CHAPTER VII

MAJOR FINDINGS, CONCLUSIONS AND POLICY OPTIONS FOR KENYA

On the basis of cross country evidences generated from secondary and primary sources with special reference to Kenya and India, the following major findings emerge:

A. CONCURRENCES

(1) They (Kenya and India) are third world developing countries, which at one time or another remained under one common colonial Government (Britain). Agriculture and allied sector forms the larger sector (in both the countries) of economic activity. Drought is a common phenomenon, however, with varying magnitude and spread.

(2) Common Salient Characteristics

(i) Farmers, in their bid to survive have resorted to extensive cultivation, thus encroaching upon marginal and sub-marginal lands.
(ii) Levels of crop productivity are substantially low as compared to other rainfall assured areas.

(iii) Irrigation facilities are not fully developed, though in the case of Kenya it is worse than India. (Chapter VI).

(iv) Famines are as frequent as drought itself, and Government together with Non-governmental organisations initiate and organise famine relief programmes to alleviate drought stresses.

(v) There are en-masse temporary migrations of human beings together with their livestock during severe drought, in search of water, food and fodder. Coupled with low levels of productivity, these impart instability and regional imbalances in the two economies.

(vi) Poor health of non-literate farmers and a substantially unimproved livestock.

(vii) Occurrence of extensive climatic hazards like severe droughts and floods.
(viii) Occurrence of extensive and large holdings manifested through extensive agriculture with the prevalence of monocropping and similarity in types of crops raised by almost all farmers in a particular region, leading to seasonal gluts and poor market prices.

(ix) Lack of servicing facilities and non-availability of the technical persons on time to attend to even the minor repairs of irrigations wells in India and boreholes in Kenya.

(3) ASAIi-Kenya and DPAP - India

(i) The two different programmes have similar broad objectives i.e., the overall upliftment of the poor sections of the society which in the Kenyan context includes mostly pastoralists, semi-pastoralists and small scale farming communities in dry areas. In the Indian case, the programme focuses on marginal farmers, small farmers and agricultural labourers.

(ii) Both programmes have adopted Integrated approach to development with the District as the focal point of
project formulation and implementation. A major emphasis is, however, put on community projects like schools in Kenya and wells in India, as opposed to individual projects.

(iii) The two programmes are essentially supportive programmes to other line ministries. Normal line departments eg., Agriculture, Livestock, Forest etc., implement their own programmes along with those initiated under either ASAL or DPAP. In India, co-ordination of supportive projects under DPAP is the responsibility of the District Project Officer who operates under the broad arm pit of District Rural Development Agency. The Project Officer also co-ordinates other poverty alleviation programmes like the Integrated Rural Development Programme, Development of Women and Children in Rural Areas (DWACRA) programme, etc. In Kenya, ASAL projects are co-ordinated by Programme Officers and in exceptional cases, together with programme Advisors at the District level.
(4) Donor Assistance

Donor assistance for the development of drought tracts of both India and Kenya is welcome. Donors like DANIDA, the World Bank, SIDA etc., have initiated projects in collaboration with the two governments (Kenya and India). DANIDA funded project in India for example can be traced in Pudukkottai District, Tamil Nadu State. This project known as Pudukkottai Livestock Development Integrated Project (PUL-DIP) was started in 1990. The World Bank through the International Development Agency (IDA) has funded projects under Drought Prone Area Programme (DPAP) in different parts of India eg., community wells in Anantapur District, in Andhra Pradesh State. The Swedish International Development Agency (SIDA) on the other hand funds a number of social forestry projects in many states.

In Kenya, DANIDA funds various projects eg., projects under ASAL programme in Kitui District. SIDA too, has forestry projects in districts like West Pokot and others. The World Bank has funded different projects spread over different parts of Kenya. It is therefore common that donor funds or assistance plays a vital role in the development of drought tracts of these two countries.
(5) Need for long term Drought Tracts Development Strategy

Focusing on short term, public drought management does not address the need to develop appropriate dryland technology (Crop, Soil, Water Management etc) to regenerate and conserve the bio-mass, to provide seasonal loans and inputs in normal years. Droughts need to be analysed as longer-term repeated phenomena, and not just as short-term isolated phenomena. This will give way to ascertainment of seasonal fluctuations and help in determining rural livelihood options and patterns.

