UNITED REPUBLIC OF TANZANIA

MINISTRY OF AGRICULTURE AND FOOD SECURITY

AGRICULTURE AS THE BACKBONE OF THE ECONOMY OF TANZANIA

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1. The Agricultural sector encompasses activities which fall under four ministries: Water and Livestock Development, Natural Resources and Tourism, Agriculture and food Security and Cooperatives and Marketing. In this paper, unless otherwise specified, the word agriculture will be used to mean the agricultural sector as defined above.

The Place of Agriculture in the Tanzanian Economy

2. Agriculture is the lead sector in the Tanzanian economy and it is going to continue to occupy that position for several decades to come. The sector contributes approximately 50% to G.D.P., food crops contributing about 35% of the agricultural GDP followed by livestock production which accounts for 30% of the agricultural GDP. The table below shows the average contributions of crops, livestock, fisheries and forestry to GDP over the ten years ending in 2002.

The Contributions of various agricultural Sub-sectors to GDP

Agriculture	45.8
- Crops	35.1
- Livestock	4.8
- Forestry	3.2
- Fisheries	2.5

3. Agriculture contributes over 60% of export earnings. It is estimated that about 95 to 97% of the food consumed in the country is produced locally with imports consisting mainly of food items which we do not produce in adequate quantities such as wheat in which we are only 40% self-sufficient, sugar in which we are 75% self sufficient etc. With carefully focused planning and investment, we could be self sufficient in all items of food and food exports could contribute a greater share of export earnings.

4. Over 70% of the population lives in the rural areas where agriculture and related non-farm activities are their main occupation. Most urban dwellers engage in some kind of agriculture and even those who are not active farmers identify themselves with agriculture.

Agriculture provides workers and urban dwellers with additional income and food items to supplement their incomes from employment and other sources.

5. Finally, agriculture produces raw materials for the agro-processing industries which are the main types of industries at our current level of development such factories include food processing facilities (grain mills, plants which make fruit juices and jams etc.), sugar factories, cashewnut factories, coffee hulling plants and coffee roasting and processing factories, textile mills, paper mills, furniture workshops, breweries, tobacco factories etc. In addition to processing agricultural products to add value to them and to make them more readily usable, these factories provide employment to a substantial number of people.

6. Due to its great contribution to the economy, agriculture is often described as the back-bone of the economy and the sector is often referred to as the lead sector. This is the situation as it is. The peasants deserve praise for the great contribution which they are making to the very survival of the Nation. We often hear people ridiculing the agricultural sector, particularly the reference to it as the *"back-bone"* of the economy. Those people feel that the sector has remained backward, its growth has remained sluggish over the years

and those engaged in it have tended to remain poor. These observations do not change the basic facts –that agriculture makes the greatest contribution to GDP, export earnings, food security, employment and supply of raw material to our industries and its is because of these facts that agriculture continues to be the back-bone of our economy, the other factors not withstanding.

7. Our agriculture depends on smallholder farmers who cultivate between 0.2 and 2.0 ha. per year, mainly for subsistence with little surpluses which can be sold to raise money for buying other requirements for the family. Most families do not produce surpluses of food and are forced to sell part of their produce to raise money with which to buy such goods and services as they cannot produce themselves. It is estimated that 40% of the population does not get enough to eat, either because they do not produce enough food or they cannot afford to buy enough food. In most cases, little attention is paid to the nutritional content of the food our people eat, a situation made worse by traditional food preferences and taboos which do not have any scientific basis.

The Role of Agriculture in the National Economy

8. I have already mentioned the fact that over 70% of Tanzanians live in the rural areas where they engage in agriculture and related non-farm activities. Studies show that poverty in more entrenched in the rural areas than it is in the urban areas. –The figures are staggering. It is estimated that the incomes of rural dwellers are only one third of those of their countrymen who live in the towns and cities. Put differently, people who live in the rural areas are three times poorer than those who live in urban areas. Poverty in this country is mainly a rural phenomenon.

9. Studies also show that approximately 36% of Tanzanians live below the basic needs poverty line. A joint study between the then Ministry of Agriculture and Cooperative Development and the World Bank published in 2000, indicated that there were positive signs of rising rural incomes a fact borne by the Household Incomes Survey of 2002 which showed a modest decrease in poverty defined in broad terms.

10. Due to the fact that most of the poor live in the rural areas where agriculture is the main or in some cases, the sale economic activity, it is obvious that agriculture must be the vehicle through which rural poverty and indeed poverty as a whole, can be addressed. But the Sector will need considerable reforms if poverty alleviation is to be speeded up in line with the Millennium Development Goals (MDG) which aim at halting poverty by 2015 or the Vision 2025 which aims at reaching the same goal by 2025.

