Education and Training Strategy was launched with the aim to address the needs of the country's economy and improvement of Agricultural production through quality agricultural education and training. The implementation of the AET strategy was supported by the establishment of a National Agricultural Education and Training Forum (NAETF) .Considering that the AET strategy outlines the mechanisms for

addressing identified disparities in education provision and access to opportunities, an analysis of agricultural education and training barriers is essential. The output of the analysis would enhance removal of barriers to equitable access and meaningful participation in Agricultural development by all South Africans, particularly the previously disadvantaged groups, women and people with physical disabilities.

At the launch of the College of Agriculture and Environmental Sciences at the University of South Africa (UNISA) in August 2006, the Honourable Minister of Agriculture and Land Affairs, Ms L Xingwana stated that the NAETF would lead to a programme of actions among others. The first programme is to develop and maintain an effective and well-coordinated AET that is integrated at all levels and respond appropriately to South Africa's Agricultural development needs and the second one is to enhance equitable access and meaningful participation in AET curricula with urgent challenges facing South African agriculture. These include sustainable development and land care, food security, water harvesting and rural wealth creation. The second programme of action entails to:

- Develop and recommend a systematic plan to identify, prioritize and remove access barriers to AET;
- Improve and promote the image of Agriculture as a career and livelihood choice, particularly among children and the youth;
- Encourage post-graduate studies in Agricultural Sciences in order to produce highly qualified scientists who add value to the agricultural science knowledge base and
- Ensure that AET is accredited at all levels with an adequate number of appropriately qualified educators and trainers. An effective quality assurance system of AET will be applied at all levels.

In view of the AET strategy (2005) for the country, it is clear that the government is placing emphasis on integration of training with a strong focus on scarce and critical skills in the agricultural sector. Therefore a priority is given to promoting

Agriculture as a career for the youth, especially those from the previously marginalised population groups. The National Department of Agriculture (DoA) has introduced a range of interventions to attract and provide opportunities for the youth in sustainable employment and entrepreneurship opportunities in agriculture. Examples of these are learnerships, internships and bursaries (DoA, 2006 and SA Government Information, 2007). Provision of a methodology to remove access barriers to AET is critical in the implementation and evaluation of government policies on sustainable Agricultural and rural development.

It is for this reason that the National Department of Agriculture (DoA) commissioned a study to detail out and analyse access barriers to AET. The following section briefly describes the objectives, research questions and significance of the study.

1.1 The Goal of the Study

According to the terms of reference (TOR), this study was commissioned to identify and analyse factors hindering access to Agricultural Education and Training in South Africa particularly by the historically disadvantaged communities, to including women and disabled persons. Furthermore, the study will recommend a systematic plan to remove access barriers to AET. The main aim of the government is to ensure that AET opportunities are accessible to all population groups irrespective of gender, race, social class and disability (DoA, 2007).

1.2 Specific Objectives

In view of the above goal or purpose of the study, the specific objectives are to:

- ✓ Identify and analyse access barriers (social, cultural, economic, technological, institutional , environmental) to AET;
- ✓ Prioritise access barriers to AET;

- ✓ Determine and describe possible methods to remove access barriers to AET;
- ✓ Determine relevance of existing formal and non-formal AET programmes to the needs of the first and second economy of South Africa;
- ✓ Make recommendations on how access barriers to AET can be removed;
- ✓ Use a logical framework and identify indicators that will be used to monitor and evaluate progress.

1.3 Research Questions

In line with the objectives stated above, the following research questions will be answered by the study.

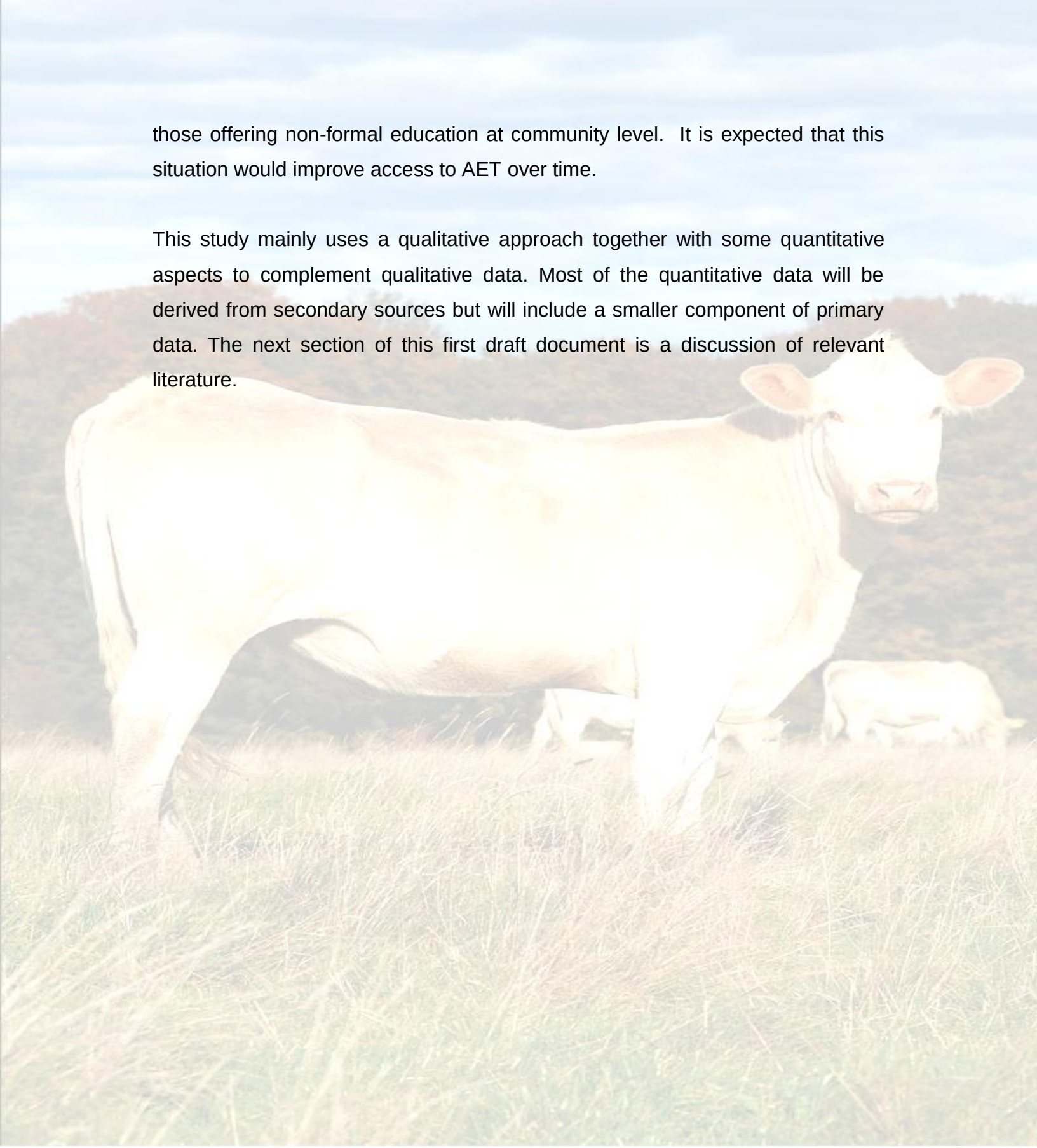
- ➢ What are the access barriers to AET and their causes?
- ➢ How would the access barriers to AET be prioritised in order of importance?
- ➢ What are the appropriate methods to remove access barriers to AET?
- ➢ Which of the existing formal and non-formal AET programmes are relevant to the needs of the first and second economy of South Africa?
- ➢ What measures can be put in place to address the prioritised access barriers to AET?
- ➢ Which indicators should be used to monitor and evaluate progress?

1.4 Significance of the Study

The Department of Agriculture through the AET Strategy (2005) is committed to enhancing equitable access and meaningful participation in agricultural education for all South Africans. Ultimately, the AET strategy aims to remove challenges facing the provision of quality Agricultural Education and Training. An assessment of the access barriers to Agricultural Education and Training will be useful in determining ways to ameliorate the challenges (DoA, 2005). The findings of the study will be used to develop and recommend a framework for interventions by the different Agricultural Education and Training providers, offering formal education (from primary school to tertiary level education), and

those offering non-formal education at community level. It is expected that this situation would improve access to AET over time.

This study mainly uses a qualitative approach together with some quantitative aspects to complement qualitative data. Most of the quantitative data will be derived from secondary sources but will include a smaller component of primary data. The next section of this first draft document is a discussion of relevant literature.



2 REVIEW OF LITERATURE

2.1 Introduction

Agriculture is viewed as a vital means through which poverty and unemployment can be addressed and one of the long-term strategies conceived so far to improve participation is education and training. The Organisation for Economic Co-operation and Development (OECD) reports that Agriculture contributes 4% to the Gross Domestic Product (GDP) and accounts for 10% of reported employment (OECD Observer, 2006). However, the Agricultural sector in South Africa is not only dualistic with a developed commercial farming sector which co-exists with a large number of subsistence (communally owned) farms, but in terms of actual size of production, education and technological know-how, it is still primarily in the hands of White South Africans. Consequently, the challenge for the country is therefore to bring the previously excluded black community into the mainstream economy through job creation and entrepreneurship and Agriculture is clearly one important avenue to redress past inequalities. As pointed out in the OECD Observer (2006), higher economic growth in South Africa will not be possible without addressing, among others, problems such as illiteracy and low education levels which are most prevalent in rural South Africa, and where Agriculture is most likely to play an important role in resolving both economic and human development.

Agricultural Education and Training (AET) plays an important role in preparing farmers, researchers, educators, extension staff, and members of Agri-businesses and others to make productive contributions. However, one of the critical issues in the 21st century is the changes and adaptations required in AET in order for it to effectively contribute to improved food security, sustainable Agricultural production, viable Agri-businesses and rural development. Generally, there are many complex factors that influence sustainable Agricultural and Rural development. Recent studies of AET in sub-Saharan Africa suggest that many Agricultural education curricula have shortcomings as they are

unresponsive, and in appropriate to socio-economic, technological, physical and environmental changes in the rural sector and the local context (Wallace et al., 1996).

At the heart of the matter is the improvement of a country's human resource capacity for productivity which is a prerequisite for social, economic and technological development. As a result of this identified limitation to access to AET by the stated individuals and groups, the focus of this literature review is directed at the historical perspective of AET in South Africa, the identification of barriers that prevent access to AET, initiatives of government that support the improvement of agriculture as a career and access to higher AET.

2.2 The Historical Perspective of AET

Prior to the establishment of the democratic government in 1994, AET was patterned after the provisions of the Bantu Education Act No. 47 of 1953. This legislation enforced separate curriculum for different racial groups. Consequently, most of the schools under Bantu Education taught Agriculture as a subject combined with other non-scientific ones, such as History, Biology, Geography and Biblical Studies. There was no emphasis on the significance of Mathematics and Science in teaching Agricultural Science (DoA, 2005).

Many of South Africa's Agricultural and Rural development problems have been related to a lack of well-trained human resources, weak institutions and misguided notions (African Development Forum, 1999). It is believed that most of these challenges emanated from the past experience under the colonial and apartheid rule which had a negative impact on AET. Thus, Agricultural human resources development remains a critical factor to meeting the country's challenge of Agricultural development and food security (DoA, 2005). Generally, the school AET was poorly controlled and lacked coherence and coordination. In addition to lack of proper quality control, most educators were not qualified in

Agricultural Sciences (Didiza, 2005). As a result of the negative impact of Bantu Education Act, AET became inaccessible to many prospective learners, particularly those from Black communities. Further, despite the presence of well-trained educators in theoretical as opposed to practical Agriculture at the tertiary level, the challenge of inadequately trained educators in both Agricultural theory and practice is still rife at the school level.

Under the colonial rule in developing countries including South Africa, education and development was concentrated on men in the institution building process. These institutions included the army, police, civil service, churches, schools, banks, to name a few examples. Women were marginalized and channeled to domestic roles. Much of the ideology of male supremacy was apparently passed on intact from the Western men to their local counterparts who were the educated elite. Western-style ownership of land rather than customary and communal rights was introduced hence colonial and western influence made sharper divisions between sexes through education (Rogers, 1980). Furthermore, division of labour in crop and animal production varied by gender. For instance, in most farming systems, specific crops were designated as "women's" crops whereas others were "men's". Men's crops were likely to be grain, tree, and non-food, raised for market or export. Women's crops were typically vegetables, roots, and food raised for subsistence and local consumption. In many African localities, men raise field crops for the market, and women raise crops that provide both foods for the family and for sale (Sachs, 1996).

As a result of Colonial and Western influence through education, women were channeled to study Home Economics and men Agricultural Education. The emphasis in education and training for girls was on household work mainly, cooking, child care, sewing and embroidery (Rogers, 1980). Under British colonial rule, Black South African male farmers were allowed to own land and market their products freely (Vorhies, 1989). Years before the 1948 rise of the

National Party and official apartheid entrenchment, Blacks had lost land rights of private property and free trade. The division of South Africa into White and Black areas had been finalized when the Land Act of 1936 was passed. The Act outlawed black purchase of white land. In Black areas, land was allocated on tribal or Colonial basis. Tribal land tenure and the Group Areas Act of 1950 prevented the development of a system of private property for Blacks and productive, commercial Black farming (Vorhies, 1989).Hence, negatively impacting AET.