(6) Common Challenges

(i) How to prevent the blowing of more wind accompanied with sand in extreme dry areas like Rajasthan in India and Turkana in Kenya.

(ii) How to check the rolling or scudding of sand into the fertile tracts like the agriculture fields, farm areas and other well vegetated lands.

(iii) How to ensure the cultivation of fodder for livestock in the drylands.
(iv) How to raise compatible vegetation in the existing environment inspite of heavy bionic destruction.

(v) How to prevent all out destruction of infant vegetation that results in the denudation of these areas, and also how to preserve existing perennial vegetation and protect the herbaceous cover.

(7) Advantage of Research Institutes on Dryland Development

Both Kenya and India have got immediate advantage of having an access to Internationally renowned research centres/organisations like the International Council for Research in Agro Forestry (ICRAF) in Kenya, International Laboratory for Research in Animal Diseases (ILRAD) also in Kenya and the United Nations Environmental Programme (UNEP) Secretariat also based in Nairobi - Kenya. In India, there is the International Crop Research Institute for Semi-Arid Tropics (ICRISAT). The two countries can also relish on research output of other institutes like the International Institute of Tropical Agriculture (IITA) in Nigeria, and the International livestock centre for Africa (ILCA) in Ethio-
nia. At the respective local scenes, Kenya merits on re-
search centres like Katumani National Dryland Farming Re-
search Station and Kibiko Range Research Stations under the
umbrella of Kenya Agricultural Research Institute (KARI).

India on the other hand has 23 research centres established
in different dry locations under the umbrella of All India
do-ordinated Research project for Dryland Agriculture
(AICRPDA).

B. DEVIATIONS

(1) Geographical position and Rainfall

Kenya lies astride the Equator, whereas India lies
astride the Tropic of Cancer. It is therefore observed that
only half of India can be categorized as being within the
Tropics. Climatic variations are therefore eminent. Most
of the agricultural activities in India depend on monsoons
whereas in Kenya many factors like geographical relief,
distance from the sea etc., influence the amount of rainfall
in different regions.
(2) Drought Proneness and Aridity-Different

The two terms appear to be like two sides of the same coin but they are practically different. Aridity is associated with prolonged and frequent deficiency of rainfall, whereas 'Drought Proneness' occurs in short term.

(3) Arid and Semi-Arid Regions

Arid and Semi-Arid regions in India have a rainfall ranging between 375 mm and 750 mm. The area with rainfall amount ranging between 750 mm to 1,125 mm is referred to as Dry subhumid region. Drought mitigating programmes are however initiated in all the above rainfall range limits. In Kenya, ASAL programmes are initiated in areas with annual rainfall amount ranging between 200mm to 850mm. These constitute ASAL districts. It is observed that drought mitigating programmes in India cover areas with slightly higher amount of annual rainfall than the Kenyan ASAL programme, (cf. p. 129 and p.81 )
(4) Operational period of ASAL programme versus DPA programme

The two programmes namely Arid and Semi-Arid Land development programme (ASAL) in Kenya and Drought Prone Area Programme (DPAP) in India have different operational periods. Whereas ASAL programme commenced in 1979, DPA programme started much earlier ie., 1973-74. Thus, by the year 1992, ASAL programme had been in operation for 13 years, whereas DPA programme had been operational for 19 years.

(5) Sectoral Coverage of the Programmes

ASAL programme in Kenya cuts across more sectors in the national economy than DPA programme in India. The various sectors covered under ASAL programme include, Agriculture and allied sector, Education, co-operation, Health, Social Service etc., whereas in India, DPA programme covers mainly Agriculture and allied sectors like, Animal Husbandry, Forestry and Environment.
(6) Apex level Financial Institution (NABARD)

India has established an apex level institution called National Bank for Agriculture and Rural Development (NABARD), which provides refinancing facilities to other commercial banks, rural banks and other agencies to give loans to their customers. One of the major focus of the bank (NABARD) has been its active role so far as the refinancing to Banks for credit disbursement to the weaker sections. Such an institution does not exist in Kenya.