11. The Second role which our agriculture must play is that of increasing its contribution to the economic growth effort of the country. As we will see later, the country abounds with natural resources which can be used to greatly enhance agricultural production and thus earnings from the sector. Agricultural growth will provide resources which can be invested in the others sectors of the economy so as to enable them to grow and to increase their contributions to the national economy to a point at which their contributions will surpass that of agriculture. Agriculture must play the role of being the engine of economic growth and it will continue playing this role for the foreseeable future and even when the proportion of its contribution to the economy decreases, its role of

providing food to the nation, providing raw materials for agro-based industries and contributing to export earnings will remain important.

The Performance of the Sector

12. Over the last decade, the agricultural sector has grown at an annual average rate of 3.7%, compared with annual population growth of 2.9%. In recent years the sector has shown signs of increased rates of growth partly due to favorable weather conditions and partly due to interventions by the government aimed at stimulating growth. In 2000 the sector grew by 4.0%, 5.5% in 2001 and 5.0% in 2002. The table below shows performance trends for the agricultural sector for the period 1993 – 2000.

Table 2: Performance trends for the agricultural sector from 1993 to 2002

Sector/Sub-sector	Average Growth Rate per Annum (%)
Agriculture	**3.7**
Crops	*3.8*
Livestock	*2.8*
Forestry	*2.8*
Fisheries	*4.4*

Source: Tanzania Economic Survey 2002

A study by the Ministry of Agriculture and the World Bank concluded that if agriculture is to have the desired effect in poverty reduction and economic growth, it must grow at a greater rate than it is doing at present and a growth rate of over 10% per years has been suggested.

13. The United Republic of Tanzania has a land area of 944,800 km², larger than Kenya and Uganda combined. The country is endowed with a wide range of resources offering considerable socio-economic potentials including 44 million hectares of arable land, (equivalent to 42% of total land area), a coastal and marine zone, wildlife reserves and parks, forests, rivers and lakes. However, only 10.8 million ha, or 24.5 percent of the arable land is under cultivation. This includes around 2.2 to 3.0 million ha. of annual crops, fallow of up to 5 years duration, permanent crops and pasture. It is estimated that out of 50 million ha. Suitable for livestock production only 26 million ha., is currently being used for grazing. The rest is restricted due to tsetse fly infestation and various forms of protection. Tanzania is estimated to have 17.7 million cattle, 12.5 million goats, and 3.5 million sheep and 47 million poultry. Forests and woodlands occupy about 38.8 million hectares of which two thirds consist of woodlands. About 13 million hectares of the total forest area have been gazetted as forest reserves. Despite tse-tse infestation and

substantial areas under various forms of protection, there is still a lot of land available for cultivation. What we need to do is to define the land available on a district by district basis so that investments in agriculture can be directed accordingly.

14. The country is divided into twenty agro-ecological zones (Samki et al 1981) based on soil types, annual rainfall and rainfall patterns and length of the growing season. The Ministry has divided the country into seven agro-ecological zones and various services are located in stations in those zones. Crops to be recommended for cultivation in various parts of the country are based on those zones. The pastoralists and agropastoralists were restricted mainly to the semi-arid parts of the country but they have been migrating to the wetter southern parts of the country where there are better pastures. This southward migration of pastoralists usually with a lot of cattle, goats and sheep has brought them into conflicts with settled smallholder farmers.

15. There are rainfall variations in various parts of the country with some parts having two seasons while other have a unimodal system. If recommended cropping patterns were observed by the farmers, every part of the country would be able to produce enough food and commercial crops. Unfortunately, most farmers prefer to grow

maize, the national staple, even in arid areas which get short and often erratic rainfall.

Water for Irrigation

16. The country is endowed with considerable fresh water resources which can be used for irrigation : perennial rivers, the great lakes, underground water and water harvesting are all sources of water for irrigation. Out of 10.8 million hectares under cultivation only 254,610 hectares are currently under irrigation. Potential land for irrigation is 29.4 million hectares out of which 2.3 million ha. are of high potential, 4.8 million ha. medium and the 22.3 million ha. are low potential. It has been demonstrated that yield response to irrigation is 2 to 3 times compared to yield from rainfed agriculture. Irrigation development in Tanzania is constrained by the high costs involved in constructing irrigation schemes. The Government of the United Republic of Tanzania has greatly enhanced budget allocations for irrigated agriculture in recent years and the area under irrigation has been increasing by about 30,000 ha. per year. Emphasis has been placed on rehabilitation of schemes built in the past, construction of low cost schemes which serve the highest number of people and the creation of green zones around the main water bodies, especially around Lake Victoria. An Irrigation Master Plan to replace the

National Irrigation Development Plan of 1991 preparation and when ready, it will be the basis on which irrigation programmes will be prepared and funded .