Thus, in order to understand and analyse access barriers to AET, it is important to discuss the National state of education in view of the historical perspective and political and socio-economic transformation that has taken place since 1994. This is because, Agricultural Education and Training prior to 1994 was strictly patterned after the provisions of the Bantu Education Act No. 47 of 1953 (DoA, 2005). This Act had a negative impact on AET.

2.3 Formal and Non-formal Education in South Africa

Fordham (1993) analysed formal versus non-formal education and raised concerns about unsuitable curricula and realization that educational growth and economic growth were not necessarily in step. A conclusion is made that formal educational systems had adapted too slowly to the socio-economic changes around them. According to Coombs and Ahmed (1974), *formal education* describes the hierarchically, structured, chronologically graded education system, running from primary school through the university and including, in addition to general academic studies, a variety of specialized programmes and institutions for full-time technical and professional training. In contrast these authors stated that; “non-formal education is any organized educational activity outside the established formal system, whether operating separately or as an important feature of some broader activity, that is intended to serve identifiable learning clienteles and learning objectives” (Coombs and Ahmed,1974: pg 16),. The

notion of non-formal education has been a significant feature of policy debates around education in South Africa since the establishment of the democratic government in 1994.

South Africa has a single National Education System which is organised and managed largely on the basis of nine provincial sub-systems. The National Department of Education (DoE) is responsible for educational matters that cannot be regulated effectively by provincial legislation, and those matters that need to be coordinated in terms of norms and standards at a national level. Hence, the National Department of Education prepares government policy on education and training for the country as a whole (SA Consulate General, 2007; South African-info-Reporter, 2006). It is within this context that AET programmes are planned and implemented.

The South African National Qualification Framework (NQF) recognizes three broad bands of education, namely: General Education and Training (GET), Further Education and Training (FET), and Higher Education and Training (HET) bands. For instance:

- ✓ The General Education and Training (GET) band which also includes Adult Basic Education and Training (ABET) is compulsory for all South Africans aged 7 to 15 years and runs from Grade 0 to Grade 9 (South Africa. Info Reporter, 2006);
- ✓ the Further Education and Training (FET) which also includes career-oriented education and training offered in Further Education and Training institutions (FET Colleges), e.g. technical colleges, community colleges and private colleges runs from Grade 10 to Grade 12; and
- ✓ The Higher Education and Training (HET) band which incorporates all tertiary learning institutions.

In terms of the qualification framework, Grade 9, i.e., the top or exit level of the GET phase is at NQF Level 1, Grade 10 to Grade 12 is at Level 2, 3, and 4

respectively, and the HET phase has qualifications that starts from NQF level 5 to 8 . However, a new qualification framework will be implemented with effect from January 2009 (for details on the new framework, refer to Government Gazette notice 30353 of 5th October 2007). The main changes have been made to the higher education band from NQF Level 5 to Level 10 (see appendix 1).

2.3.1 Careers in AET, Assessment Standards and Learning Outcomes

Agricultural Science is the study of the relationship between soils, plants and animals in the production and processing of food, fibre, fuel and any other agricultural commodities that have an economic, aesthetic and cultural value (SAQA, 2003). It is an integrated science that combines the knowledge and skills from Physical, Life, Social, and Earth Sciences, and Engineering, Mathematics and Economics. According to SAQA (2003) and NDA (2003), the purpose of Agricultural Sciences for learners is to:

- Develop awareness of national priorities such as food security, sustainable livelihoods and the alleviation of poverty, considering both subsistence and commercial farming practices, as well as cultural, aesthetic and ethical issues within plant and animal production;
- Develop an awareness of the management and care of the environment, natural resources and the humane treatment of animals through application of science and related appropriate technology, with responsibility towards the environment and for the health and well-being of all in South Africa;
- Develop problem-solving mechanisms within the contexts of agricultural production, processing and marketing practices,
- Be aware of the social and economic development of the society at large through personal development in commercial and subsistence farming enterprises by communicating, by working effectively in groups, and by being creative and innovative;

- Become informed and responsible citizens in the production of agricultural commodities, caring for the environment and addressing social justice issues;
- Be aware of agricultural indigenous knowledge and practices through understanding agricultural science in historical and social contexts;
- Develop an awareness of gender inequity and other imbalances that exist in the agricultural industry, encouraging meaningful participation of female learners with special educational needs;
- Develop social and personal skills through understanding ethical and responsible agricultural practices in the production and processing of food and fibre and caring for crops and animals; and
- Acquire values through having access and the opportunity to succeed in lifelong education and training.

Agricultural Sciences are aimed at developing the following competencies: investigate and analyze *sustainable agricultural practices, indigenous agricultural knowledge and historical development; and interrelated issues in Agriculture* (SAQA, 2003). Thus, the competencies should be developed within the context of the following knowledge areas: *soil science, plant science, animal science, agricultural economics, basic chemistry, basic biological concepts, sustainable natural resource utilisation, and management of the environment* (SAQA, 2003; NDA, 2003). In addition to these competencies, Agricultural Sciences addresses social and economic justice issues such as, food security and risk management.

According to the South Africa's National Curriculum Statement, there are four main learning outcomes of Agricultural Sciences (SAQA, 2003; NDA, 2003). AET assessment standards for instance in Grades 10-12 are written per grade for each learning outcome, thus indicating progression from grade to grade. The AET assessment standards embody knowledge, skills and values required to achieve the Learning Outcomes. In this sense they provide criteria of what the learners should know and demonstrate at a specific grade. The thrusts of the

different Assessment Standards are stated under each Learning Outcome as follows:

(a) *LO 1: Investigate and Analyze*

The learner is able to investigate, critically analyze and understand the challenging nature of Agriculture in order to plan and solve problems relating to sustainable Agriculture. For instance, the learner should be able to: plan and investigate information to solve problems; and, show capability in the responsible handling and use of basic Agricultural machinery and equipment according to relevant safety legislation.

(b) *LO 2: Sustainable Agricultural Practices*

The learner is able to demonstrate an understanding of the dynamic nature of Agricultural knowledge and of the appropriate technology; and to interpret and apply this knowledge to Agricultural management practices and systems to ensure a sustainable Agricultural environment. For instance, the learner should be able to:

- ✓ understand and explain the origin of soils and soil forming and their importance;
- ✓ know and distinguish between the different plant groups and crops in South Africa and their nutritional, reproductive and protection components;
- ✓ identify and describe selected ecological regions in the world and the impact on production;
- ✓ know and distinguish between the different animal groupings and breeds in South Africa, and the main areas of production; know and describe different veldt types and their impact on agricultural production;
- ✓ investigate and explain sustainable use of agricultural resources to obtain optimum production using different Agricultural systems;

- ✓ recognize and analyze a sustainable Agricultural enterprise where the system, management and practice do not impact negatively on the environment;
- ✓ categorize, describe, analyse and interpret how agricultural knowledge is contested in different contexts;
- ✓ understand and apply appropriate technology to specific agricultural practices; and ,
- ✓ Select and develop own entrepreneurial skills and explain how they will continue to the socio-economic environment.

(c) *LO 3: Indigenous Agricultural Knowledge and Historical Development*

The learner is able to understand and interpret socio-cultural developments in Agriculture over time, and to use indigenous agricultural knowledge in relevant management practices, systems and technologies. Learners will be able to enter programmes in higher education in the area of food, nutrition, clothing, textiles, housing and interior design. For instance, learners should be able to:

- ➢ understand, describe, explain, analyse and evaluate the indigenous practices of Agriculture;
- ➢ understand and describe how these practices help provide economic stability in primary and secondary farming practices;
- ➢ describe, analyse and evaluate the reasons for changes in Agricultural practices over time; and
- ➢ understand and analyse labour relations in the agricultural sector and explain the need for ethical and fair labour practices in sustainable agricultural enterprises

(d) *LO 4: Interrelated Issues in Agriculture*

The learner is able to demonstrate an understanding of the links between man and nature and the impact of socio-economic and political issues on natural

resources and on sustainable agricultural production. For instance the learner should be able to:

- ✓ identify and describe the importance of optimizing the utilization of agricultural resources;
- ✓ investigate and describe the socio-economic impact of HIV/AIDS and other human diseases on the agricultural industry;
- ✓ understand and explain the impact of global Agriculture on local production;
- ✓ understand and analyse the relationship between human rights, inclusitivity, a healthy environment and social justice in sustainable agricultural production;
- ✓ understand and analyse the impact of legislation on local and global agricultural production and marketing; and to
- ✓ Understand and explain the ethical and cultural differences in processing and marketing agricultural commodities.

In South Africa, AET can be offered in both formal and non-formal education settings but there is a need for awareness creation to develop interest in Agriculture and to provide education and training for the required skills to make agriculture a viable option for sustainable livelihood, entrepreneurship or a career. Special effort should be made to provide education and training, particularly among the previously disadvantaged populations and groups. One of the most important issues at stake is the question of access to AET by all South Africans hence the analysis of barriers and how they could be removed in both formal and non-formal education (DoA, 2005).

2.3.2 Agricultural Educational and Career Links

Agricultural Sciences prepares learners for additional Higher Education and Training, vocational careers, and the world of work and self-employment (SAQA, 2003; NDA, 2003). Thus, learners develop entrepreneurial skills and can go into farming practice using the skills acquired to contribute to the local and national economy. It caters for careers such as; farming, horticulture, veterinarian,

agricultural teaching, environmental and natural resource manager, extension officer in Agriculture and marketing services, agricultural engineer, food technologist, agricultural economics and agricultural business management.

2.4 Agricultural Education and Training in Higher Education

According to Lindley et al. (1996) in order to meet the challenges of Agricultural production and food security facing African countries, improvement of a country's human resource capacity for productivity is a pre-requisite. Both formal and non-formal education is essential for improving food security and rural development and thus reducing poverty. Formal AET is needed for the production of skilled manpower to serve the agricultural sector through extension, research, entrepreneurship and commerce. However, non-formal Agricultural education is often provided by both public and private organisations. It is particularly needed for training of farmers, farm households and workers and for capacity building in a wide range of community based organisations and groups.

Higher Agricultural education institutions are expected to play a leading role in the Agricultural and training systems at national level. Maalouf (1988) asserts that these institutions should be an integral part of higher educational institution programmes and the research themes should include interests of small and poor agricultural producers and measurement of research impacts. Lindley et al. (1996) identified a need for greater educational relevance and higher quality graduates. Post-graduate training should provide high-level scientists and researchers to pursue academic careers in agricultural and rural development. Higher Agricultural education institutions should develop education programmes and curricula responding to the need of socio-economic development by providing the knowledge and skills required to meet the needs of the people concerned. Furthermore, curricula and programmes should solve societal technical and socio-economic challenges.

Maalouf (1988) recommends that research should be an integral part of Higher Agricultural Education institutions with research themes to include interests of smallholder farmers and subsistence Agricultural producers. Research impact needs to be evaluated. The involvement and participation of Higher Agricultural Education Institutions in Agricultural education training and rural development activities will lead to the formulation of national development policies (Lindley et al., 1996; Maalouf, 1988). South Africa like other countries will not develop without well-educated people with a strong agricultural base among all population groups to provide food security for improved nutrition and health of human resources for sustained agricultural production and economic development.

The next section reviews literature on AET in Higher Education in South Africa. AET in HEI's is provided by Colleges of Agriculture, Universities of Technology and Universities.

2.4.1 Agricultural Education and Training at Colleges of Agriculture

There are twelve public Colleges of Agriculture in South Africa offering qualifications at NQF Level 1 to NQF Level 6. These are Cedara in KwaZulu-Natal, Elsenburg in the Western Cape, Fort Cox in the Eastern Cape, Glen in Free State, Grootfontein in Free State, Lowveld in Mpumalanga, Madzivhandla in Limpopo, Owen Sithole in Kwazulu-Natal, Potchefstroom and Taung in North-West, Tompi Seleka in Limpopo and Tsolo in the Eastern Cape. The colleges are managed under the auspices of Provincial Departments of Agriculture and the National Department of Agriculture.

The common qualifications are the Higher Education Certificate (HEC) in Agriculture (NQF Level 5) which takes two years, and the Diploma in Agriculture (NQF Level 6), which is pursued for a further one year on completion of the Higher Certificate in Agriculture. HEC and the Diploma programmes are accredited by the HEQC of the Council for Higher Education (CHE), while the

programmes in NQF Level 1 to 4 are accredited by Umalusi and AgriSETA. Prospective farmers, extension officers, animal health and engineering technicians are trained at these colleges.

In terms of enrolment in the nine Agricultural Colleges, the majority of students are Black and a higher proportion of these are male students. A DoA report (2006) shows that in 2005, a total of 1739 students were enrolled in the Colleges of Agriculture, and out these, 50% were Black, 43% were White, and less than 7% was made up by the other population groups. Male enrolments constituted 72% of total students enrolled, while female students made up only 28% of total students. White males were particularly dominant, making up 51% of total enrolment. While there were relatively small numbers of coloured students, Asian students were almost non-existent (DoA, 2006).