(7) Multiple funding agencies

In Kenya, only one donor is allowed to fund projects in a given district(s) at a time. Multiple donor funding agencies do not exist, apart from a few Non-Governmental organisations. In India, multi-agency approach to the financing and development of drought tracts is allowed.

(8) Development of Infrastructure

The development of infrastructure in the drought tracts of India such as roads to begin with, followed by rural
electrification, posts and telecommunication, railway system, markets, school buildings and Colleges, Hospitals etc., are more developed than the Kenyan counterpart.

(9) Other Special Programmes

Loans in India are given to the weaker sections under other special programmes like the Integrated Rural Development Programme, Command Areas Development Programme, Desert Area Development Programme etc., to purchase Bullocks and other milk animals. Bullocks play a very important role in dryland development, both as a means of transport in the most inaccessible pockets, and also are used for ploughing. In Kenya, loans for such activities are uncommon, and donkeys together with camels to a large extent are used as a means of transport.

(10) Participation in Programme Planning and Implementation

Micro-level planning concept in India, which implies "bottom up", planning as opposed to "top-down" planning can be equated to the "District Focus for Rural Development
Strategy" in Kenya. However, according to the present study, this concept has not gained momentum in the Indian case. The grass-root machinery called "Village Task Forces" which were meant to actively involve local people right from the initial process of planning to implementation by exploiting resources, (human, natural, environment, financial and cultural) available at the local level, were instituted, but without much ado, they became dormant. Plans and project proposals are therefore solely prepared by heads of various departments at the District level and subsequently implemented wholesome by government officers. In the micro study, a majority of respondents in the Indian case clearly stated that "Village Task Forces" were near dormant. In Kenya, 80 per cent of the respondents were aware of the machinery instituted at the grass root level (Locational Development Committee) to cater for planning and implementation of projects by involving the local people. To corroborate this, 25 per cent of the respondents stated to be members of Locational Development Committees. About 94 per cent of the sample respondents in the Kenyan case reported their participation in ASAL programme implementation by way of contributing either cash, labour or both.
Without involving local people in project planning and implementation it is likely that most projects shall be seen as Government projects imposed on people, and not necessarily people's projects meant for their socio-economic upliftment. Such projects are bound to fail and there is need for involving people in planning and implementation at the micro-level.

(11) Livestock Vs Agriculture

Livestock rearing in the drought tracts of Kenya constitute the key occupation, and crop farming play a secondary role. This situation is exactly the reverse in the Indian context (micro study).

(12) Fertiliser application to crops

In India, the use of fertilizers for irrigated crops in

villages is almost universal [Ambhire D.B.], whereas in Kenya, very few farmers use fertilizers in the limited irrigated tracts.

FIELD LEVEL MICRO-STUDIES

A survey of a few selected Divisions and Blocks in Kenya and India respectively reveal the following deviations, in terms of ASAL Vs. DPAP programmes.

(i) The respondents in India belong to different castes. Kenya has a casteless society.

(ii) Majority of the respondents in Kenya constitute of Christian religion, whereas in India, majority of them are Hindus.

(iii) Majority of the sample respondents (96.67%) in India are "Owner cultivators" whereas in Kenya, the same works to only 47.92 per cent.

(iv) The average family size in India in the selected villages is 6 whereas in Kenya the same works out to 5.
(v) Land in India is 100 per cent privately owned by respondents, whereas in Kenya 50 per cent of the respondents own land privately and the rest are communal lands (47.50%) and lease lands (2.5%).

(vi) The average land size owned per sample respondent in India is 2.65 acres, whereas in Kenya, the same is computed at 8.81 acres.

(vii) Wells, followed by tanks, constitute the major water sources in India, whereas in Kenya, rivers followed by dams/pans constitute the main source of water both for irrigation and domestic use.