17. Water harvesting schemes are given high priority in West Iringa, Dodoma, Singida, Shinyanga and Manyara regions. Where such projects have been implemented, they have greatly transformed the lives of the people involved. Little work has been done in exploiting ground water reserves due to lack of equipment and funds.

Lack of Farmers' Organisations

18. The Cooperative movement which was first introduced in the country in 1932 was abolished in 1976 at a time when some cooperative societies were strong the supportive of their members. The dissolution of the Cooperative movement left the farmers without organisations to which they could turn for credit, agricultural inputs, extension services and marketing. This state of affairs has had seriously adverse effects in the development of agriculture in the country. It is to correct those effects that the 3rd Phase Government decided to establish a fully fledged ministry to revive the Cooperative movement and to put in place marketing arrangements for products produced by the agricultural sector.

19. A viable cooperative movement would solve many of the problems which the farmer faces. Before their dissolution. Cooperative societies used to provide the farmer with his production needs on credit, a system which recognised the fact that the smallholder was so small that he was not credit worthy but when many farmers joined forces in their Cooperative societies, the societies became viable and were able to borrow from the financial institutions on their behalf. Similarly, the farmers produces very little surplus for the market and he needs an organisation which can bulk up produce from many farmers and do their marketing for them. Savings and Credit Societies provided systems of saving and they gave the farmer credit when he needed it. Finally, these organisation provided the farmer with managerial support which enabled him to increase his production, observe quality requirements, process his produce for value addition to find markets for him. It will take time to return to where we were in 1976 but the government is doing all in its power to shorten the time required to get there.

Inadequacy of Funding

20. Public expenditure on agriculture, both development and recurrent and including donor assistance declined in the 1990s

reaching a level of 2.1% of government expenditure in 1997/98 for the Ministry of Agriculture and Cooperative Development. Donor assistance also decreased during this period. As already alluded to, most small farmers in this country do not have access to agricultural credit and they are forced to use whatever sailings they may have to procure their needs. Subsidies for agricultural inputs were removed gradually over a five year period, starting with 30% reduction in 1990/91 and ending with full elimination of all subsidies by 1994/95 –the prices of fertilisers increased by 3-4 times between 1991/92 and 1996/97 and regional prices differences also emerged putting agricultural inputs out of the reach of most farmers while at the same time rendering their use economically infeasible.

The Hand Hoe

21. The studies carried out by the World Bank and the Ministry have identified the hand hoe as the greatest impediment to agricultural growth. Due to the relative abundance of land in Tanzania farm mechanisation holds a great potential for Tanzania and given the fact that chemical fertilisers and improved seeds are priced out of the economic feasibility of most farmers, area expansion where possible and advisable becomes relevant in achieving the goal of increased production.

22. It is estimated that 70% of all land is cultivated with the hand hoe mainly by women and the elderly. 20% of the land is cultivated using animal power and only 10% by tractors. It is estimated that a farmer can cultivate between 1 and 2 ha. using the hand hoe, 4 – 5 ha. using oxen and more than 20 ha. with tractors. What is needed is the combination of prudent use of agricultural inputs and oxenisation or tractorisation to maximise production.

Low Productivity of land, labour and inputs

23. One of the greatest weaknesses of our agriculture is low productivity which is mainly caused by other deficiencies in the agricultural sector such as lack finance for procuring production – enhancing inputs, limited access to support services such as extension, research findings, information and plant and animal protection services, leading the farmers to produce for subsistence. This situation is found in all crops : most cotton farmers produce between 250 and 300 kg. Per acre while by observing basic agricultural practices they could easily produce over 1,400 kgs from the same area. The same could be said for tea. Smallholders own as much land as large scale or estate farmers but they only account for a mere 10% of tea production. Due to low production most rural

families remain relatively poor and life in the rural areas becomes unattractive and those who can, run off to the towns in search of greener pastures which they rare by find.