A total of six hundred and thirty eight (638) students graduated at the colleges of Agriculture, with either a Higher Certificate or a Diploma. Of these, 61% were African, 28 % White and 11% were Coloured. Asian graduates were almost non-existent as these were only two. The majority of graduates were male, with female graduates constituting 32% of total graduates. There is therefore a need to determine what it is that limits access to education in Colleges of Agriculture and the gender and racial dimension is particularly worthy of investigation.

2.4.2 Agricultural Education and Training at Universities of Technology

Information from data collected on Agricultural programmes in 2005 shows that there are five Universities of Technology in South Africa offering AET. These are Cape Peninsula University of Technology (CPUT), Central University of Technology Free State (CUT), Mangosuthu Technikon (Mantec), Nelson Mandela Metropolitan University (NMMU), and Tshwane University of Technology (TUT). The Agricultural qualifications offered by these institutions

range from certificates, at NQF level 5, to Doctor of Technology at NQF level 8 (DoA, 2006).

All the five institutions have at least one programme in Agricultural management from Diploma level to BTech level with the exception of TUT whose agricultural management programmes are offered up to Dtech level. The historically Black institutions have curricula focused on general Agriculture and Agriculture Management with little or no focus on skills that are currently in demand (scarce skills) such as Agricultural Engineering, Agricultural Economics, Viticulture, and Veterinary Science. Animal Science, Agricultural Management and Renewable Natural Resources had the highest enrolment figures. TUT has a very broad curricula compared to the other institutions and offers a wide range of agricultural programmes in four main streams, namely Horticulture, Crop Sciences, Nature Conservation, and Animal Sciences. In 2005 TUT had 70% of the total enrolment figure of 3035 students across the 5 institutions (DoA, 2006).

Black students dominate the enrolment in these institutions of technology, constituting 70% of enrolment, while Whites make up 28% and very few Coloured and Asian students. The gender composition is fairly balanced with 47% male and 53% female. In terms of throughput, a total of 685 graduates were trained, in 2005, with TUT having trained 66% of this number. Sixty nine percent (69%) of these graduates were of African descent, 29% were White and Coloureds comprised only 1%. There were also more male (64%) than female (36%) graduates.

While the size of the institution has something to do with the numbers enrolled at the different Universities of Technology, it is important to establish what contributes to the low enrolment in some cases, and the generally low throughput rates. Secondly there is need to determine why the curricula has not expanded in some of the institutions to respond to the human resource needs.

2.4.3 Agricultural Education and Training at Universities

In South Africa there are 10 universities offering AET programmes. These are University of Fort Hare, University of North West, University of Free State, University of KwaZulu-Natal, University of Limpopo, University of Pretoria, University of South Africa, University of Stellenbosch, University of Venda and University of Zululand. All the universities offer various agricultural programmes, with some institutions offering a wide variety in the Agriculture curricula. Out of a total of 8302 students enrolled in AET at all universities in 2005, University of Stellenbosch, University of South Africa and University of Pretoria had the highest enrolments with 20%, 19% and 15%, respectively (DoA, 2006). University of Zululand had the lowest number enrolled. Black students comprised 55% of enrolment, followed by White students (42%) and the Coloured and Asian students constituted only 3% of students enrolled in AET. The number of male students in the 2005 academic year was still higher than female, at 59% compared to 41% respectively.

The popular subject matter classifications at the Universities were Agricultural Management, Agricultural Sciences, and Animal Sciences, with enrolment of 1555 (19%), 1384 (17%) and 1312 (16%), respectively. With regard to throughputs from the Universities, the available data based on 2005 graduates' shows that a total of one thousand three hundred and twenty eight (1328) graduates qualified. Of this number, 20% were from University of Stellenbosch, 16% from University of Pretoria, 14% from North West University and 12% from University of Free State. The rest of the institutions produced less that 10% of the graduates. The Black graduates were in the majority (54%) followed by White graduates (43%). Predictably, the male graduates outnumbered the female graduates, with 52% of graduates compared to 48% of female graduates. There were more graduates in the Animal Science (21%); Agricultural Science stream (19%) and Agricultural Management (11%).and 65% of all graduates were obtaining their junior degree (DoA, 2006).

The Department of Agriculture annual report (2006) on agricultural programmes also highlighted the huge discrepancy in enrolment and graduation numbers for Scarce Skills. Scarce skills include programmes in subjects, such as Agricultural Engineering, Viticulture and Veterinary Science offered by University of KwaZulu-Natal, University of Stellenbosch, and University of Pretoria, respectively. They are among the few institutions offering programmes considered as Scarce Skills (DoA, 2006).

A total of five hundred and sixteen (516) students were enrolled in scarce skills programmes in 2005 and of these 50% were in Viticulture, while 16% were enrolled in the Veterinary Science (BVSc) Programme. White students highly dominated the enrolment in the programmes, constituting 82% of enrolment compared to 12% African students. There were more male students than female students in the Scarce Skills.

The graduates in Scarce Skills were much fewer and only one hundred and seventy one (171) graduates qualified in the Scarce Skills at universities in 2005. Of this number, 51% were in BSc Veterinary Science and 28% were in Viticulture degrees. The majority of graduates were White (90%) followed by Coloured graduates (4%). Interestingly, the female graduates dominate the scarce skills graduates, comprising 53% as opposed 47% of male graduates. Many of the women were mainly in the Veterinary Science, Veterinary Nursing and Veterinary Biology.

University education in Agriculture in Africa still has an obligation to enrol more women and to produce students who are prepared to go on to positions of leadership. Some progress has been made as indicated by Lindley et al. (1996) that enrolment of women in intermediate and higher levels has increased from an average of 15% to nearly 25% of the total students studying Agriculture in Africa. Although women form about 50% of the human population and their role in

Agriculture and related sectors is more than two thirds, they are still invisible and at times underestimated. Women play a major role in food production, food access and food utilisation (Paroda, 2000). Many studies recommend that women's abilities can be enhanced by improving their education, training, access to resources, technology, information and knowledge. Curriculum reform is fundamental to bringing about a change in mindset and value system. Gender insensitivity in agricultural education, research and development programmes is now recognised to be a key factor responsible for the stagnation in agricultural production in many African countries, where food crops are grown mainly by women (Swaminathan, 2000).

Although theoretically, the concerns in gender in Agriculture are mirrored in the social sciences, Leimar-Price (2000) notes that gender studies in Agriculture and rural development scholarship like social science scholarship in general, does not have a seamless theoretical orientation. Despite the availability of numerous resources on gender appropriate to the agricultural curriculum, there are some challenges to face. First, the models available for integrating women's gender studies into the curriculum are focused on the traditional arts and social sciences disciplines and prove to be more useful in project development rather than details of content specific to agricultural education. Second, there is lack of introductory and basic undergraduate level textbooks. Third, university lecturers with capacities in both Agriculture and gender are only one or two in a given institution and thus there is an overall lack of an integrative approach to include gender (Leimar-Price, 2000).

Greater awareness of women's contribution to Agriculture, changing long-held perceptions that undervalue women's work and breaking down discriminatory practices and attitudes are essential in improving women's access to and participation in agricultural education and extension. However, better access to higher agricultural education does not necessarily translate into equal opportunities to benefit from this education. Improving employment opportunities

so that women benefit from agricultural education will be even more of a challenge than improving women's access to AET (Van Crowder, 1997).

It is evident from the foregoing section that there is a need to determine factors that contribute to the racial and gender imbalances in the enrolment and graduation numbers across the universities. These imbalances result from the political and socio-cultural and economic history of South Africa. Despite the implementation of post 1994 policies, AET is still inaccessible to previously disadvantaged population groups. The participation of Blacks in Scarce Skills is limited and it is cause for concern. There is need to determine the contributing factors limiting access to AET in South Africa.

2.5 Non–Formal AET in South Africa

Reviewed literature indicated examples of AET in non-formal settings. This section details some of non-formal AET in their settings and related challenges and/or barriers

2.5.1 Adult Basic Education

The National Department of Education established a Directorate for Adult Basic and Community Education and Training in 1995, thus signifying its commitment to adult basic education and training (ABET). This was one of the initiatives of the first democratic government post 1994. The Directorate has since been restructured and renamed after merging ABET with lifelong learning, and is now known as Directorate for Adult Education and Training (Ramarumo, 2004). ABET is part of the National Qualifications Framework and this ensures vertical and horizontal mobility between different levels of the education system. According to Ramarumo (2004), all the Provincial Education Departments have established ABET units in the provinces in order to improve delivery of adult education and training.

One of the projects that was piloted and introduced within ABET is the introduction of applied Agriculture and Small, medium and Micro Enterprises (SMME) under the Ikhwelo Project. The aim of the project was to promote development of skills in Agriculture and SMMEs, for adult learners to enhance their social and economic capacity and ultimately alleviate poverty. The focus of the programme is still ABET at levels 3 and 4. As of 2004, the Ikhwelo project had been extended to 60 public Adult Learning Centres in the nodal points through out the country.

2.5.2 Environmental Education Programmes

Reviewed literature indicated that Environmental education programmes by their nature do touch on Agriculture and conservation. The Green Trust EETDP and the City of Cape Town Environmental education and training strategy are some of the examples. These are briefly described in the following sub-sections

2.5.2.1 The Green Trust EETDP

The Green Trust EETDP Curriculum and Learning Support Materials Development project is one such programme supported by the Wildlife Society of South Africa (WESSA), the Rhodes University Environmental Education and Sustainability Unit, the Environmental Justice Networking Forum and the Department of Environment Affairs and Tourism. The project has been developing curriculum and learning materials for educators working in the field of environment and sustainability in conservation, Agriculture, industry, local government and civil society contexts. The project is developing a National Certificate qualification at NQF level 5. As expected, one of the areas addressed in the EE curriculum is agricultural education.

One of the challenges experienced in the development of curriculum in this project is that environmental education as a concept is broad, and is practiced in different ways in different sectors. The issue to be focused on will differ

depending on the context. For example, the issues for EE practitioners working in nature reserve are different from those of EE practitioners in a local government or industry context and much different for that working in agricultural contexts. It was important therefore to develop materials that allow for flexibility and are responsive to these contexts. The other challenge was aligning the materials such that they respond to the needs identified by employers and other role players in the different sectors, as well as to the unit standards prescribed for the qualification as registered at NQF level 5.

2.5.2.2 The City of Cape Town Environmental AET Strategy.

The City of Cape Town (CCT) has an Integrated Metropolitan Environmental Policy (IMEP) in which environmental education has been identified as both a strategy and a tool for other environmental strategies (City of Cape Town, 2003). Although Agriculture is not one of the functional focus areas for the EET strategy in Cape Town, there is a lot to learn (for AET) in terms of the strategic objectives developed for this programme, and the partnerships and collaboration established in order to realize these objectives.

There have been a number of challenges in the CCT environmental strategy that would help inform or counter challenges to the AET strategy. Some of the issues and concerns raised in the EE strategy brief were understaffing, under qualified staff, given the broad nature of EE, over commitment, and a lack of clarity about overlapping functions (City of Cape Town, 2003)

There has been risk of staff losing focus, quality and effectiveness as they try to use every opportunity, planned and unplanned for environmental education and training. The CCT has been cautious to choose and develop focussed, output driven programmes, rather than try to do everything. On the issue of forming partnerships within the CCT, one of the challenges has been a lack of cooperation between City Departments and directorates in matters pertaining to

the environment. It was therefore found necessary to put systems and structures in place that would help achieve the strategic value of internal collaboration.

Another challenge has been the limited capacity within the formal education structures (national and provincial education departments) to offer environmental education. The environmental education of the youth is important in creating an environmentally educated public.

2.6 Barriers that Limit Access to AET in South Africa

The Department of Agriculture (DoA) has identified lack of access particularly among the historically disadvantaged communities as one of the challenges that hindered provision of quality AET. In the terms of reference (Tore) for this study, an assertion is made that AET access barriers include the following factors: *affordability, admission requirements, and physical distance from training centers, literacy, numeracy, language of instruction and scant resources* for disadvantaged communities AET service providers (DoA, 2007). It is further asserted that, AET faces challenges of marginalization of agriculture, discrimination resulting from the colonial and apartheid heritage, and a variety of other challenges which still present a formidable barrier to effective formal and non-formal education.

As a result of increased urbanization due to rural-urban migration, the South African government often gives priority to urban needs for health, education and social services at the expense of rural areas and the agricultural sector. The perception has always been that, urban and rural people from previously disadvantaged racial groups have limited interest in Agriculture (agricultural education) and enrolled in agricultural sciences when they were unable to undertake alternative subjects or programmes of study (FAO, 1997). According to Maguire (2000) agricultural education faces a variety of challenges and influences in the 21st Century. These include most of the challenges facing rural education in South Africa as summarized in the research conducted by the

Nelson Mandela Foundation as outlined in the Working Document on Education for Rural People (2005):

- ✓ *Curriculum relevance regarding emphasis on Mathematics, Science and Technology, understanding of local and global environment, promotion of critical thinking and inclusion of useful skills;*
- ✓ *Education disparities for girls and boys infringing their rights to education;*
- ✓ *Lack of School Governing Body's (SGB) capacity to focus on curriculum and quality of education as a result of this teachers dominate;*
- ✓ *Poverty and cost of fees and uniforms present a barrier to education; and*
- ✓ *Quality of education particularly in rural schools as indicated by lack of qualified teachers, particularly in Agriculture, irrelevance of curriculum, large classes, and lack of teaching aids.*

According to FAO (1997), the low standards of general education in rural areas make it difficult for the young to obtain entry level qualifications required for access to agricultural education, especially at tertiary education levels. Often, rural young people found themselves in direct competition with better schooled urban youth when seeking entry into tertiary institutions. Additionally, and systematically, survey data tend to understate the importance of Agriculture in former homelands. According to Zimmerman (2000), Agriculture in the former homelands was not practiced by everyone. Zimmerman (2000) argues that, even among those who practiced Agriculture, it was used as a backstop activity, limited to a few animals and a small plot of vegetables or grain. The author asserts that average farming skill levels in the former homelands were low and that agricultural human capital was both scarce and unevenly distributed.