(viii) To meet food requirement during severe drought, most of the respondents in India first resort to the sale of property owned and also on relief measures. In Kenya, most respondents simply rely on government and non-governmental organisations food relief.

(ix) 73 per cent respondents in the Indian case had personal tangible assets created through different programmes. However, none of the respondents had an
asset created through Drought Prone Area Programme (PDAP). In the Kenyan case, 19.17 per cent respondents had personal assets created through Arid and Semi-Arid land programmes.

Regarding creation of tangible assets to the community, 60 per cent responses (out of 78 multiple responses) in the Indian case stated to have had community wells, check dams and afforestation projects through DPA programme. In the Kenyan case, the same works out to about 46 per cent through ASAL programme. Projects or assets created through ASAL programme to the community include school buildings, desks, text books, work tools, rental houses and health facilities.

18.75 per cent respondents in the Kenyan case have had intangible assets created at personal level (Training in Agro-forestry) through ASAL programme, whereas none of the sample respondents in the Indian case has had intangible assets created through DPA programme. It is also observed that 19.17 per cent
respondents in the Kenyan case have had intangible assets (Training in health care, teacher training and training women groups in project management) created to the community through ASAL programme. None of the respondents in the Indian case has had intangible assets created through DPA programme.

xii) Per capita income and expenditure in the Kenyan case works out to Ksh. 3,188.40 and 3,007.12 respectively. In the Indian case, the same works out to Rs.980.80 and Rs.997.40 respectively, per annum. These figures are calculated at 1991 prices whereby according to the Economic Survey of Kenya, One Indian Rupee was more or less exchanged at One Kenyan Shilling. It is however, difficult to infer in wholesome, which side of the sample respondents are better of than the other, given that many different factors determine and influence levels of per capita income and expenditure in different countries. General commodity prices, inflationary rate, population growth and government intervention in the economic welfare of the people are good examples that among others determine per capita income and expenditure.
Writing about the same, the World Resources report notes:

Comparing the GNP of one country to another requires use of a common currency (Most often US dollars) and a common base year. However, currency exchange rates do not reflect the relative purchasing powers of currencies. For example, the price of labour services (such as carpentry) relative to those of commodities that enter international trade (such as wheat) differs systematically between high and low-income countries. Exchange rates substantially overstate international differences in real living standards.


(xiii) Savings and Indebtedness

Per capita savings and debts in India works out to Rs.111.90 and 949.30 per annum respectively. In Kenya, the same works out to Ksh. 921.50 and 287.20 p.a respectively. It is observed that the level of indebtedness in India is high as compared to Kenya.


This could be attributed to the existence of many financial institutions which offer loans to respondents in India. Per capita savings in Kenya are higher than per capita savings in India.

(xiv) The major food crops grown in the Kenyan drought tracts include sorghum, millets, cassava, and maize. Commercial crops include cotton and groundnuts—In India, food crops include paddy, finger millet, grams etc., whereas cash crops include gingelly, chillies, flowers and bananas.

(xv) The average number of animals (Livestock) per sample respondent in India is 2, whereas in Kenya, the same works out to 27. Veterinary services in India are essentially free of cost, provided by the Government, whereas in Kenya, the same services are provided at a higher cost due to cost sharing policy of the Kenyan Government.

(xvi) In India, 78-33 per cent of the sample respondents are members in different co-operative societies, which cater to their needs like marketing and credit disbursement. In Kenya, only 16.25 per cent of the total sample respondents are members of different co-operative societies. This shows that in India, Co-operative Societies play a more crucial role in the study area than in Kenya.

(xvii) In India, about 68 per cent of the respondents depend on both family and hired labour for their on-farm and off-farm activities. The same in the Kenyan case works out to about 31 per cent. Family labour alone in Kenya constitute 68.33 per cent, whereas in India, the same works out to 28.33 per cent. Thus, in India, there is more dependence on family labour combined with hired labour for the on-farm and off-farm activities, whereas in Kenya, a greater part of labour for the same activities is provided entirely by the family labour alone.
(xviii) Wastelands

None of the respondents in the Indian case reported to have land under the "Wasteland category". All respondents had cultivable land. Normally, wastelands are left fallow and the Indian government acquires the same under land reclamation programme. In Kenya, some farmers leave part of their land fallow due to its rocky nature. This type of land is categorised as a "Waste land".