Inadequate agricultural research and extension services

24. There are many technological innovations that are yet to reach the majority of smallholder farmers, such as improved seeds, post harvest technologies and animal breeds. In many cases they are not adopted because they are unknown to smallholder farmers or there are inadequate effective delivery systems in place. Despite many successes, research and development in the agricultural sector is still facing many constraints including declining resources, programmes that are fragmented in different institutions and disciplines rather than integrated into production systems. The extension service is blamed for being ineffective and Mwalimu once said that he could have disbanded the service without anybody noticing the difference. In all fairness, the extension service has problems which constrain its performance which are currently being addressed so as to improve its performance. Those problems include low morale caused by lack of advancement in the service, lack of resources, inappropriate training and supervision and the difficulties inherent in dealing with small farmers scattered over a large area. The Government has embarked

on a mass promotion exercise, it has designed retraining curricular and teaching programmes and farmers are being organized into farmer groups under various programmes.

Poor rural infrastructure

25. Investments in rural infrastructure particularly rural roads, water supply, transportation, processing facilities, communications, electrification, crops, livestock and fish markets and irrigation infrastructure are critical to stimulating increased agricultural production. However, rural infrastructure in the country is still inadequate and its coverage is generally limited. Poor rural roads, limit farmers' access to markets, increase time and cost of transport and often result in deterioration of produce quality. The absence or inadequacy of communication facilities constrains access to and dissemination of knowledge and market information. Agricultural performance is adversely affected by weak agro-industries, poor linkages within the marketing, processing and production chains, poor market-orientation and inadequate processing facilities leading to high levels of produce wastage.

Crop and animal pests and diseases

26. Crops and livestock production is affected by pest and disease infestations often at epidemic proportion. Major crop pests include locusts, Quelea quelea, armyworms, rodents, and various fungi, bacterial and viral diseases. Livestock production is challenged by outbreaks of foot and mouth diseases, rift valley fever, contagious bovine pleuropneumonia, east coast fever, lumpy skin disease, trypanosomiasis and poultry diseases. Infestations by the tsetse fly, a vector of trypanosomiasis, have rendered 60 percent of the total rangeland unsuitable for livestock production. The management and control of pests and diseases increase the costs of production and hence reduce producers' incomes. It is estimated that between 40 and 50% of harvested crops are lost to pests and if this problem was corrected, food security would be greatly enhanced.

Erosion of the natural resource base and environmental degradation

27. Unsustainable utilization of production resources may result into many environmental problems including land degradation, desertification, deterioration of aquatic systems, widespread pollution from improper handling and inappropriate use of agrochemicals,

livestock drugs and fertilisers. Further, the environment is degraded through overgrazing, poor cultivation practices, bush fires, overexploitation of forests and invasion by exotic organisms. This may result into rapid reduction of biological and land productivity. Environmentally destructive fishing such as the use of explosives, excessive trawling, chemical poisoning and small mesh size nets often lead to irreversible destruction of marine biodiversity and habitats.

Depressed prices for primary commodities in global markets

28. Depressed prices for primary commodities in global markets and constraints to access traditional markets constitute a continuing challenge to the agricultural sector. The share of traditional exports in global markets has been shrinking, largely due to increased competition from other suppliers, subsidized exports and non-tariff barriers on traditional exports. For example, Good Agricultural Practice (GAP) demands high quality and standards and labour conditions. The current situation requires us to take measures to produce what can be marketed in terms of quality and other specifications and also by departing from the so called traditional crops and growing new types of crops which can be more easily marketed. For example, the production of cut flowers and horticultural crops in Arusha brings in about USD.11m/= per year

competing with earnings from long established traditional crops with earnings from long established traditional crops.

Health sanitation HIV and AIDS and waterborne diseases

29. The prevalence of malaria, tuberculosis, HIV and AIDS is high and is spreading affecting economic activities in the agricultural sector. Studies indicate that about 1.5 million people are living with HIV and AIDS, 70 percent of whom are within the most productive age groups (between 15 and 59 years). Only one percent of the total rural households have access to safe tap water and 65.5 percent get their drinking water from unprotected water sources. The cumulative health problems increase household vulnerability to food (especially immunity building food) and livelihood insecurity and deepen their poverty levels.

THE WAY FORWARD

30. In order for Agriculture to tackle the problem of rural poverty and become a strong pillar of growth, it must at least grow at a rate not less than 10 per cent annually. This calls for massive and targeted interventions in the agricultural sector. In order to achieve this, the

government adopted the Agriculture Sector Development Strategy (ASDS) in 2001. The Objective of the ASDS is transforming the subsistence dominated agriculture into commercial, profitable agricultural production systems by creating an enabling environment favourable for improving agricultural productivity and profitability, improving farm incomes, reducing rural poverty and ensuring food security. In line with the ASDS an Agricultural Sector Development Programme has been developed.