The new democratic South African government has put in place intensive national transformation policies and programmes to address the legacy of a racially and culturally segregated system of education through appropriate Acts. Despite a world wide success record, agricultural education and training in Africa and elsewhere faces rapid and dynamic changes in the environment in which it

exists. As a result of these Maguire (2000) identifies the following problems with agricultural education and training in South Africa as well:

- Failure to attract the best quality students from secondary schools;
- High unemployment of graduates from the university, often due to lack of relevance of curriculum;
- Lack of communication with the employers of graduates of the university, the market;
- Poor practical skills;
- Inbreeding in higher educational institutions where the teaching and research staff members are frequently graduates of the same university or college, thereby excluding the entry of new ideas from the wider world of academia and research.

In addition, Didiza (2005) states that educators at tertiary level are often well-trained in theoretical Agriculture but inadequately trained in practical agriculture. Also Maguire (2000) emphasizes that major changes impacting on AET and delivery of quality education and training, such as loss of key experienced teaching and research staff. Some other changes that impact on AET and present further challenges and access barriers include:

- ***The shift in focus from Agriculture to rural development***. The older curriculum that concentrated on production Agriculture is no longer able to produce educated people who can deal with the wider problems of agricultural and rural development. In the new approach the AET is viewed as a subsystem of the whole Rural Development System.
- ***Globalisation*:** Agricultural education and training institutions should provide education for graduates who would be able to deal with Agriculture and the macro-economy in an integrated world.
- ***HIV/AIDS*:** The impact of the epidemic on the professional agricultural workforce is severe and has led to the loss of experienced scientific and

extension capacity. Thus HIV/AIDS barriers to provision of human resource development and replacement of staff.

- ✓ ***Urbanisation:*** The ambition of farming families to educate their children so that they can attain a better standard of living away from rural areas has implications for AET. Urban centers provide more job opportunities and easier access to non-agricultural careers.

There are many bureaucratic, political and societal barriers to change that can defeat even the most innovative changes, such as admission policies at educational institutions, curriculum policy without innovation and financing such as student bursaries, subsidies, fees and even salaries to attract staff with scarce skills in agricultural education. A number of studies commissioned by DoA have documented challenges and dilemmas in AET, most of which are outlined in the AET Strategy of 2005 (DoA, 2006).

2.7 Challenges Identified in the 2005 AET Strategy

The AET Strategy of 2005 that is accessible to all South Africans seek to plan and implement a system of AET that would meet the needs of the agricultural sector and create opportunities as identified in the national and provincial agricultural strategies, as well as those resulting from the research conducted to formulate this strategy. Based on the research, analysis and consultation conducted, limitations in the current South African AET 2005 discuss the following challenges:

2.7.1 Fragmentation and lack of co-ordination

The AET system has been found to be lacking in coherence and co-ordination. Consequently, there is poor articulation characterizing the programmes offered both between the formal and non-formal subsections and also within the formal education and training sector. The funding of programmes is unequal and uneven across different institution providing them. The former White institutions

are still better resourced than their historically Black counterparts. Often academic programmes differ in quality, standards, outcomes and curriculum. For this reason learners cannot easily change from one institution to another. Further barriers to access of AET at higher levels are caused by this lack of coordination and poor articulation.

2.7.2 Poor and Inconsistent Quality Control

The curriculum content of school level education and training is poorly controlled and the quality is often very low. A number of educators responsible for teaching agricultural sciences in former Black schools are not qualified in science and agriculture. The quality of non-formal education remains untested in most cases. The former White institutions are comparatively better resourced in terms of infrastructure that supports training and education and human resources. However, the historically Black institutions are poorly resourced and provide poorer quality Agricultural training. Although the formal education and training has some level of quality control in place, the non-formal AET is almost completely lacking in it.

2.7.3 Ineffective and Non-Responsive Education and Training

There has not been an appropriate response in formal education and training *curriculum* content to address the required improvement in areas, such as marketing, management, value-adding and other practical skills. Agribusiness can be a more profitable approach to Agriculture as opposed to it being taught only as a production enterprise.

Educators who provide training in Agriculture at secondary level are often inadequately trained in both theoretical and practical Agriculture. Most of them do not even have interest in Agriculture but they are channeled to teach the subject because of the shortage of qualified educators in Agriculture. This

reduces the chances of access by learners to higher education in Agriculture. Most educators at tertiary levels are well trained in theoretical Agriculture but often inadequately trained in practical Agriculture. Consequently, graduates have few practical skills to offer in the workplace. Only few teachers at both secondary and tertiary levels have been trained to put emphasis on agribusiness aspect of Agriculture. Research studies indicate that there are *inadequate links between AET institutions and relevant private sector* role-players who provide strategic information about employment and entrepreneurial opportunities, particularly in the agricultural sector.

As a result of low enrolments in post-graduate studies, especially at Masters and Doctoral levels, the *research base is narrow*. This contributes to the slow response of AET to provincial, national, regional and global changes, challenges and opportunities in Agriculture

2.7.4 Poor Access to AET by Emerging Farmers and New Entrants

Previously disadvantaged groups and communities, and in particular women and the disabled continue to have poor access to quality AET. This is the result of various barriers, including affordability, admission requirements, physical distance from training centers, literacy and numeracy, language of instruction and scant resources available to those charged with the responsibility of providing AET to these communities.

2.7.5 Agriculture's Negative Career Image

Youth from previously disadvantaged groups and communities have negative attitudes and perceptions of Agriculture as a career choice. They associate it with poverty, low status and the elderly. Hence they do not view it as profitable. Further-more, Agriculture is considered in a very narrow context, and is equated solely with primary production as opposed to a profitable business incorporating

value-adding elements. Another discouraging factor is that a large number of learners who have diplomas and degrees in Agriculture are, for a variety of reasons, unable to find jobs.

2.7.6 Shortage of Critical Skills

The AET Strategy (2005) has identifies the lack of critical skills in Agriculture as caused by access barriers to AET. It states that Agriculture draws on a wide range of scientific and practical skills and knowledge. The critical skills can be categorized into five broad areas: *Agricultural production; Agricultural engineering; Agricultural economics; Agricultural development; Veterinarians*.

The range of Agricultural research has been limited because very few Black South Africans have high level production skills. As a result of this limitation, the needs of small-scale and subsistence producers, these include household food security and rural livelihoods sustainability. Generally the historically disadvantaged populations produce very few agricultural scientists. The fact that few secondary school learners have an opportunity to specialize in Mathematics and Science is a barrier to access to AET.

Training in Agricultural Engineering has focused primarily on supporting large-scale commercial farming, and this has resulted in a shortage of appropriate technologies for small-scale farmers. A combination of scarcity of engineering programmes at the Historically Black Institutions (HBI) and the lack of adequate training in Mathematics and Physical Science have prevented historically disadvantaged populations from accessing training in Agricultural Engineering (DoA, 2005). Linus at all. (2004) conducted a study of university students' perceptions and attitudes towards agricultural engineering education. They state that students showed a general dislike for courses in basic sciences, such as Biology, Mathematics and Physics. The same attitude was indicated for basic

engineering courses, namely Statistics, Dynamics and Calculus in their curriculum. Linus et al. (2004) also reports on the low appeal of the agricultural and marine science academic programmes among the majority enrolled in a bio-resource and agricultural engineering major.

The provincial enquiries supporting the AET strategy highlighted the crucial need for general Agricultural Economic skills, as well as those related to agricultural business, farm planning, farm management, enterprise management, marketing, finance, credit and risk management, and human resource management (DoA, 2005). In a paper on youth, training and employment, Bird (1999) states that South Africa has fewer people active in entrepreneurial activities in Agriculture among previously disadvantaged populations. Such activities were suppressed largely by apartheid policies.

The increasing numbers of new entrants into Agriculture lack the skills to cope with the rapidly changing landscape. These skills cover areas such as agricultural extension, sustainable livelihoods, food security, resource management, agricultural law and policy, land care, and environmental management. Agricultural extension presents a special case in that it is particularly urgent that all agriculturalists, economists, engineers, and scientists at all levels be skilled in taking their specialty into the field, to the farmer. The skill of engaging farmers, producers and small-scale value-adders in technology development is a singular challenge to the AET system (DoA, 2005).

Research studies have highlighted the need to provide agricultural extension workers with capacity and the skills to assist communities to deal with the effects of rural change, the impact of HIV/AIDS on the rural economic base, and the growing vulnerability of household livelihood systems, which presently are not generally part of the formal and non formal education and training of extension workers.

The South African Public Service is faced with the challenge of ensuring that there is an adequate supply of veterinary doctors. There is no data existing or recommended ratio of the number of veterinarians per number of households/livestock farmers. There is a need to identify the knowledge and qualification gaps in training veterinarians (DoA, 2005).

According to Linus et al. (2004), the majority of university students (48% of the total responses) preferred career option and employment in government ministries and agencies. Forty two percent preferred employment in the private sector. While a negligible number of students (3%) wanted to start their own businesses after graduation. Most students expressed confidence that their current educational programme would enable them to attain the critical skills required for success in their preferred workplace.

There are many bureaucratic, political and societal barriers to change that can defeat even the most innovative changes, such as admission policies at educational institutions, curriculum policy without innovation and financing such as student bursaries, subsidies, fees and even salaries to attract staff with scarce skills. In view of all these barriers, DoA has observed that the education system, especially in historically disadvantaged schools, is not conducive in preparing learners with the necessary foundation subjects for careers in critical agricultural skills. These are Mathematics, Science and Technology required for entry to post-school training institutions where agricultural training is offered. Another challenge is insufficient career information and guidance available to learners and educators in former schools for Blacks, Asians and Coloureds. To address these issues DoA has introduced a bursary scheme to enable school learners and tertiary institution students to enhance their capacity for entering the agricultural industry. In making a concerted effort to identify and prepare learners and students to take up this opportunity, a pilot on Agricultural Awareness among school-going learners was planned and implemented in KwaZulu-Natal and the Northern Cape in 2004 (DOA Document, Undated). Formal education system is

critical in creating awareness and developing young people's interest in careers in Agriculture.

2.8 Conclusion

This draft document has undertaken a review of literature on access barriers to AET in South Africa. A key component of this review has been the acknowledgment of the historical perspective of the challenges in AET and how visionary policies, programmes and strategies have been put in place for implementing action programmes to improve access to AET and the national human resource capacity for agricultural and rural development. Both formal and non-formal education has been discussed as critical to removal of access barriers to AET. Furthermore, careers in AET, scarce skills in Agriculture and gender issues in higher education have been examined. We have seen in literature that there is inadequate link between AET institutions and relevant stakeholders or role players in the public sector, business, education, community based organizations, non-governmental organizations, and labour. There is a dire need for policymakers to ensure that AET institutions comply with national policies, programmes and strategies. The visionary policies of government would be enhanced by having methodologies and guidelines on how to implement them in order to remove access barriers to AET.

3. METHODOLOGY OF THE STUDY

This study explored agricultural education and training barriers, particularly among the previously disadvantaged communities, women and physically challenged individuals. This section gives an insight into how the research project was conducted.

It discusses the research design, sampling, instruments, data collection methods, validity and reliability, methods of data analysis, time schedule of the research project and the study area.

3.1 Research design

The research design was descriptive but a combination of qualitative and quantitative research methods were used because they complement each other (Scrimshaw, 1990). The qualitative approach provided detailed descriptions of particular social settings under investigation and also recognised that people construct meaning within a socio-cultural environment in which they live. Therefore the descriptive survey was used to quantify data.

3.2 Sampling

A non-probability sampling method of sampling, namely purposive or judgemental was used to identify the study area and the sample for the study. The method of selection was based on the judgement of the Department of Agriculture's priority geographical location of the disadvantaged groups in consultation with the researchers and available financial resources. The sample was based on handpicking the individual elements in keeping with the department's needs. In consultation with the manager of the Directorate of Education, Training and Extension the research team selected the sample from typical communities who did not have equal access to agricultural education and training. These communities were known to be mostly in selected provinces, namely KwaZulu-Natal, Northern Cape and Western Cape. There was no way of

forecasting, estimating or guaranteeing that each community or group would be represented in the study.

In each province 10 to 12 key informants were interviewed and a minimum of two focus group discussions were conducted.