(xix) Price and Marketing

About 69 per cent of the sample respondents in the Indian case reported not to be getting fair prices for their farm produce. The major reason stated for this was due to ignorance of the market situation. In Kenya, 74 per cent of the respondents also reported not to be getting a fair price for their produce, however, the major reason for such, it was noted, was due to poor transport facilities leading to exploitation by the middlemen.
Extension Services

In India, 95 per cent of the respondents are regularly visited on their farms by the extension staff. In Kenya, the same works to 75 per cent. However, the regularity of visit varies. In India a majority of those visited (about 67%) by the extension staff stated regularity to mean "Weekly visits". In Kenya, a majority of those visited (75%), regularity meant "Twice a month visit combined with monthly visits". Thus, it is observed that extension coverage in India in terms of percentage coverage together with regularity of visits is better than in Kenya.

There is no direct funding of programmes by donors in the Indian case as it is in most ASAL programmes in Kenya. All funds or assistance in India is channeled through the ministry of finance and finally to the officer in-charge of programmes.
C. POLICY OPTIONS FOR DROUGHT TRACTS DEVELOPMENT IN KENYA

Policy options imply the course of action needed for the general development of drought tracts of both the countries, specifically Kenya. It is crucial that these areas should be mounted with development action plans that would exhibit macro-coherence with flexibility to accommodate the needs of each one of the areas. A policy cannot work in a vacuum, hence the major challenge for the development of drought tracts would be first to prepare resource inventory of these areas. The following data inventory and analysis are necessary;

I Socio-economic Surveys

These include people and their customs, land holding and tenurial patterns, trades and skills, size of family, level of agricultural technology, livestock census etc..

II Hydrological Surveys

These include rainfall (monthly/annual frequency analysis), run-off-gauging data, run-off rainfall relationship,
flood discharge and annual yields, and finally Infiltration and evapo-transpiration.

III Soil Surveys

Under soil surveys come land classification on the basis of morphological characteristics, and chemical analysis, land capability and other special location specific features.

IV Ground Water Surveys

These include taking stock of existing irrigation facilities, and potentials based on Geophysical surveys as well as Geohydrological surveys.

V Agricultural Surveys

Agricultural surveys include land use patterns, crops raised, livestock management and other practices.
VI Topographical Surveys

Under topographical surveys lie the followings: gradients of lands and streams, location of water storage structures, soil conservation etc.

An inventory of all the above information is a prerequisite to a practical development plan of drought tracts. These shall facilitate the formulation of the afore-mentioned macro-strategy.

Due to rapid growth of population in Kenya, all round concerted efforts are needed with expediency for the development of poorly endowed and marginalised drylands. Given that 80 per cent of the total geographical area of the country is either Arid and Semi-Arid and that such an expanse of land area is inhabited by a mere 20 per cent of the country's total population, it is imperative that such disproportionality is adjusted and unnecessary imbalance done away with. By developing drought tracts, a kind of panacea to many of the economic woes facing Kenya shall be attained.
The following key pointers can be regarded as specific policy options for the development of a dry Kenya.

(1) Infrastructural Development

As a follow-up to the resource inventory survey in the drought tracts, and based on an assumption that pockets of high development potentials have been identified, ex-ante investment should be directed at the development of infrastructure. Rural electrification should be the preamble for future development of ASAL areas. Communication network need to be stepped up by construction of link roads, airstrips, railways, etc. There is need too, to open up these areas with the necessary post and telecommunication services. Banking facilities need to be established, and organised marketing of the ASAL products need to be addressed. Irrigation facilities such as pump-sets, wells, tanks, canals, boreholes, irrigation furrows, rock catchments, subsurface dams etc., all need to be developed in a systematic manner, with the local people trained in repair and maintenance of such facilities.