31. The main focus of ASDS and its ASDP is to offer possibilities for smallholder, medium and large-scale producers and agribusiness to realize profitable operations through increased production and productivity. Continued emphasis will be placed on enabling the subsistence producers to become commercial producers, creating rural employment and hence reducing rural poverty.

32. In operationalizing the ASDP, the Government has concentrated efforts and resources towards formulation and implementation of District Agricultural Development Plans (DADPs). About 80 per cent of these resources are directed at the district. The DADPs are developed in a participatory manners taking into consideration development priorities of the districts. Programmes which are currently being implemented include

smallholder irrigation schemes, construction and rehabilitation of infrustructures such as central pulperies and hullers for coffee, dams, dips and rural roads, multiplication and distribution of improved seeds and planting materials, This year DADPs have been extended to cover the whole country compared to 90 districts covered last year.

Increasing productivity of land, labour and production inputs

33. Using improved seeds, agrochemicals and proper crop husbandry practices can enhance production and productivity of land, labour and production inputs. For example, maize production per hectare can be increased from 1,000 kg per ha. to more than 3,000 kg per ha. in almost all areas of the country (Annex 1). The same is observed for paddy, millets, and most cash crops. This requires strengthening of agriculture research and extension systems so that they can respond to farmers' demands and facilitate their access to improved technologies, water, finance, information and markets.

34. Research and extension is increasingly geared towards responding to demands of farmers and stakeholders in general as more client oriented research and extension programmes are being

implemented. Further more, there is increasing partnership between the public and private sector in financing and carrying out research programmes. For example, research in commodities such as coffee, tea and tobacco is jointly carried out by the Government and the private sector through institutions such as TACRI for coffee, TRIT for tea and TORITA for tobacco. The sugar industry contributes significantly to sugarcane research. The local Government Authorities have also been contributing funds for facilitating research activities at zonal level.

35. The Government has continued to offer training opportunities to farmers and extension workers in its training institutions. Sponsorship for training is offered to both pre and in-service students in order to build capacity and maintain future requirements of human resources. There are successful centres of excellence in training farmers such as Kilimanjaro Agricultural Training Centre, Lyamungo and Tumbi offering tailor made courses on rice, coffee and tobacco cultivation respectively. The Government has been striving to strengthen the training institutes in terms of manpower, working facilities and curriculum development to address current economic challenges.

Increasing food supply and food security

36. The problem of rural food insecurity is essentially a problem of poor rural households. Overall, the strategy to reduce food insecurity must focus on assisting low-income households to produce more food and cash crops, livestock and marine products, to feed their families and generate cash for non-food needs. It is also important to reduce the level of post harvest losses from the current high levels averaging about 30 percent by encouraging better hygiene, use of pest avoidance measures and application of post harvest pest management and processing techniques.

37. In order to facilitate increased food production and productivity and reduce food insecurity, in 2003/2004 the Government reintroduced support to farmers by subsidizing fertilizer transportation costs to the major food producing Southern Highland Regions of Iringa, Mbeya, Rukwa and Ruvuma. The Government allocated Tsh 2.0 billion in its 2003/2004 budget for this purpose. This initiative increased consumption of fertilizers from 77,557mts in 2002/2003 to 88,390 mts in 2003/2004. Productivity increased from an average of 1.0 tons per ha. to 2.5 tons per ha. In view of these positive results, in the 2004/2005 season the Government has allocated TSh 7.244 billion from its budget for expansion of the

fertilizer transportation and supply subsidy arrangements to cover the whole country.

38. In order to improve the profitability of the livestock sector the government has embarked on construction and rehabilitation of the livestock marketing infrastructure including stock routes and holding grounds, abattoirs, livestock marketing centres and training centres. The Government also introduced incentives for investment especially in processing facilities for the sector. The incentives among others include removal of taxes on packaging materials fro diary products, protecting the dairy industry through tariffs and duties. These initiatives have contributed to the revival of export of live animals as well as for search for new export markets.

Reducing over-dependence on rain-fed agriculture (through promotion of irrigated agriculture)

39. Tanzania is implementing several measures designed to realize and utilize its existing irrigation potential. These measures, include preparation of the National Irrigation Master Plan (NIMP). The plan has identified existing land, water resources and social economic potentials for development of irrigated agriculture in Tanzania.