3.3 Methods of data collection

3.3.1 Literature and documentary review and semi-structured interviews

During the initial stage of the study unstructured interviews were conducted by telephone and face to face. Furthermore literature was reviewed in order to analyse past and present trends for analysis that would have been impossible for a single researcher undertaking primary research. Literature review was used to conceptualise the study and frame its research questions. Qualitative secondary data helped to identify local issues in selected provinces and it also helped the researchers to decide what issues needed to be covered in the empirical research. Primary sources of documents were reviewed in their social context. Both secondary and tertiary sources in the libraries were used. Internet search engines were added to the documentary sources. These included private and public documents. The documentary reviews helped to identify access barriers to AET. Four criteria for assessing the quality of the evidence available from documentary sources were considered. These included authenticity, credibility, representativeness and meaning. Semi-structured interviews were based around a checklist of questions or issues that the researchers wanted to cover in order to formulate research questions.

3.3.2 Key informants

Key informant interviews are qualitative in-depth interviews with people who know what is going on in the given community of profession. The purpose of key

informant interviews was to collect data from a wide range of people who have first hand knowledge about the study. These experts, with their knowledge and understanding provided insight on the nature of the agricultural education and training problems and gave recommendations for solutions. Key informants with first hand information about the study were carefully selected. Face-to-face interviews were used and provided a free-exchange of ideas and detailed responses. A total of 36 key informants were interviewed in the three provinces. Key informants were selected from the following organisations and groups: Provincial Department of Agriculture; Women in Agriculture and Rural Development (WARD); National Agricultural Education and Training Forum (NAETF); Community-based AET providers; Department of Education (DoE); Non-governmental organisations (NGOs); Municipalities; Provincial and national farmers' unions; College of Agriculture; Higher education institutions that offer agricultural programmes; Further Education and Training and Youth Commission. Focus group discussions were used to collect data as one of the qualitative approaches.

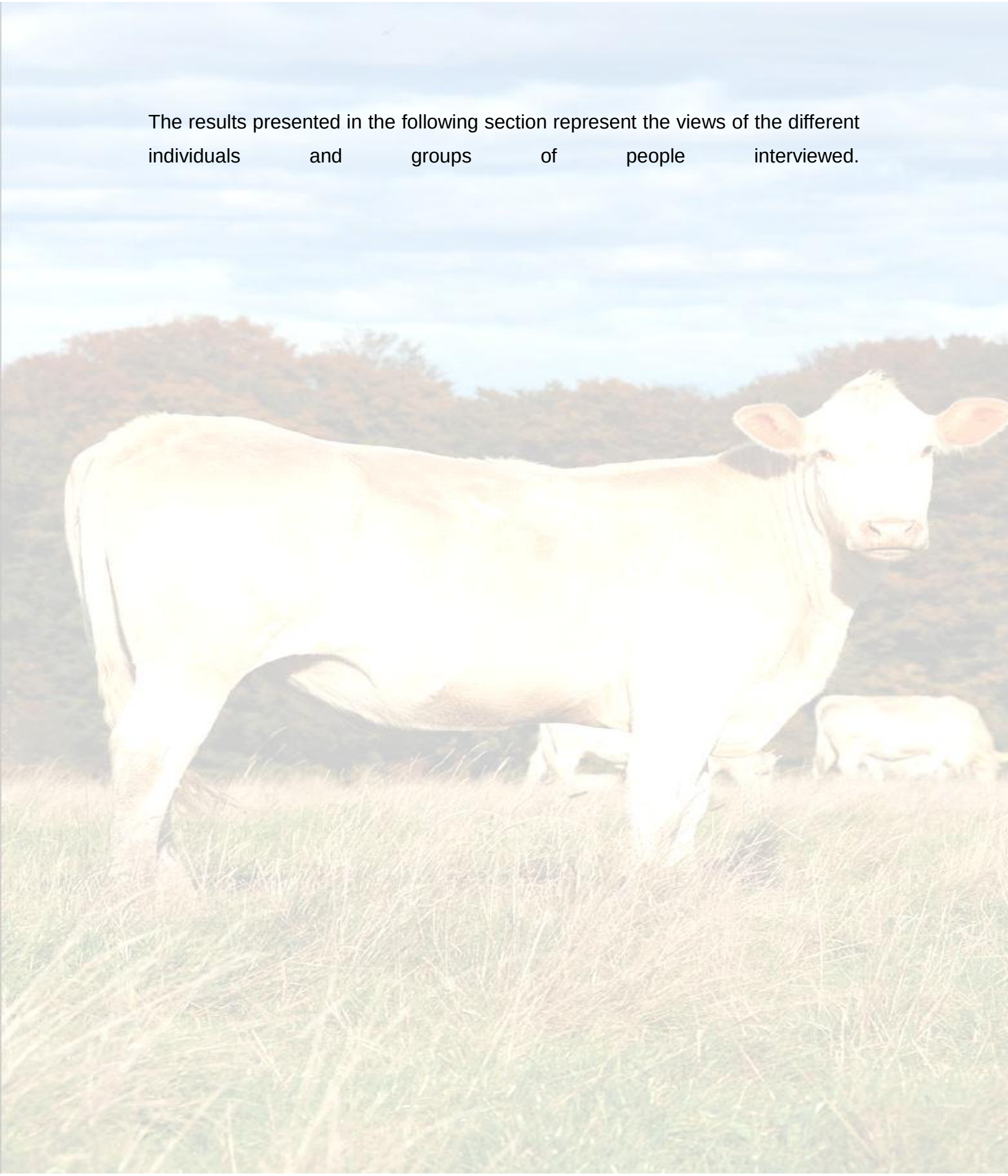
3.3.3 Focus Group Discussions (FGDs)

Focus Group Discussions were used as one of the qualitative methods to obtain in-depth information on concepts, perceptions and ideas of a group. A focus group discussion was typically 6-15 people who are not familiar with each other but selected because they have certain characteristics in common concerning the study. In Northern Cape a focus group discussion was held with school-going youth and a group of unemployed graduates, whereas in KZN the FGD was held with youth out of school, youth in school, and a group of educators.

3.4 Data analysis

The data from the various provinces was analysed qualitatively by categorising and organising by themes following the main areas of enquiry in the study.

The results presented in the following section represent the views of the different individuals and groups of people interviewed.



4.0 RESULTS OF THE STUDY ON ANALYSIS AND REPORT OF THE AGRICULTURAL EDUCATION AND TRAINING (AET) ACCESS BARRIERS IN SOUTH AFRICA.

4.1 BACKGROUND

The Department of Agriculture through the AET strategy is committed to enhancing equitable access and meaningful participation in agricultural education for all South Africans. One of the main focus areas in the AET strategy is to remove the challenges facing the provision of quality education and training in Agriculture. The National Department of Agriculture commissioned the study whose purpose was to assess the factors hindering access to agricultural education and training particularly by the historically disadvantaged communities. Specific objectives of the study were to;

- Identify and analyse access barriers (social, cultural, economic, technological, institutional, environmental) to agricultural education and training;
- Determine and describe possible methods to remove access barriers to AET;
- Determine the relevance of existing formal and non-formal AET programmes to the needs of the first and second economy of South Africa;
- Make recommendations on how access barriers to AET can be removed
- Use a logical framework and identify indicators that will be used to measure progress.

Several barriers were identified and have been grouped into socio-cultural barriers, economic barriers, Institutional barriers**,** technological and environmental or infrastructure barriers. It should be noted that responses within a province were not necessary homogenous, in fact in some cases, they were often conflicting responses and depended on people's personal experiences, the employment status, and exposure/awareness of what is going on around them

regarding participation in AET. The report has tried to present these diverging views, but at the same time makes conclusions based on the points for which there was most consensus.

4.2 SOCIO-CULTURAL BARRIERS

The following sub-categories of socio-cultural barriers were explored, namely gender, social class, youth, membership of groups, educational background of parents, and attitudes and perceptions of people in the communities where the study was carried out.

4.2.1 Gender

Participants were asked to explain if gender was a barrier to accessing agricultural education and training. There were divergent views on this question, although more respondents (59%) said that gender was a barrier in AET compared to those who said it is not a barrier to AET (41%). The common observation was that agriculture is a man's domain, it is dominated by men. 'it is dirty work for men (Northern Cape student). A respondent in Northern Cape said that in the agriculture sector, there are more male service providers than female. Men are responsible for farming and even in the commercial sector; women only get involved in administration. 'I think men are more able to access AET than women' (Northern Cape out-of-school youth). Agriculture is associated with hard labour and not suitable for women.

In KZN, it was reported that among emerging farmers, there is some representation of women (a number of them are women), but among the commercial farmers, there are more men than women. In Northern Cape, a female respondent representing women in agriculture said that young women are not interested in agriculture. Elsewhere, it was said that when women get involved in agriculture, it is at the subsistence level of farming.

Some participants who said that gender is not a barrier indicated that all people are engaged in agriculture equally or have equal opportunities to access AET and where there is no access, it affects both gender in the same way. In Northern Cape there were several respondents saying agriculture or AET is accessible to all and that a number of women have gone through AET. Although some participants said gender was not a barrier, they said that women (or female students) are not encouraged to pursue agriculture and felt that some women think being a female is a barrier in agriculture; they have the wrong perception of what agriculture entails.

Table 1: Summary of comments on Gender as a social cultural barrier to AET

PROVINCE	COMMENTS FROM DIFFERENT RESPONDENTS
Kwazulu-Natal	✓ Previously, women were not encouraged to access AET ✓ Only men are in commercial agriculture ✓ Only women are in subsistence agriculture ✓ AET is intended only for male students (Youth respondent)
Western Cape	✓ Agriculture is perceived as a man's job ✓ Agriculture is perceived to be manual. Not popular among females ✓ Agriculture is dominated by males. ✓ There are limited means for females to access AET. ✓ Females are advised against AET
Northern Cape	✓ In the commercial sector, agriculture is a man's thing. Women only involved in administration. ✓ Among coloured people, the man is responsible for farming ✓ There are more male service providers than females in the agriculture sector. I think men are more able to access AET than women (youth out of school) ✓ Agriculture is associated with hard labour. Also a perception that it is dirty work for men.

On the other hand, in KZN, a few participants said there are more women in agriculture (meaning subsistence agriculture) and men are lazy. "Women are the ones doing all the work especially in rural areas' (KZN Higher education respondent). Women have a real interest in agriculture; it is not just the need to

grow food. A Northern Cape Higher Education respondent had a similar conclusion to that of KZN above and said that 'girls aspire to be agriculturalist because there are women in agriculture who are role models'.

4.2.2 Social class

There was agreement across the board that people in lower social classes have problems or barriers in accessing AET while those from higher social class have better access and this is mainly an issue of having or lacking resources. According to one KZN respondent in Higher education, the low class people have limited or no access to newspapers and other forms of media, and even the schools attended are also limited in resources. The quality of education is poorer. An example was given by some respondents in KZN who said that those who have resources have better access to Department of Agriculture services, or the Tongat Hullet (Sugar Company) extension services. The sugarcane farmers are better in that they have access to information. AET is perceived to be for the high class people.

One respondent from a college of agriculture in Western Cape said that social class may or may not be a barrier depending on the type of education being sought. For instance, Further education and Training (FET) is more easily accessible to the less fortunate than is higher education. Respondents from the FET colleges agreed the poor do not have the financial resources to study further, AET is very expensive and people are stopped by the costs.

In Northern Cape, the general feeling was that AET was accessible to all groups of people regardless of social class, with one respondent saying that 'the destiny of the previously disadvantaged was in their own hands'. Another respondent felt

that social class alone may not be the barrier but an overall lack of exposure to AET. There is limited access to land in general. Yet another respondent in Northern Cape expressed the issue of favouritism, meaning that those who are well connected are able to not only access AET, but are able to get jobs.

Race seemed to be seen as a factor, but was raised in the sense that (rich) White people have the resources necessary to access AET and they are viewed as being of higher social class. In Northern Cape one respondent said that there is a perception that agriculture is for White people and not Africans. A respondent in KZN said that the poor Black people only engage in non-formal Agriculture for subsistence purposes. Another respondent in the Northern Cape expressed the opinion that the land restitution programme has not been carried out according to social class. But there are people who opted for the money instead of going back to the land, arguing that the return on the inputs in agriculture is very limited. There was also an observation that agriculture/agricultural services are mainly in rural areas, and here there are not many opportunities.

An interesting comment was made by a group of youth out of school in KZN who argued that the high class people are not interested in agriculture, and anyway they can get someone to do gardening for them. The low class people on the other hand know that they have to farm (do gardening), but they have no access to information.

4.2.3 Youth

The youth are viewed as a sub culture within a given culture and have particular issues to deal with. Since the dawn of democracy in South Africa, various interventions have been conceptualised to advance youth development but there are still enormous challenges. One of the strategies that has been variously proposed is to encourage participation of youth in agriculture. There is a concern

that there has not been as much interest in agriculture among the youth. The current investigation on access barriers to AET also strived to determine if and what access barriers to AET are experienced by the youth

There were more respondents clearly saying that there is a barrier among the youth in accessing AET (44%) but a further 23% also gave various comments that allude to the fact that there is a problem among the youth with regard to agriculture.