* For the current status, refer to Chapter V and VI
(2) Setting up Special ASAL Fund

There is a dire need for institutional credit in ASAL areas. This credit need to be linked up with technology, marketing and insurance. A number of studies reveal that farmers' meagre and under-investment in the new dryland farming technology like the use of fertilizers, is due to risk aversion, though the major part is attributed to other factors like credit constraints and lack of insurance cover in the event of total crop failure due to vagaries of nature. Kenya's National Development Plan (1989-93) talks of the need for institutional arrangement for ASAL planning and management. It further talks of the Government's intention to set up a special ASAL Development Fund into which multi-donor/GoK funding will be channelled. This sounds laudable. However, mere setting up of the fund alone cannot guarantee an accelerated tempo of development in ASAL areas. Similar special funds like the "Rural Development Fund (RDF)" under the Ministry of Planning and National Development have in the past been set up, but resulted into serious financial "leakages". Thorough care need to be taken to avoid a replica of such funding like RDF. It is therefore necessary that a special fail proof and operable ASAL fund (National
Bank for Dryland Development), under the umbrella of the Central Bank of Kenya could be instituted as an apex level financial institution to offer refinancing facilities to other commercial banks and financial institutions involved specifically in dryland development. The operational experience of the "National Bank for Agriculture and Rural Development (NABARD)" in India, with the necessary built-in modifications to suit the Kenyan environment could be worth studying and operational modalities be explored further.

**ASAL DEVELOPMENT MODEL**

Below is an hypothetical model for ASAL development in Kenya.
CHART VII.1
Proposed Set-up of a New Special ASAL Fund

CBK
NATIONAL BANK FOR DRYLAND DEVELOPMENT (NABDD)  NATIONAL LEVEL

CREDIT Refinancing Financial Institutions

Insurance

ASAL Coordination Office

Technology Centre

Registered Groups (Beneficiaries)

INVESTMENT CONDUITS

C.B.K. - Central Bank of Kenya
Thus, from the diagramatical presentation, ASAL office at the district level remains a king-pin on which all other arms revolve. It co-ordinates and links up credit sources (Commercial banks) with the grass-root level beneficiaries, it also links up technology centres with the beneficiary and finally, the office links up the beneficiary with the necessary insurance facilities. An additional factor would be that to begin with, all potential beneficiaries need to form or register as a group (eg. women group, youth group, co-operative society etc) which shall facilitate marketing of the various products. Loan acquisition and repayment need to be handled through group approach. This explains the need for strong registered and well managed groups in these areas. ASAL office at the District level shall need a kind of manpower reinforcement in order to manage the increased volume of work. It should be noted that this is only a complimentary arrangement to the normal ASAL departmental operations. It is expected that while ASAL office at the District level shall concentrate on financing and implementing community based projects, it shall also co-ordinate implementation of other ASAL funded projects through the special ASAL fund. Acquisition of the necessary skill and technology in a given trade, should be a pre-condition for
availing credit to any beneficiary. Proposals for investment shall be scrutinised by ASAL office at the District level and recommended for credit acquisition from the banks.

In this context, Hirschman's strategy of deliberate unbalancing of the economy according to pre-designed strategy, seems to be the best way to achieve economic growth in an underdeveloped country wherein investments in social overhead capital (SOC), which creates external economies are promoted with basic services without which primary, secondary and tertiary productive activities cannot function.

Under social overheads are included investments on education, public health, communications, transpiration and conventional utilities like electricity, water, irrigation, drainage schemes etc.

In the light of the current study and the hypothetical model given, both development via excess of SOC and DPA are advocated. Thus, what is needed is proper balancing whereby the Ministry of Reclamation and Development of Arid and Semi-Arid areas and Wastelands shall continue to invest in

SOC through its established office at the District level and on the other hand, investment via excess of DPA shall be a mandate of a special fund disbursed to beneficiaries for investment through commercial banks. Hirschman's contention that investment via excess of SOC invites DPA, holds true in societies where beneficiaries have capacities for investment, but not in dry ASAL areas where most beneficiaries are poor and without investment capabilities. Thus, it is not adviseable to wait for investment via excess of SOC to invite DPA for it may never be realised. **It is therefore important to invest in SOC and at the same time induce investment via excess of Directly Productive Activities in the drylands.**

