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KARNATAKA AGRICULTURE & RURAL DEVELOPMENT VISION 2020

MISSION GROUP ON AGRICULTURE AND RURAL DEVELOPMENT

PLANNING BOARD
GOVERNMENT OF KARNATAKA
BANGALORE

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KARNATAKA AGRICULTURE AND RURAL DEVELOPMENT VISION 2020

CHAPTER 1

INTRODUCTION

The Government of Karnataka has adopted the document, "Karnataka – A Vision for Development – 2020" prepared by the State Planning Board. The document presented the developmental targets, challenges and the strategies and a long-term developmental plan to achieve the targets for accelerating growth, reducing poverty and enhancing human development in the State. It postulates specific strategies that need to be translated into meaningful interventions by the State Government on partnership basis with all relevant stakeholders to achieve the goals.

The above Vision Document has identified the key transformations, which predicate the future policy and strategic imperatives - a driving force to realise the said Vision:

Box. 1
Key Areas of Transformation to achieve Vision 2020

1. Ensuring greater visibility of agriculture and allied activities to increase rural incomes
2. Focus on skill development to achieve job oriented growth
3. Develop the state as a vibrant knowledge society
4. Improve access and availability of quality healthcare for all
5. Achieve a sustainable and orderly process of industrialization and urbanization.
6. Enhance opportunities and empower women across economic, social and political spheres
7. Bridge the gab between socially backward and vulnerable groups and the rest of the people
8. Improve energy availability and develop infrastructure to boost productive potential of the economy
9. Preserve and promote Karnataka's rich cultural heritage
10. Ensure sustainability of the state's environment and natural resources
11. Build and sustain Bangalore's global leadership in science, technology and knowledge based industries.
12. Improve governance through wider participation and deep democratic decentralization.

1.1 Mission Groups

To finalise the developmental strategy and guide its implementation, Government of Karnataka constituted different Mission Groups comprising eminent personalities drawn from various fields under the Chairmanship of the Honourable Chief Minister, vide G.O. No. PD 59 SPB 2008 dated October 10, 2008. The terms of reference of the Mission Groups are (i) to provide inputs to enable the State to finalise and implement the Vision 2020, (ii) to provide guidance on the strategies, programmers, performance across different sectors with a bearing on external perspective, and (iii) to monitor initiatives and actions taken to achieve the Vision. In a Group meeting held on June 24, 2009 chaired by the Honourable Chief Minister decided to constitute six Mission Groups for working out the details of development and implementation strategy on the following aspects:

1. Human Development
2. Social Empowerment
3. Rural Economic Development
4. Infrastructure and Industrial Development
5. Decentralisation and Governance and
6. Karnataka Heritage

All the 6 Mission Groups have been entrusted with the task of drawing up short-term, medium-term and long-term strategies and action Plans for achieving the goals/outcomes in their respective spheres by the end of December 2009. The Mission Groups are required to identify the policy and institutional reforms required to fulfil the overall objectives of accelerating growth, reduce poverty and improve human development and quality of life of the people. The term of the Mission Groups has since been extended to January 31, 2010.

1.2 Mission Group on Agriculture and Rural Development

The above Mission Group is one of the 6 Mission Groups set up to look into the different dimensions of the rural sector including agriculture and the allied sectors. It is a small group and the composition of the Mission Group is given below:

Prof. R S Deshpande Director, Institute for Social and Economic Change Bangalore	Chairman
Shri. Yellappa Reddy Former Principal Secretary Department o f Environment Government of Karnataka	Member

Shri.N Vinaya Hegde — Member
President, NITTE Education Trust,
Mangalore

In addition to the above, Principal Secretaries/Secretaries and HODs of the Departments of Agriculture, Horticulture, Animal Husbandry and Veterinary Services, KVAFSU, Sericulture, Fisheries , Fisheries Research and Information Centre, Watershed and University of Agricultural Sciences Bangalore have been coopted in the Mission Group, who have rendered valuable assistance in the form of material, information and relevant data.