A common comment from many respondents who said youth was a barrier was that the youth do not like to engage in agriculture (and subsequently AET). They associate agriculture with dirty work and menial labour. 'They do not like working in the fields. Some youth prefer taking other careers other than agriculture, and there is some peer pressure influencing decisions made. It was also said that the youth do not have access to land, and this could mean that they have no reason to take an interest in agriculture.

In KZN, different explanations were given as to why the youth are not participating or interested in agriculture. A group of school going youth said that young people are not exposed to agriculture, and this could be the reason they are not interested. They argued that older people themselves are not practising agriculture and therefore young people have no role models. They also said that the youth from rural areas are more exposed than those from urban areas.

Another respondent in KZN said that the youth in school are never sure if they will pass and that is why they do not choose agriculture. At the same time, the youth have access to different programmes but they see agriculture in terms of farming only and it has not worked for their parents so why would they pursue it?

In Northern Cape, the high rural to urban migration was also given as a reason why the youth are not exposed to agriculture, while in Western Cape there were

explanations that the youth do not know what to study after matriculation. They need more guidance with regard to AET.

Among those saying that youth was not a barrier to accessing AET (comprising 32% of respondents) were respondents from colleges (a college of agriculture and FET College) saying that age does not influence accessibility and the students coming in are from a wide age range. The youth as such are not the problem so long as they are willing to learn. However it has been observed from these institutions that with older students there is more dedication. A Northern Cape respondent said that there are now open opportunities for youth especially with the Youth in Agriculture and Rural Development (YARD) programme. There is only a need to change the mindset that associates agriculture with labour from the poor. Some youth in the same province said that there are many opportunities for youth in the agricultural sector. They have to make a choice of the career they want to follow.

Some additional comments elucidated from the discussion are important in understanding access barriers but the issues presented do not only affect youth. For instance in Northern Cape, it was said that the youth report to people who do not understand their job e.g. reporting to a legal professional who has no idea of youth, women and disabled persons. It was also reported that there is no integration of department's functions and as a result there is isolation of the different units. There is also no dissemination of information from managers, meaning that information does not filter down.

Table 2: Summary of comments on youth as a social cultural barrier to AET

PROVINCE	COMMENTS FROM DIFFERENT RESPONDENTS
Kwazulu-Natal	• Young people generally have a negative attitude toward agriculture. Do not want to study agriculture. DO not want to be farmers • Lack of exposure to agriculture and/or AET • The youth are forced by parents to go into agriculture (meaning gardening) and mostly it is the girls, the boys run away. • The youth are do not want to work in the open sun • Only two institutions offer agriculture in surrounding area and there are no short courses available
Western Cape	• Youth have a negative attitude toward AET • Peer pressure: The youth influence each other not to pursue AET • Agriculture is for old people
Northern Cape	• The youth do not have the appropriate information • They associate agriculture with dirt and heavy labour • Do no see it as a business entity • Youth are interested in agriculture but there are too few schools that offer agriculture

In KZN, a group of youth out of school said that it is not difficult to get agricultural studies but some youth do not want to do agriculture because they do not want to be farmers. But for this particular youth group and the location or area they find themselves in, they said there were few opportunities, as observed by one young girl 'there is only University of Zululand and Owen Sithole College of Agriculture and there are no short courses available'. Probably the view here is that if one does not access the two institutions (with all the entry requirements) then there is no where else to go.

Other social factors, namely the educational background of parents as well as membership in groups was also explored to determine if they limit access to AET.

4.2.4 Educational background.

There was general consensus that parents have the ability to influence their children. As indicated by one Western Cape respondent, they can put pressure on children on what to study. The level of education of parents was generally seen as a barrier where, as is commonly the case, it is poor or low. Such parents cannot advice the children regarding AET, and they themselves are not exposed to AET, and do not know what agriculture entails. They also have no knowledge of existing careers in Agriculture. In KZN one participant said that most parents with little or no education advice their children against AET. Another group of KZN respondents said that many parents do not teach their children agriculture (referring to subsistence farming or gardening), but the children also show no interest. According to a Western Cape respondent, low educational background among parents affects both formal and informal education. If anything, such parents support whatever educational decisions children make.

On the other hand, a respondent in Western Cape said that children whose parents have an agricultural background would have easier access to AET. Also it would be expected that if parents are involved in agriculture, they could influence the children, but in most cases, they do not.

A respondent from an agricultural high school in KZN said that the learners come to the school because of their parents as the parents want the children to do agriculture. The reason was that the older people are getting their land back and want the young to be able to farm.

In Northern Cape, it was said that parents encourage children to take up other careers; educated parents may even influence their children to follow non-agricultural careers, while another respondent in the same province said that farm workers are still marginalised, as there is a slave mentality.

In Western Cape it was said that most parents of colour have a low educational background and cannot give good educational advice to their children.

4.2.5 Membership in groups.

This question was not appropriately answered in all cases, but a majority of responses show that it is not a problem. Responses across the three Provinces from people who are already farming (at whatever level) indicated that there are advantages to being a member of a group. In KZN, a community group engaged in hydroponics said that it is better to work as a group since it is much easier to get funding. Within the group, you can train a few people and when they come back, they can then train/transfer skills to the group.

However, some responses show that it is a problem in some cases. For instance, in KZN, it was said that some groups discriminate against members on the basis of race, for instance 'White people's groups are not open to Black people's membership. There is also discrimination on the basis of tribe, or political affiliation.

In Western Cape, a respondent said that Whites do not communicate critical information about access to AET. Another respondent in the same province said that many large companies have bursaries and they fund certain projects only. This would imply that if one is not a part of (or member) of a project that falls within the Company's social responsibility, then they have no access to AET. At the same time membership in a social group can work negatively in terms of access. For instance a respondent from Department of Education, Western Cape said that where there is a low social image of agriculture, peer pressure will mean that the entire group does not want to access agriculture education. At the same time, many groups are not socialized into Agriculture and it is therefore hard for them to promote access to AET.

In Northern Cape, there was observation that Whites are socialized to access agriculture education which is an advantage, while among Black communities, there are no role models, 'they only have priests, teachers, and nurses as role models'. This observation is true of other provinces. There was also a feeling that some individuals or race groups are favoured by senior managers. One respondent from a Community Based service provider said that there is very little skills transfer from White to Black people. At the same time, he had observed that training is not taken seriously by the Department, and cited the fact there is no budget for bursaries.

Table 3: Summary of Comments on Membership in Groups as a Barrier to AET

Province	Comments from different respondents
Kwazulu-Natal	• To some extent, political groups are not open to non-members • Some groups discriminate against members in terms of colour, raced or tribe. • White people's groups are not open to Black people's membership
Western Cape	• Whites do not communicate critical information about access to AET to people of colour • Many large companies have bursaries and fund certain projects only. • Peer group pressure means low social image of Agriculture. • Most groups re not Agriculture oriented. Its hard for them to promote access to AET • Farmers Union is only for Whites
Northern Cape	• Whites are socialized to access AET. • There are no role models in Black communities. They only have priests, teachers and nurses as role models • AET is easier for Whites because they are aware of agricultural science • Black learners use Agricultural science as a 'filler' subject (i.e. no real interest but add it to make up required number of subjects)

4.3 ECONOMIC/POVERTY BARRIERS TO AET

Closely related to social class is the economic factor which impacts negatively on access to agriculture and agricultural education and training. Poverty was

addressed in the interview as one of the social cultural barriers and the responses will be discussed as part of economic barriers. There was general consensus that poverty limits access to AET as financial resources are important to have. Formal education and training in Agriculture is very expensive and the poor do not have the financial resources to study further. One respondent in Northern Cape said "If you do not have the means it is not possible", while another respondent in the same province said that 'poor children cannot proceed to higher levels of education due to lack of money. Poor people do not have appropriate information. They often have no access to agriculture science schools.

Many respondents highlighted the fact that most Black people are poor and are not able to access AET due to cost. Only those who can afford to pay for tertiary education will have better access. A respondent from Northern Cape said that the poor prefer to get jobs than to study further. In KZN one woman said that those with the resources are the ones who access funding (referring to the collateral needed to access funding).

While some youth in KZN expressed the view that there are only two institutions for agriculture, they also said that they anyway often do not have the money necessary to go to the two available institutions. Some respondents expressed the need for funds in terms of bursaries to attend institutions offering agriculture. They said that the bursaries available are not enough (for the number of poor people that would need them). Poverty was also associated with lack of access to land (Western Cape respondent), and to lack of education and lack of jobs (Northern Cape). In KZN one respondent said that poverty leads to hunger and hungry people cannot work. In Northern Cape, one woman involved in agriculture said that projects are left half done because the people live from hand to mouth.

4.4 ATTITUDES AND PERCEPTIONS AS BARRIERS TO AET

4.4.1 Attitudes and perceptions as part of social cultural barriers

There was a general agreement across the three provinces that attitudes and perceptions are a barrier to accessing AET, with 27 out of 36 respondents clearly saying yes to the question. AET has a low/negative image among many people, and in all three provinces, it was mentioned that people look down upon agriculture, and specifically among Black people, AET has a negative image. It is perceived as only for rich white people or (as said in one interview), for the low social class, it is a dirty job and on several occasions it was mentioned as a man's job. In an interview with the youth in KZN, they said that when they think of University, they think of 'high agriculture or a big agriculturalist' and one is limited due to poverty. In Western Cape it was mentioned by several interviewees that people of colour have a negative attitude toward agriculture.

In another KZN interview, it was said that a fundamental problem is the influence of apartheid. Blacks did not get a chance to do Agriculture and it is not seen as an academic subject. Similar responses were given in Western Cape, where agriculture is associated with dirty work, is perceived as a low paying job, and a job for the uneducated. In Northern Cape, there is a negative attitude toward those who work in agricultural farms. Agriculture is not highly rated. One female respondent in Northern Cape observed that women have become negative towards development because of poverty. They are not interested in education and practical initiatives such as gardening.

On the contrary, in KZN, a few participants said there are more women in agriculture (meaning subsistence agriculture) and men are lazy. "Women are the ones doing all the work especially in rural areas' (KZN Higher education respondent). Women have a real interest in agriculture; it is not just the need to grow food. A Northern Cape Higher Education respondent had a similar conclusion to that of KZN above and said that 'girls aspire to be agriculturalist because there are women in agriculture who are role models.

Participants were asked if there were any attitudes held or practiced by school-going learners, and parents that create or develop a barrier to accessing AET. Responses to this question were very similar to those above and mainly emphasize the negative attitude. In one Agriculture Training school in KZN, it was reported that some learners come to the school with a negative attitude toward agriculture. Many are sent to the school by the parents and some of them do not want to work in the farms, often giving excuses of allergies. But on the whole, the institution manages to get many students interested in agriculture in the end.

Regarding parents, in KZN it was said that most parents do not encourage their children to access AET. Among the women, it was said that they are afraid to take decisions, and wait for men who live far away. Women also argue that they do not have enough strength to do physical work.

Table 4: Summary of Comments regarding negative Attitudes and Perceptions on Agriculture and as Social Cultural Barriers to AET

Province	*Comments from different respondents*
Kwazulu-Natal	• **AET has a low/poor image among many people, especially Black people.** • **Is perceived as only for White/rich White people (even by school-going learners)** • **Perceived as a low paying job, is a dirty job.** • **One does not need AET to work in agriculture *(mentioned twice)*** • **Agriculture is not seen as an academic subject** • **Agriculture/AET is for the low social class, or for rich White people.** • **Some people in community are lazy to work,** • **Some people are sick and unable to work** • **People love agriculture, but they are afraid to work** • **Men not interested.** • **People only think of agriculture in terms of subsistence level.** • **One is limited by poverty. Agriculture requires resources.** • **AET is for men only** Additional attitudes held by School-going Learners • **AET is highly mechanised and uses advanced technology.** • **Agriculture is rural based** • **Not a high profile job**
Western Cape	• **Agriculture is regarded as a low level, low paying job, and dirty job, for the uneducated.** • **Accessed by Whites only.** • **People of colour have negative attitude** • **Low paying profession, dull and not exciting** • **Agriculture is for men only** Additional responses regarding school-going learners • **Seen as a dirty job and associated with hard labour** • **Agriculture is boring** • **Not a high profile job** • **Agriculture is about farming and you must have a farm otherwise you won't have a job.**
Northern Cape	• **Black people see farming as oppressive and would not want their children to do agriculture.** • **Some people associate agriculture with dirty work** • **Negative attitude toward those who work in agricultural farms** • **Officials do not show a passion to serve** • **Officials do not give young farmers assistance/support and confidence.** • **Women not interested in education and practical initiatives such as gardening**

	Attitudes held by school going learners • **Not enough information on AET** • **Agriculture is for old men and women** • **Graduates unemployed**

4.5 INSTITUTIONAL BARRIERS TO AET

4.5.1 Access to agricultural information

The majority of respondents (95%) from KZN, Western Cape and Northern Cape provinces indicated that lack of access to Agricultural information was a barrier to accessing Agricultural education and Training in South Africa. According to the Department of agriculture official (Western Cape), lack of access to agricultural information is to a large extent a barrier to AET especially for people of colour (i.e. Coloured and blacks) compared to the whites.

In KZN respondents indicated that prospective Agriculture students especially from previously disadvantaged communities did not know or have access to Agricultural Education and most were unaware that such education existed.