(3) **Crop Diversification and Intercropping**

It is also to be pointed out that wherever possible, dryland farmers should be encouraged to adopt both crop diversification and intercropping farming practices in order to spread risks and also to meet food, fodder and cash needs. These agronomic practices help in better utilisation of available soil nutrients and moisture. Research results
obtained at Kovilpatti in Tamil Nadu - India, reveal that intercropping with legumes for instance enrich the soil through nitrogen fixation and returns accrued are higher compared to sole cropping. Farm scientists in Kenya need to explore this avenue and make available the necessary agronomic practices to be adopted in ASAL areas. Wherever concrete and proven research results are available for ready application, emphasis should be on the diffusion of the same to farmers via extension and other mechanisms. It is important that experiments are conducted on farmers' fields. Given that ASAL districts are categorised into 4 Agro-climatic zones, different research centres need to be established in the four ecozones in order to develop plant varieties that can adopt to climatic regimes of the respective ecozones. Reddy has established that a recommended technology package if adopted may provide higher gross income for a given region only and may not hold true for all crops at other different centres or regions.


(4) Cost Sharing and Livestock Development

Most of the ASAL residents constitute vulnerable groups in the sense that they are basically pastoralists, semi-pastoralists and/or nomads. They are mainly subsistence agricultural producers and their ultimate security lies in their rights over domestic herds (Livestock) and land. They are affected seriously by cost sharing policy of the government on veterinary services. This may hinder their exposure to modern animal husbandry technology which is the principal strategy for their development. It is therefore opined that cost sharing should be applied sparingly with pastoralists groups in mind. It is therefore important to design appropriate methodologies for identifying the locations of the vulnerable pastoralist groups.

There is need to reduce and improve livestock in ASAL areas, through training of the herders by persuasion, limited to their appropriate carrying capacities. It is also important that other activities like poultry and bee-keeping are boosted up to commercial standards in order to enhance total livestock development. This will raise the standard of living of the ASAL farmers.
(5) Evolving HYVs for Stability of Yields

The adoption of recommended High Yielding Varieties (HYVs) of various crops by farmers at Kovilpatti in India has not been found very satisfactory as their adoption of other farm inputs like fertilizer and pesticides and one main reason for the poor adoption, it was noted, was due to their greater susceptibility to both pests and diseases as compared to the local or improved varieties. It would therefore be necessary for research centres like Katumani in Kenya to develop HYVs with built-in resistance to disease, pests as well as droughts. This will help to overcome problems of non-adoption of recommended HYVs and other associated inputs, and thus ensure stable yields.

(6) Need for low cost appropriate technology

It is necessary to reduce the cost of new technology in dryland development in order to make it affordable by the poor residents of these areas. The technology must be appropriate particularly when addressing low value crops

Rangasamy P., Op cit, p.191
like millet. which also have low income and price elasticities of demand. High yielding varieties (HYVs) resistant to pests for example can cut down costs on pesticides. Wherever possible, alternative means of adding soil nutrients through rhizobial cultures and leguminous intercrops can help to reduce expenditure on fertilizers. Labour intensive, moisture conservation practices like inter-culturing, weeding, bunding and small watersheds or farm ponds can utilise unemployed and under-employed family labour which is likely to increase yields at lesser cost.

(7) Evaluation of Technologies

It is important that socio-economic evaluation of all technologies evolved in the Kenyan research stations on dryland development is done (If not done already). This evaluation will enable planners and policy makers to draw sound decisions with regard to approaches for a meaningful dryland development. Thus, only technologies with higher returns against input costs on all items need to be adopted and popularised. Herein lies the importance of agro-economic studies.
(8) Liaison with other Research Centres

Kenyan researchers on dryland development need to liaise with other related researchers both locally and internationally, for mutual exchange of ideas, knowledge and experiences. Such international centres like International Crop Research Institute for Semi-Arid Tropics (ICRISAT) India, International Institute of Tropical Agriculture (IITA)-Nigeria, International Council for Research in Agro-forestry, (ICRAF)-Kenya, International laboratory for Research in Animal Diseases (ILRAD)-Kenya and local research centres/bodies in India like the Indian council of Agricultural Research (ICAR), Indian Agricultural Research Institute (IARI), Central Arid Zone Research Institute (CAZRI), Jodhpur, Central Soil Salinity Research Institute (CSSRI), Haryana and Central Research Institute for Dryland Agriculture (CRIDA) Hyderabad, can provide ample room for such endeavours.