Through the plan, diverse technologies including water harvesting in low potential areas, use of shallow wells and treadle pumps in areas with high water table and drip irrigation technologies are gradually being adopted. The Government has started initiatives for the development of a green belt around the Lake Victoria Basin. Equally important, the master plan provides for the rehabilitation of existing irrigation schemes including traditional schemes. Other measures include strengthening the capacities of producers and producer groups to access land, water, production inputs and other technologies.

40. Remarkable achievement have been recorded in terms of development of irrigated areas which have been increasing annually from 4,806 ha in 2001/2002, 11,242 ha in 2002/2003 to 23,970 ha. in 2003/2004. This brings the total areas developed between 2001 to 2004 to 40,018 ha. The total irrigated area has therefore increased by 44.9% from 157,000 ha in 1999/2000 to 227,486 ha in 2003/2004. The target is to develop about 30,000 ha for irrigation annually.

Strengthening access to capital and financial services

41. There is a need to develop and efficient systems for financing the agricultural sector and at the same time provide a framework for empowering producers through access to credit. To achieve this, a strong commitment by both the public and private sector is inevitable.

42. The Government is facilitating provision of agricultural production inputs loans to inputs distributors through its Agricultural Inputs Trust Fund (AGITF). The AGITF has established partnerships with private commercial and community banks, Savings and Credit Societies and Local Government Inputs Funds with the view to expand network for distribution for inputs. Other initiatives include providing loans for agricultural machinery purchases and rehabilitation through the AGITF and operation of the Rural Financial Services project.

Strengthening agricultural research, technology dissemination and adoption

43. Due to limited success of the agricultural research and extension services in reaching producers, new ways of ensuring responsiveness to clients needs ought to be developed. Critical issues addressed include:- Developing a common agenda for agricultural research and extension services, enhancing producer involvement in research and dissemination of technologies (Client-oriented, demand-driven technology) and encouraging collaborative research nationally and internationally.

44. The government has continued to build the capacity of researchers to conduct research on-farm rather than on station. The Government has also involved extension officers in the design and selection of experimental sites with a view to improve the research-extension farmer linkage. In the process of providing incentives and reviving workers morale, the Government has promoted more than 8,000 staff and therefore reduced complaints from staff while the exercise is ongoing

Improving rural infrastructure and trade-related capacities for market access

45. Infrastructure is an essential physical asset base for economic growth. An improved road network, including farm-to-market roads, will increase farmers' access to inputs and markets as well as value of farm produce. In line with the Rural Development Policy and Strategy, the Government through the President's Office for Regional Administration and Local Government has embarked on the development of rural infrastructure with emphasis on rural roads. This aims at improving access to inputs and produce markets and reduction of production and transportation costs. This will ultimately motivate farmers, input dealers and agricultural produce traders to invest in agricultural production and agribusiness.

46. The Government in view of fall in world prices of traditional export crops and stiff market competition, encourages farmers to diversify their production enterprises mainly by embarking on production of high value non-traditional export crops. Spices like Vanilla and paprika are among the high value crop introduced which have enabled farmers to improve their incomes. The Government also promotes other crops such as flowers, oilseeds and fruits and vegetables and organically grown traditional crops such as coffee

which fetches premium prices in external markets. From successes registered in contract farming for sugarcane and tea farmers, the Government encourages increased contract farming arrangements.

Timely control and management of crop pests and diseases

47. Due to the recurrence nature of migratory pests each season, it is important to build the national and regional capacity to pest outbreaks. This should include procurement of control inputs and application equipment including aerial capabilities, training of operators, development of early warning systems and pest information dissemination systems. Available technologies to manage non-outbreak pests, if disseminated and utilized by producers, can successfully enable them to reduce its level of pest damage by more than 50 percent.

48. The Government in collaboration with international pest control agencies has continued to carry out pest surveillance and control activities thoughout the country. The service has enabled the country to manage migratory pests such as army worms, locusts, quelea quelea birds and rodents which in other countries such as those in West Africa have` recently devoured crops at disaster levels threatening agriculture and food security of those countries. Taking

into consideration the effect of agrochemicals on the environment and people, the Government has adopted and successfully implemented participatory methodologies in pest control and management such as Integrated Pest Management (IPM).

49. The Government has put in place the Plant Protection Act of 1997 and continues to enforce the legislation in view of safeguarding the farmers and the environment. The Phytosanitary services at entry points like, sea and air ports, border posts have been strengthened to protect the county's agriculture form influx of plant pests and diseases.