According to the *Hydroponic farmer in KZN, m*ost people do not know how to access information. The farmer observed that the Agricultural extension officers only visited groups (i.e. people who have formed some group) but not individual farmers.

Another community based service provider in KZN said that, besides lack of access to Agricultural information the positive side of agriculture did not come through to communities. According to the respondent, access to land and shortage of skills is a challenge. The respondent for instance said that in Nkandla, an area where her NGO operates, there was a serious shortage of skills such that the community did not get the support they needed to deal with agriculture related matters. She added further that, 'the HOD for Agriculture in the district is very unskilled (not knowledgeable), even in extension service and

people have no faith in the officer'. The respondent also said that. 'training colleges such as Owen Sithole College of Agric (OSCA) previously had training of low quality (although not familiar with what is going on there now)'. The training at University was also said to be lacking in terms of preparing graduates who can give practical help to community members. A community based service provider in KZN said that the quality of training in higher education is very poor and has contributed to the shortage of skills in agriculture. The KZN respondent further observed that 'there was a need for training for community members' She gave an example of the essential oils project in Nkandla which was initiated by NGOs, Donors and CSIR, and supplied the equipment and materials for the project. However there was need to train the community members involved to be able to use the equipment.

Another respondent from KZN gave a different view in that for her access to agricultural information was not a barrier as most people in KZN province are able to access Agricultural information from extension officers (i.e. in most instances, Agricultural extension officers visit schools to disseminate information).

In Northern Province, a community based service provider said that, besides lack of access to Agricultural information most of the information on agriculture was not friendly. For instance, the respondent observed that most people in the area could not read English (the primary language used to communicate agricultural information), there were no services for the physically challenged, such as audiovisuals for the deaf, or braille for the blind etc. The respondent further observed that most parents did not sensitize their children and to a larger extend Agricultural information did not reach young people. Most valuable information was concentrated in urban centres only.

According to a youth out of school in Western Cape Province, information on careers in agriculture was very scarce. Further to the scarcity of information

those who were not well-informed about Agricultural Education and Training did not have the initiative to access it.

4.5.2 Lack of agricultural related skills

Majority of the respondents indicated that lack of agricultural related skills was a barrier to the access of AET in South Africa. They indicated that lack of agriculture related skills contributes to a lack of interest in the subject, and demotivates those who would wish to access agriculture due to the unfamiliarity with the discipline.

From discussions held with a teacher at an Agricultural school in KZN, the issue of skills shortage within Agriculture is quite severe and is a limiting factor. There are very few schools that are designated as agriculture schools and this also impacts on the provision of non-formal education through community enrichment programmes. The teacher at the school also indicated that teaching and learning in agriculture should include practicals but there were only two teachers in the whole school to cover agriculture subjects, making it difficult to also cover the practical component effectively. From observations made, one teacher is quite overloaded.

The issue of skills shortage was further elaborated upon by the subject adviser from KZN [Department of education], who said that several factors contributed to the lack of agriculture related skills. These were:

i) *Lack of agriculture teachers within schools*: i.e., In the Empangeni District (with 4 circuits, namely Nkandla, Eshowe, Mthunzini, and Lower Umfolozi), there were 148 teachers for 145 schools. Usually there is only one teacher per school (as the norm) but one school in Esikhawini, Mantamzane Dube had 3 agriculture teachers, while 5 schools were without agriculture teachers.

ii) *Quality of teachers*: The teachers from Owen Sithole Agriculture college and CEDARA were good in practical's (hands- on), but they were not able

to deal with the scope in terms of content and not as good in imparting theoretical knowledge and the related assessments.

iii) *The training of agriculture teachers is a problem*. Teachers previously trained in Teacher colleges had a good agricultural background than those presently trained.

iv) *Teachers are lacking in certain skills/knowledge* i.e., genetics, which is part of the syllabus. They are expected to teach basic genetics.

v) Teachers are also battling with business management skills which are included in the agriculture syllabus/curriculum.

vi) It is difficult for the subject advisor to workshop teachers first before they can teach the same content to their learners. This has been happening simultaneously, and in some cases there have been delays due to the large area to be covered by the subject adviser.

According to a community service provider in the KZN Province, knowledge on the use of agriculture technology in the area is limited, for instance the use of equipment such as planters. The respondent also observed that in KZN, people who are not in agriculture are appointed to lead agriculture in the province and this serves to weaken service delivery.

In Northern Province, a community based service provider said that brochures were useful in transferring knowledge and in developing interest among the youth but there were none in the province. The respondent gave an example of a failed pilot project in the province due to management problems by the steering committee members. According to some section of the respondents one (especially from the black community) is born with or within Agricultural related skills hence no need to learn the trade as it's in born.

According to a respondent from a higher education institution in KZN province, the staff employed in extension services (DoA) did not seem to know what is

expected of them. The respondent observed the following as true of the situation in KZN which contributed to the lack of agricultural related skills as a barrier;

i) Poor work ethics among extension staff members

ii) Lack of qualified staff in institutions of learning (especially in the Specialized programmes). Schools also lacked qualified educators to teach agriculture.

iii) In the previous KwaZulu-Natal Government, commercial farmers were supported by very skilled staff through the Co-ops, and only partially by DoA. This is no longer the case, particularly for Black emerging farmers.

iv) Small and subsistence farmers were supported by extension staff employed by government who focused on very small gardens, or only focused on subsistence farming. After amalgamation of services, very little has improved because it is the same officers supposed to provide support to all farmers.

v) Very little training for extension officers

vi) Department of Agriculture staff do not provide information when needed.

vii) The vehicle policy currently in use does not favour work in rural areas as only small cars which cannot use the poor roads are allocated.

viii) Unsatisfactory recruitment for leadership positions, for example the head of the province is not qualified in Agriculture. Generally ‘’the political agenda seems to be bigger than the professional requirements’’

ix) Lack of adequately informed people to spread the gospel of agriculture.

x) Limited career guidance and information given is outdated especially in the schools.

xi) Low profitability of Agriculture.

4.6 ACADEMIC FACTORS

The academic factors explored in the study that were deemed to impact negatively on access to AET were subject combinations and learning areas at school, admission requirements in general and mathematics and science as a

requirement for entry to AET programmes. These factors are all related and will be discussed under one heading. Problems in the higher education sector were mentioned by respondents as they responded to issues under section 4.5 above but are highlighted again in this section.

4.6.1 Subject combinations, Admission requirements.

Majority of the respondents (82%) said that the subject combinations were a hindrance to accessing AET and especially for high school learners. The main explanation was that admission requirements are based on subject combinations. For instance learners need to have mathematics and science in order to get into agricultural sciences. Seventy two percent (72%) of respondents clearly indicated that the requirement for maths and science at tertiary level prevents most learners from accessing AET as many learners do not have these subjects. In Northern Cape, a respondent stated that the problem is compounded by the fact that the subject package that has agricultural sciences excludes mathematics and science. This means that such learners who pass grade 12 cannot get admission to study Agriculture programmes at universities. In KZN a group of youth said that for them the choice of subjects depends on what is deemed to be easy subjects. For instance they find commerce subjects and general subjects easier than mathematics and science.

However, there are some programmes such as the B. Agriculture degree at Free State which does not require maths and science. The learning areas are not seen as critical as only 27% of key informants felt that this affected access to AET. Thirty six percent (36%) of respondents said that that learning areas were not a barrier to AET.

Admission requirements (to include subjects but also a minimum entry requirement/average grade) especially at University level are used to discriminate and select those capable of university study. Participants, particularly the youth in all three provinces mentioned the point system and the

quota system used for admission as a barrier. All these factors mean that candidates that would be interested in agriculture fall by the way side.

Some respondents observed that many learners are not aware of the required subject combination for agriculture, and many do not achieve the minimum requirement in their performance. In addition respondents mentioned financial requirements as an additional barrier, to the extent that some young people may gain admission but do not have the money.

4.6.2 Curriculum and quality of training in Colleges and Universities

The quality of training in higher education institutions impacts directly on the quality of personnel produced to oversee delivery of services in agriculture. A community based service provider in KZN felt that the training at University did not produce people who could deal with the practical aspects of agriculture. As a result the extension officer deployed in the area (University graduate) was not of much help to the local farmers. The agriculture graduates themselves do not want to stay in agriculture. She cited several instances where this has been the case.

4.7 CAREER GUIDANCE

Most respondents indicated that lack of career guidance was a barrier to accessing AET in South Africa. Respondents across the three provinces observed that, most prospective students (especially from the previously disadvantaged communities), did not receive proper or any career guidance in AET and if they did most of the career guidance officers were ill equipped and had limited knowledge to advice learners and give guidance pertaining to Agriculture. Respondents also observed that agriculture was not well marketed to inform prospective learners of the existing possibilities in Agriculture as a career.

According to a member of the farmers Union from the Northern Province, Agriculture was not taught as a subject at primary school level. For instance, the Northern Cape Province has two agricultural schools with 95% White learners and 5% Blacks from previously disadvantaged groups.

However a respondent from an Agriculture school in KZN said that, teachers in the school give the learners career information on career opportunities including Agriculture. It was also reported that the learners take science subjects in the school so they had more possibilities and many indicated that they wanted to study for a B.Sc in Agriculture.

A Hydroponics farmer in Kwazulu-Natal, said that the Ezingeni project, in conjunction with EXXARO and Dept of Agriculture have been training young people in primary school about agriculture. They had started with one school and had plans to move to other primary schools. According to the respondent, the reason for starting with primary schools was to have young people develop an early interest in Agriculture.

All the respondents across the provinces observed that the career guidance offered was limited and more needed to be done if this barrier was to be removed and make AET more accessible.

4.8 ENVIRONMENTAL/ PHYSICAL BARRIERS

Agriculture education (both formal and non-formal) and agricultural practice can be affected by environmental factors such as climatic conditions, soils, availability of natural resources such as land and water, and availability of physical infrastructure such as electricity, health facilities, transport and transportation networks and telecommunications. If people see that agriculture is not a viable livelihood option where they live, they often will not also think of seeking for agriculture related training and skills. The environmental and

physical aspects were explored to see the extent to which they hinder agriculture itself or become a barrier to accessing AET.

4.8.1 Access to water

Most respondents indicated that lack of access to water was a barrier especially when Agriculture was dependent on it. Respondents indicated that lack of rainfall and supply of water in most parts of the country had affected access to Agriculture.

Most respondents indicated that all agricultural related activities depended on the availability of water. For instance, at Zakhe training institute in the KwaZulu-Natal, all farm demonstrations depended on the availability of water sources. Other respondents observed that lack of access to water could only affect agricultural production but was not directly linked to AET.

4.8.2 Lack of electricity

Seventy four percent (74%) of the respondents indicated that lack of electricity was a barrier to AET. Respondents from all the provinces indicated that a lack of electricity can affect AET in that certain equipment used for training requires electricity. Certain agricultural projects require electricity, such as those using irrigation. In KZN, a respondent said that their hydroponics project requires electricity, while in Northern Cape; electricity use for poultry production was mentioned. Where there is no electricity, students in general are not able to study (said a respondent in Western Cape). Some respondents indicated that the supply of electricity was especially a problem in the rural areas.

On the other hand a few respondents (17.6%) indicated that access to AET was not directly affected by lack of electricity. These respondents further observed that most agricultural training could do without electricity.

4.8.3 Lack of Telecommunication

Majority of the respondents (70%) from all the provinces indicated that lack of access to telecommunication facilities such as telephone, fax, and email services affects communication in general and consequently affects access to AET. Communication infrastructure is necessary in order to access resources. Respondents observed that it was difficult for people to conduct business or access AET especially without, faxes, cell phones, or even e-mail in remote areas. They said that telecommunication services are important for networking and access to relevant information for AET. It was however mentioned that cell phones have helped to ease communication although there are still problems of limited network reception in certain areas.

Some respondents indicated that most rural areas were affected by lack of proper or non-existent telecommunication infrastructure. Respondents from all the provinces indicated that due to lack of proper telecommunication infrastructure most people in the rural areas could not access the much needed agricultural information i.e. through newspapers, internet, telephone, cell phones, or e-mail. According to a respondent from a Department of Education circuit office in KZN, lack of telephone or email facilities slowed communication and coordination of AET services in the area. The respondent indicated that he relied on educators to relay messages through their own cell phones. Only a section of the respondents (24%) indicated that lack of telecommunication infrastructure was not a barrier to access to AET.

4.8.4 Access to roads and transport facilities

Majority of the respondents from all the three provinces indicated that access to roads and transport facilities was a barrier to accessing AET in most of the rural areas. Respondents from the three provinces indicated that most AET services

were provided in urban settings as opposed to rural areas and this made it difficult for access due to poor roads and an unreliable transport system.

Respondents indicated that adverse weather conditions affected the state of the gravel roads which were impassable during rainy seasons making it difficult to access AET. They also indicated that due to poor roads, public transport was expensive and inaccessible in some areas. Some respondents further observed that schools or centres for AET did not provide residential services and given the poor road and transport infrastructure, most potential learners had problems in accessing AET services.