(9) Multi-Agency Approach to Development

The idea and practice of leaving one district to one donor to finance all ASAL related projects in different
sectors of the economy need to be reviewed and if possible replaced by a multi-agency approach, though care need to be taken to avoid unco-ordinated operation of different agencies which may result into unnecessary multiple financing, over-financing/under financing, financial indiscipline and diversion of scarce resources to unproductive purposes. Simply put, the question of overlapping, duplication and unhealthy competitions need to be thoroughly checked. The feeling of farmers that the government would give assistance without insisting upon repayment need to be curbed. This is clearly illustrated in a number of studies in India.

(10) Long term solutions to Drought – a must.

Long term solutions in the form of programmes to drought in ASAL areas of Kenya are as follows;

(i) Water harvesting and surface water development through a series of gully plugs to control erosion and floods.

(ii) Afforestation and Agro-forestry to meet the requirements of food, fodder, fuel and fruits as well as for soil conservation.

(iii) Dryland treatment and management through contour bunding, farm drains, farm ponds and strip cultivation to accelerate the soil building process.

(iv) Water conservation through efficient irrigation methods like improvement of traditional irrigation furrows, drip irrigation, appropriate cropping systems and dry horticulture.

(v) Development of non-conventional energy to meet the energy requirements of the dryland residents.

(vi) Provision of clean water for drinking and sanitation.

(vii) Extension education for farmers and vocational training for women groups in different trades.

All the above programmes can be considered as "Primary Programmes" on which there can be any number of secondary programmes interrelated to the primary one.
CONCLUSION

Varied as they are, drought tracts of the world have different problems, constraints and development prospects. However, one grain of truth runs through them all viz., rainfall/water scarcity. This propels them to form into a distinct ecosystem.

With the rapidly growing population and the consequent pressure, and particularly in the third world economies, countries with drought tracts can no longer regard such areas as backward, scarcity areas, depressed, low potential etc., and push them into oblivion, far from the gamut of development. It is imperative that these areas have to be integrated with the well endowed and rain assured locations in order to avoid regional imbalances, disparities and economic instability. Some advances have been made in different parts of the world in developing these areas, and different approaches together with operational modalities have been evolved. Based on different modus operandi of different programmes, Countries with similar or related ecosystems have enormous ideas, knowledge and experience to exchange for further development of these areas. However,
there is a need to modify and infuse in the necessary ingredients in a given programme to suit, sustain and adhere to the specific needs and requirements of a given locality or region. Above all, man at the grass-root level, as the key factor in the whole process of dryland development need to be wholesomely involved in the development of these areas, right from the initial planning process.

HYPOTHESES FOR FUTURE STUDIES

Out of the foregoing study on dryland development of Kenya and India, a number of hypotheses emerge for further testing and validation.

(1) Both absorption and application of the new Dryland Farming Technology in the drylands is low due to tradition-bound risks aversion strategies inherent among the farmers and lack of insurance cover to the application of the technology.

(2) Aggregate household incomes in different agro-ecological zones in dryland areas are related with the
quantum of rainfall amount in the zone i.e., the higher the quantum of rainfall amount, the higher the aggregate household incomes and vice-versa.

(3) High rate of investment conduits in the drylands can be triggered on by dovetailing credit with technology, marketing and where necessary insurance cover through a well established Central Co-ordinating Machinery.

Thus, Cross-Country evidences on the development of drought tracts between the two Countries viz., Kenya and India, reveal that development is a wholistic approach requiring multi-disciplinary agencies and encompassing the development of both man and environment.