Promotion of sustainable utilization of natural resources and environmental protection

50. Tanzania is a party to several international conventions, agreements and treaties relevant to the agricultural sector. These include those made under the World Trade Organization such as the Agreement on Agriculture, Sanitary and Phytosanitary (SPS), and Trade and Intellectual Property Rights (TRIPS). Under the Rio Convention (Agenda 21) there are several agreements relevant to agriculture. These include Convention on Biological Diversity (CBD),

Convention to combat desertification (CCD), and Convention on Wetlands (Ramsar Convention) and the Convention on Climate Change. Implementation of these conventions will no doubt impact the way we produce, process, transport, trade and consume agricultural produce. The immediate challenge is to strengthen our compliance capacity, failure of which may lead to negative impacts such as loss of markets and destruction of our environment. Success in protection of the environment is heavily dependent not only on awareness campaigns and capacity building, but also on the involvement of the community and equitable sharing of benefits.

51. The Government has reviewed crop industry legislation in view of the international treaties and conventions to protect the environment and bring about sustainable agricultural development and poverty reduction.

Development and promotion of enabling environment (framework conditions for development)

52. The above four critical areas for intervention are addressing investment areas that will ensure quick returns. However, there is a need to create an enabling environment for the benefits accruing

from such measures to be realized sustainably. This includes formulation of appropriate policies and ensuring their compliance through formulation and enforcement of appropriate legislation, financing mechanism, and timely access to reliable information services.

53. In order to improve agriculture, the Government is taking additional measures aimed at creating better environment for attracting investment in the sector, and at the same time enabling small scale farmers to increase productivity and reduce poverty. The measures include:-

(a) Removal of taxes on equipments and inputs.

(b) There is a reduction of produce cess in order to encourage production and trade on agricultural products. The Act prohibits Local Government to charge crop cess at more than 5 percent of the farm-gate price.

RECOMMENDATIONS

54. The most important initial step in escaping from rural poverty is raising the productivity of small holder farmers thorough a package of rural interventions that collectively lead to increased productivity. This requires simultaneous investments in soil health through a combination of chemical and organic fertilizers, improved varieties of crops and livestock breeds, water management, community extension services; with a special focus on reaching women farmers; increased agricultural research; post harvest storage; improved rural infrastructure in the form of roads, irrigation; power and communication; and investment in restoring natural resources through conservation, improved land management; secure rights to land and natural assets. Investments are also needed to raise rural incomes through better access to credit and the development of networks of agro dealers and farmers associations.

In order to attain this, the government shall concentrate on addressing the following:

Low productivity of land, labour and production inputs

55. Special efforts should be put in ensuring farmers have access to fertilizers, improved crop seeds, animal breeds, pesticides and veterinary pharmaceuticals. It is recommended that: -

- The use of fertilizers should increase from the current 7 kg/ha to 10 kg/ha by year 2007;
- The use of improved seed should increase from the current 8,000 tons per year to 30,000 tons per annum by 2010.
- Access to veterinary services improved by decreasing the current ratio of veterinarians from 1 per 35,000 heads of cattle to 1 Veterinarians per 5,000 heads of cattle.

Increase area under sustainable management and reliable water control system

56. The Government and the private sector should increase resources to enable utilization of the vast national irrigation potential. Emphasis should be put in developing irrigation schemes along all the areas described as high and medium potential. It is

recommended that on average a total of 30,000 hectares be put under irrigation per annum. To realize that minimum of US $ 30 million should be made available annually for investment in irrigation development. At this level of investment, it is estimated that by year 2017 a total of 405,400 hectares will be developed for irrigation.

57. Integrated water resource management, which promotes coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystem should be adopted.

58. Mapping and surveying of land is a prerequisite to investment in large-scale production and establishment of the land bank, land use planning and allocation. Mapping and surveying are costly operations and should be treated as part of investment in development of national infrastructure such as roads and railways. Parcels of land for agriculture must be identified and surveyed ready for allocation to would be investors. Increasing the area under crop and livestock production is one of the key strategies for increasing production. The size of farms per household should be increased. To realize this, each household should be allocated a minimum size of a surveyed

land for producing food and cash crops. Likewise, the area for agriculture and livestock production should be demarcated.

59. To promote large-scale commercial production, the government should expedite the processes of surveying, mapping and make it available for would be investors through a special land bank.