1.3 Relevance of Vision Statements for Agricultural and Rural Development Sector

Agricultural sector of Karnataka has been undergoing a crucial phase during the past few years. The trends in the sectoral composition of the State reveals a disturbing picture of the share of primary sector steeply going down and having reached a low of 16.4 percent (2008-09). However, what is more agonizing is the slow decline in the share of its workforce who are getting out of the sector. As a result the density of workers per unit of income generated is quite high and increasing. The phenomenon intensified in the course of the last decade bringing about many changes in the State economy. These imply that the State economy is shifting away from agriculture, which is a positive sign only if viewed from the point of view of structural changes, but is accompanied by serious negative externality associated factors with the farm sector livelihood. Along with these changes in the agrarian situation wide spread distress in the sector became bare open. Productivity and net real income (adjusted for inflation) generated in the farm sector has stagnated in the last decade. This has pushed more farm families under the poverty line. Consequently, farmers' distress has been increasing in the State like elsewhere in the country.

1.4 Target for Agriculture and Allied Sectors

Agriculture and allied sectors of Karnataka have registered growth rates between two and three per cent per annum in the past three decades, but these have been marked by a large scale of fluctuations due to droughts and other natural calamities. In order to achieve consistent income flow that records a growth rate significantly higher than the growth rate in the Consumer Price Index for Agricultural Labourers for rural areas, it will be essential to place the target of agricultural growth rate at 4.5 per cent per annum as contemplated in the Karnataka Agriculture policy 2006. This point in the long-run growth curve also provides the required push for the aggregate growth of the State economy. The 4.5 per cent growth rate in gross value of agricultural production will result in an increase in the net real income by about two per cent per annum for the farm households. And that should be sufficient in the coming decade to take care of increasing prices of inputs, as well as the changes in the terms of trade between agriculture and non-agricultural sectors. Therefore, it will be quite prudent to set forth a medium term goal of 4.5 per cent per annum in the gross value of agricultural production**.**

1.5 Goal

The goal of this Document is to envision the future for the farm sector so that the farmer will have a respectable income and livelihood in the ensuring decade. Achieving equity across regions and farm groups along with growth is the Vision Statement of this Document. Therefore, an attempt towards bringing the neglected regions and crops into the mainstream is the main pursuit of the Mission's Vision. At the same time realising the optimum potential of the promising high growth regions will remain a vital component of the delineated growth strategy.

1.6 Strategies of the Mission Group on Agriculture and Rural Development

The Mission Group held several meetings with officials of the concerned departments, academicians and University researchers. This apart the Mission Group while preparing has given due consideration to the recommendations offered in the many earlier Committees/ Groups and Commissions set up by the Government of Karnataka on the subject. The discussions held with the Chairman of the Agricultural Commission were very fruitful. Above all, the Mission Group would like to place on record that it benefited immensely from a well prepared booklet on the relevant subject by Dr. Vinaya Hegde who is also a Member of the Mission Group.

1.7 Limitations of the Vision Document

The Mission Group needed to dwell upon various aspects of agriculture and rural development such as output, technology, institutions and regional dimensions. The Mission Group would like to emphasize an important point which is that, the Document had to be prepared in a limited period of time. In such a situation, the Mission Group with the available information and data relating to various aspects and taking into account the need and requirements of Agriculture and Rural Development, a Vision Statement has been prepared and presented in the Document. There is an important caveat in presenting this Document i.e., since rural development per se is being taken care by another Mission Group, this sector receives less importance by the Mission Group on Agriculture and Rural Development.

Keeping in view the above, the Mission Group on Agriculture and Rural Development is pleased to present its Report and the Document, **Karnataka Agriculture and Rural Development Vision 2020**.

1.8 Organisation of the Vision Document

This Document is organised into five chapters. The first chapter which is the present one is the Introduction. The second chapter presents envisioning the Future of the Sector wherein the theory and sectorwise analysis are also given. The third chapter presents the Vision 2020 and the fourth chapter gives the Activity Mapping of the Agriculture and Rural Development

sectors for Karnataka. While the fifth chapter deals with the review of agriculture and allied sectors and the problems are illustrated. This again has 4 sections. Section one deals with Production issues, the second with Technology aspects, the third with Institutional issues while the fourth section reviews the Regional Dimension. At the end, there is an Annexure which narrates the proceedings of the various meetings held by the Mission Group.