4.8.5 Access to health facilities

Respondents indicated that access to health facilities in most rural areas was a barrier. It was reported that most blacks living in the rural areas did not readily have access to the health facilities and they spent a lot of time trying to access the services. Other respondents indicated that people of colour and especially farm labourers did not have access to proper health facilities. The respondents indicated further that project such as women projects were most affected as women opted to care for the children and the sick family members at the expense of AET.

Some respondents especially from KZN indicated that the prevalence of such illnesses as cervical cancer and HIV/AIDS were on the rise and were fuelled by the lack information on how to deal with them. These diseases have a direct and indirect impact on access to AET.

Respondents from all the three provinces also indicated that usually there were long cues at the hospitals and health care facilities that prolonged the time taken in accessing health care services, hence indirectly affecting the access to AET. Generally if people are unwell, it means that priority would be given to accessing

health care services rather than to agricultural education and ultimately agricultural production is affected.

5. RECOMMENDATIONS TO REMOVE ACCESS BARRIERS TO AGRICULTURAL EDUCATION AND TRAINING

One of the objectives of the study undertaken to understand factors hindering access to agricultural education and training in South Africa, was to make recommendations on how access barriers to agricultural education and training could be removed. Access barriers have been examined from the following perspectives: socio-cultural, economic, technological, institutional and environmental factors. Following the presentation and analysis of the empirical data collected during field work, the following recommendations are being made as a way of helping to remove access barriers to agricultural education and training.

5.1 Removing Socio-cultural Barriers to Agricultural Education and Training

Because of the systematic exclusion of the previously disadvantaged communities by the apartheid policies to the practice of agriculture, many people from such communities as a result developed a negative attitude and a distorted image of agriculture as an academic discipline and as a career. Mostly affected in this regard are women, youth and the disabled. Social cultural barriers such as social class, attitudes and perceptions on AET, educational background of parents, and poverty require a more long term approach. But if effort is made to address other AET barriers, it is bound to indirectly influence these barriers. Of importance is the general education and literacy in the community as it would open doors to information and education on various issues, including AET. To this end, as part of non-formal education, ABET classes need to be intensified and provided at the lowest community level. This will not only address literacy but should include agricultural knowledge and skills. ABET classes should become an avenue for delivering agricultural information and providing skills.

5.2 Career guidance

It was evident from the findings that career guidance is very limited or totally lacking in some communities. Part of the problem is linked to the fact that people who are supposed to disseminate AET information such as educators in schools, have limited information themselves.

It is recommended that focused career guidance efforts be directed at young people (both in and out of school youth), females and disabled persons in order to change the perceptions about agriculture as a career and encourage such groups to consider agriculture as a career worth following. Such efforts will help open up many other opportunities available in the agricultural sector besides being an extension officer or even a farmer. Young people need to realize that modern agriculture is much more sophisticated than they realize, involving information technology, engineering, financial and economic aspects and is technologically advanced. Women and disabled persons need to realize that agriculture is not always about hard and dirty work, and that there are aspects of agriculture that are not linked to primary production but involve other aspects of the value chain which need other types of skills other than physical strength and hands-on approach.

Career guidance efforts could take the form of 'Agricultural education and training information days or weeks' in schools, AET road shows in communities, media talks and advertisements (in both print and electronic media) etc. This approach would help to put the spot light on agriculture.

5.3 Addressing Curriculum Development and Human Resource Limitations

General Education and Training Phase

The General Education and Training band in the education system does not expose learners to agriculture as a science, but rather tend to blend it with the Natural Sciences. There is a need to introduce Agricultural Sciences as a

separate learning area so that learners can have a chance to get introduced to agriculture at earlier stages and give them a chance as they develop to decide whether they want to follow a career in agriculture or not, instead of discovering later about agriculture thus making it difficult for them to venture into a field they do not know well about and are not adequately exposed to.

The schools need to be encouraged and supported to start school gardening projects and/or small animal projects (i.e. poultry) in order to demonstrate some agricultural skills. Agriculture clubs are common in countries such as Kenya and the USA (4-K Clubs and 4-H clubs respectively) and these help to stimulate interest in agriculture.

Further Education and Training Phase

At the high school level, provision is made to teach Agricultural science or Agriculture Management. However not all schools are able to teach these subjects due primarily to human resource limitations. Not all educators are qualified to teach agriculture and find certain sections of the curriculum difficult. Some schools cannot teach the subject for lack of staff. So you have learners that are disadvantaged in terms of accessing AET simply due to lack of educators (or lack of adequately trained educators) in their schools.

The following is recommended;

- **Training of Agriculture teachers**

  There is a need for the Department of Education to prioritise the training of agriculture teachers in the same way that the training of math and science teachers is prioritized to ensure equal access to AET at the school level. Certain bursaries could be made available to students enrolled for B.E D at tertiary institutions, who wish to take agriculture as one of their teaching subjects. There is also need to intensify and support the in service training of agriculture teachers. Such training should include providing with more career information which could then be passed on to learners.

- **Subject Combinations**

  At the high school level, there is need to have agriculture subjects available in all schools and ensure that interested students make the right subject combinations to enable them pursue agricultural education at a higher level. Mathematics and physical science are important in this regard, and there are many schools that do not impress upon the learners that they need to take mathematics and physical science along with agriculture. It is therefore recommended that principles in schools ensure that the right information on subject combinations is given to learners. Tertiary institutions need to circulate admission requirements to all schools.

- **Admission requirements and curriculum reviews at tertiary level.**

  At the tertiary level, serious thought needs to be given to the curriculum with a view to diversifying it to accommodate the needs of different learners and the job market. For instance agricultural management as a sub field of study addresses different needs in the agricultural value chain and programmes need to be developed that address these needs and for which the admission requirements could be different from those of a typical B.Sc degree.

  For instance, one subject adviser in KZN felt that admission requirements at tertiary level should be reviewed to make them more in line with what the agriculture curriculum in schools is about. An example was given of the agricultural management subject which incorporates a lot of business studies content. At the same time many learners combine agriculture with business studies and economics. The suggestion was that such learners should be able to gain admission to general agriculture programmes.

  The curriculum at Universities and colleges of agriculture needs to include practical application of theoretical knowledge. The quality of training at this level has a direct bearing on the quality of extension service delivery. Communities need practical assistance in the solution of their problems.

Practicals and Internships during the course of training will help to alleviate this problem.

- **Development of Agricultural high schools.**

  Government should institute more Agricultural High Schools in the provinces. Dedicated agriculture schools would enhance the development of personnel with agricultural skills. Schools similar to Zakhe institute and Western College of Agriculture in KZN have a special role to play. Unfortunately without public funding, such schools remain exclusive and only a few privileged learners gain access to them. Such an initiative needs the collaboration of Department of Agriculture and Department of Education.

5.4 Economic Barriers to Agricultural Education and Training

Agricultural education and training is not accessible to many people because people cannot afford it. Institutions offering training are in distant areas and costs are high as with other training programmes. Non-formal and informal AET are also inaccessible because poor people in communities cannot afford it.

Generous and consistent financial support needs to be made available for students who want to follow careers in agriculture. Fields like Accountancy, Engineering, Medicine and others are known to be well funded and providing career opportunities, hence their popularity amongst students. Providing such financial incentives will ensure that the popularity of agricultural careers improves over time. Internships and job opportunities will need to be opened up for these groups. Some of the agricultural careers are deliberately earmarked for people who speak English and Afrikaans only. This is also a concern amongst agriculture graduates as some of them cannot speak Afrikaans.

5.5 Institutional Barriers to Agricultural Education and Training

Lack of access to information is another major barrier facing many of the rural and underprivileged people. Many opportunities available in agriculture are not accessible to these groups of people because of lack of access to relevant and timely information. Advances in information communication and technology have created a divide in that those who are underprivileged remain or become more backward when those who are privileged become more advanced.

There is a need to make sure that information is readily available to communities and in the way they can understand. Many rural areas rely on extension workers to provide them with information they need and there is evidence to prove that extension workers of this day and age are themselves disadvantaged as their own training is now inadequate and irrelevant. There is therefore a need to up skill extension workers and allow them access to up-to- date information that can be shared with the communities they serve. Public internet terminals are needed for the public to access up to date information. Community centres need to be developed to the level of community Information, Communication and Technology (ICT) centres with both electronic and print information which includes agricultural information. This would particularly appeal to the youth. The Department of agriculture needs to play a significant role in ensuring that such centres exist by supporting specific ones to provide agriculture information as well as some education and training.

5.6 Environmental and Physical Barriers to Agricultural Education and Training

Proper practice of agriculture is usually supported by conducive environmental and physical conditions. Adverse conditions like climate, soils, infrastructure and other support systems hamper the development of good agricultural practice. Electricity, water, roads, health facilities and other crucial inputs are needed in agriculture. Government needs to ensure these facilities are provided so that people are able to learn about and practice proper agriculture. The main

physical barrier (most felt need) to agriculture in most communities is access to water for irrigation purposes.

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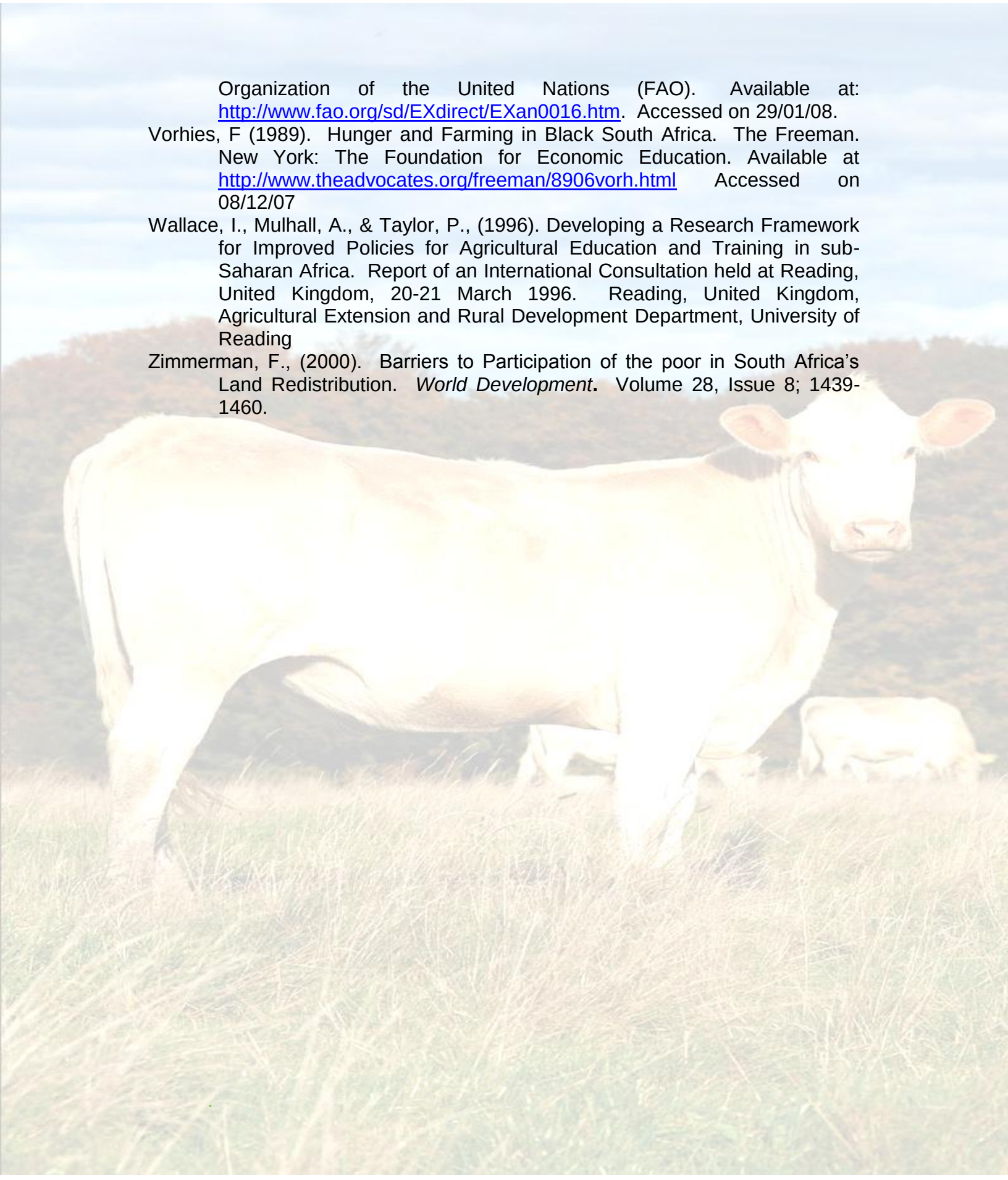

APPENDIX 1

Levels of education in South Africa

BAND	SCHOOL GRADES	NQF LEVEL	QUALIFICATIONS
HIGHER		8	Doctor's degree
		7	Master's degree
			Honours degree
			Postgraduate diploma
		6	General first degree
			Professional first degree postgraduate
			Bachelor's degree
		5	First diploma
			Higher certificate
			Certificate
FURTHER	12	4	Diplomas
	11	3	Certificates
	10	2	
GENERAL	9	1	Grade 9 / Adult Basic Education and Training level 4
	8		
	7		
	6		
	5		
	4		
	3		
	2		
	1		
	R		

(Source: DoE, 2005)