Development and promotion of enabling environment

60. The sustainability of most of the interventions to promote development of irrigation, increased utilization of production inputs, development and dissemination of appropriate technologies through research and extension requires appropriate policies, supporting legislation and financing mechanism. To ensure these policies and legislation are developed and enforced, the following activities need to be implemented:-

- Subsidize the cost of production inputs particularly fertilizers, pesticides, farm machinery and irrigation equipment;
- Strengthen financial services to the agricultural sector by consolidating the current credit services and funds serving the agricultural sector into an agricultural sector development bank;

- Review and update agricultural sector policies and legislation to make them capable of providing policy guidance and ensure compliance to macro policies and strategies; and
- Strengthen the information collection, processing, storage and dissemination capacity for the sector.

Development of rural infrastructure

61. It is recommended that:-

- The government will continue to increase the ratio of paved roads;
- Improve rural road network to enable producers to access markets for inputs, produce and services;
- Railway cattle transportation wagons be increased from the current 95 wagons to 150 wagons; and
- Serviceable markets for livestock be increased from the current 56 markets to 305.

Increase storage capacity

- Attain the set capacity level of 150,000 tons of grains of the national grain storage reserve to increase the government's capacity to respond to emergency food requirements.
- Encourage storage at household level such that each household is capable of meeting its grain requirements for a minimum of 12 moths after harvest. Based on the average household size in Tanzania of about 5 people, each household should store about 1.2 tons (about 12 bags of 100 kgs) after harvest.

Control of crop and animal pest and disease

- The Government will build its capacity to respond and control outbreaks of migratory crop pests from the current 14 days within 3 days upon confirmation of locust, armyworms, and Quelea quelea outbreaks.

- The Government will strengthen its capacity to timely respond to livestock pests and diseases outbreaks from the current 7 days for emergencies containment to within 2 days and mounting ring

vaccination campaigns from the current more than 30 days to within 3 weeks. Likewise, disease confirmation reports will be issued after 5 working days upon receipt of the samples.

Strengthen agricultural research, extension, technology dissemination and adoption

62. The Government in collaboration with the private sector will devise new methodologies to ensure client-oriented and demand driven agricultural research. The agricultural research system should develop sector capacities to conduct and disseminate research on: market and socio-economic issues, post harvest technologies, livestock production and produce marketing, sustainable utilization of production resources (soils, water and agro-biodiversity) and technology transfer methodologies. The capacities of research and development institutions will be developed to meet these new challenges.

Sustainable management of natural resource base and environment

63. Expedite the enactment of the Environmental Act and ensure its internalization in all sectors including the agricultural sector as way to guarantee enforcement and compliance. All the agricultural sector policies and legislation should be updated in line with the environmental policy and its legislation.

Mitigating the effects of depressed terms of trade

64. The expected growth in urban population is a potential for increasing trade domestically. Growing urban population coupled with increasing incomes, improving transport and communication infrastructure will increase interaction between rural and urban areas and provide an opportunity for trading in agricultural products.

Mitigation of the effects HIV and AIDS, malaria and waterborne diseases

- Mainstream HIV and AIDS in agricultural development projects and programmes.

- Control of malaria and water borne diseases.
- Facilitate promotion and production and utilization of immune building food for affected individuals.

Conclusion

The development and growth of the agricultural sector to a level that contributes significantly to economic growth, poverty reduction and food security will need the efforts of all stakeholders including Government, private sector, the farmers and the academia among others. Institutions of higher learning and in particular universities such as the Open University of Tanzania are known to be centres of excellence in various fields of academics, research, capacity building and human resources development. The challenges in the sector lies in the areas of technology development, transfer and replication so that the end users in this case including the farmers, processors, agribusiness and entrepreneur will be able to improve their production and productivity in their respective areas. The role of universities therefore cannot be overemphasized in meeting the national objectives in the Vision 2025 as well as other regional

commitments such as the NEPAD/CAADP, SADC Dar es Salaam declaration as well as international goals such as the Millenium Development Goals (MDGs), the World Food Summit Goals of 1996.

Annex 1

Current and Potential Productivity Levels

No.	CROP	Current Productivity Levels (Kg/ha.)	Potential Productivity levels (Kg/Ha.)
1.	Maize	600 – 2,200 in minor maize growing areas	5,000
		1,000 – 3,000 in major maize growing areas (Ruvuma, Mbeya, Rukwa & Iringa)	
2,	Rice	2,900 under rainfed conditions	4,000 – 4,500
		3,500 – 4,500 under rirrigated conditions	6,000
3.	Sorghum & millets	640	1,200
4.	Coffee	100 – 170 for smallholders	550 - 600
5.	Cotton	500	1,400
6.	**Tobacco**		
	Flue cured	950 – 1,000	1,800
	Dark Fire cured	950	1,800
7.	**Tea**	400	2,000