CHAPTER 2

ENVISIONING THE FUTURE OF AGRICULTURE AND RURAL DEVELOPMENT

2.1 Theory and Sectorwise Analysis

While preparing any Vision document the theory behind envisioning is quite different than simple projections. A Vision can have a short term target, a medium term focus and a long term goal. The strategy has to be flexible to accommodate the local level specificities and therefore the Vision document should be only a guideline and not an exact workbook. Vision shall therefore have to keep in view the available resources, impending generation of resources and the technology that is conducive to achieve the goal. The Mission Group method here is to envision the broad characteristics and then elaborate on the Vision to reach an activity mapping. The Mission recognises the fact that it is difficult to estimate the volume of investment required to achieve even the short term goals because that task is best done by the line departments who are responsible in designing and implementing the schemes. Further the Group felt that the implementation authorities or the practitioners of Vision Document need to think differently out of the box. Therefore the Group while designing the Vision Document focussed on a few important questions mainly to instigate the practitioners. The difficulties in estimating the quantum of investment first of all stems while assuming the unit cost at current prices without the essential inputs from the field and second is that the cost of implementation varies across regions and schemes. Therefore, it will be a futile exercise but nevertheless provided, the implementing agencies can prepare this can be looked into.

For the Vision Document, the Mission Group has considered these main sectors that form the part of agriculture and allied sectors and the major component of rural development. These include Agriculture, Horticulture, Animal Husbandry, Forestry & Environment, Sericulture, Marketing, Research and Education. The broad thinking about the envisioning that has been perceived is reflected in paragraph 2.2. Two important institutional components here namely markets and research. Education is also taken along with these as it tend to make a lot difference in the field conditions.

2.2 Parameters of Vision for Karnataka Agriculture and Rural Development Vision 2020

Sl No	Sectors	Envisioning the Future
1	**Agriculture**	i) Enhancing the net real income of the farmer; ii) Long run growth rate of 4.5 percent per annum with the participation of Northern rainfed regions and sustaining the growth. iii) Reduction in cost of cultivation and infusion of new technology.
2	**Horticulture**	i) Transforming Karnataka as a major State in horticultural development of the country. ii) Eco friendly cultivation practices. Increased value addition and getting ahead in the dryland horticultural crops. iii) Enhancing horticultural extension.
3	**Animal Husbandry**	i) Increased production, value addition and health aspects. ii) Moving into non-traditional areas. iii) Strengthening extension and markets through PPP.
4	**Sericulture**	i) Modernization ii) Move ahead in technology and iii) Market support
5	**Watershed**	i) Institutional stabilization, ii) Increased emphasis iii) Productivity coupled with conservation of natural resources.
6	**Fisheries**	i) Realizing full inland potential ii) Following Bangladesh model iii) Strengthening infrastructure.

5	**Forestry & Environment**	i)	Ensuring ecological security and environmental balance.
		ii)	Modern technology and people's responsibility.
		iii)	Forest planning and environmental watch.
6	**Marketing**	i)	Efficiency in marketing
		ii)	Reduction in market margins and PPP in crucial marketing sector.
		iii)	Encouragement to direct marketing
7	**Research and Education**	i)	Demand driven research in critical areas
		ii)	Strengthen the extension interface and quick research output in critical areas.
		iii)	Investment in education and introduction of the subjects at school level.

The parameters presented in 2.2 have been dealt in detail in Chapter 3

CHAPTER 3

KARNATAKA RURAL AGRICULTURE AND RURAL DEVELOPMENT – VISION 2020

3.1 Agriculture

This chapter presents the sector wise Vision for 2020 as also the rationale behind such a Vision.

3.1.1 Dry land/Rainfed Agriculture

The first challenge posing the agriculture sector in Karnataka is to mainstream the vast drought prone/rainfed area. At present the undue share of this area is the stumbling block for the state in the race to move onto higher growth path. The large presence of rainfed regions is also compounded by frequent climatic aberrations and not so frequent but devastating floods. Failure of technology to meet these challenges resulted in low average productivity and consequently low income. Therefore, meeting this challenge upfront is the first priority in the coming decade. The vision is thus set to bring the rainfed areas under the new growth initiatives.

Box. 2
Agriculture: Vision 2020

1. **Setting a 4.5 per cent of growth rate in agriculture and allied Sectors**
2. **Achieving sustainable-integrated development**
3. **Getting dryland/rainfed agriculture in the mainstream**
4. **Arresting the process of shrinking land base and deteriorating soil health**
5. **Increasing efficiency in irrigation**
6. **Creating favorable Technological innovation and Dissemination**
7. **Restructuring and Strengthening of Extension System**
8. **Enhancing capital formation**
9. **Providing sufficient Safety- Nets**
10. **Boosting Agro processing sector**
11. **Reducing imperfections in Agricultural Produce Markets**
12. **Creation of additional Employment**

Rainfed/dryland areas confront harsh environment and economic hardship. The basic problem of dryland areas is one of a vicious cycle that starts with low water availability, degradation of natural resource base because of poor management which ultimately results in low productivity. This, in turn, leads to over-exploitation of the existing natural resources and causes further degradation. One of the major problems that has to be overcome in this regard as said earlier is the frequent occurrence of droughts and the infrequent but devastating floods in some of the regions. The Mission Group's Vision here is to maintain a contingency plan ready to meet such exigencies. Such Contingency Plan has to embody in itself crops and enterprises which are suitable and required in these regions.

3.1.2 Integrated Agriculture

Agriculture has always been understood as synonymous to crop husbandry while the other activities are classified as allied agricultural activities. This Document shall make an all out effort to magnify the concept of agriculture to encompass Horticulture, Animal Husbandry, Dairy, Forestry, Fisheries, Sericulture, and other allied activities as also the sunrise sectors that have a strong rural base. Promotion of Organic Farming has been initiated in the State which needs to follow the contours of the Organic Farming Policy adopted by the State. The Vision shall emphasize an Integrated Farming System Approach with all the activities mapped according to the adaptability of the regions. Gram Panchayats could be the epi-centres of such activity planning which is integrated upwards with a proper institutional set up.

3.1.3 Size of Holdings

Due to demographic and market pressures the average size of holding in the State is shrinking very fast, making large number of farm families economically unviable almost everyday. The average size of holding is 1.63 ha and the number of holdings having land less than 1.0 ha account for 42 per cent of the total holdings in the State, which itself is a cause for concern. Besides, land available for cultivation in the State is declining because more of such lands are put to non-agricultural purposes. Soil health is deteriorating and availability of micronutrients has declined in many regions. Twin steps are essential here to tackle this; one is to overcome the impediment of size of holding and the other is improving the soil health. By the next decade it is imperative to reclaim soil health to the extent of 80 percent of the cultivable area in a phased manner i.e, covering about 10 percent in each year after allowing for about 2% relapse despite efforts.

3.1.4 Stagnation in Productivity

In Karnataka stagnation of productivity has become so acute that it is now visible in the irrigated areas also due to neglect of scientific water management practices and lack of proper awareness among the beneficiaries, and the technological bottlenecks. The irrigation sector is beset with some constraints. The major constraints identified in respect of canal irrigation are:

- Untimely filling up of reservoirs
- Vast unused potential
- Delays in letting of water in canals
- Tail-end farmers not getting timely supply of water
- Breaching of canals
- Increasing saline alkaline lands.

Linking of small river systems to augment the existing water resources with economic viability can be the future strategy for effectively utilizing the water resources. All these are not new

problems but have not been squarely dealt with proper institutional framework. The Vision here could be to establish an appropriate Institutional frame to deal with these issues at the ground level.

3.1.5 Innovations

Technological innovations in the State have always remained supply driven with scant attention to the demands arising from the field. That causes low adoption as a result not even 10 percent of the innovations have found roots in the farmers' field. There is lack of incorporation of the traditional wisdom in development of technologies, and inadequate research-extension-farmers linkages. These needs have to be met with innovative institutional intervention in extension framework.

3.1.6 Farm Mechanisation

Popularizing farm mechanization is needed along with training to the farmers for usage of advanced machineries. Small implements need to be popularized keeping in view the labour shortage and tiny size of holding. Alternatively priority should be given for providing hiring facilities at the panchayat level.

3.1.7 Agricultural Extension

The future steps involve in removing the bottlenecks presently operating in input supply chain as well as the weak extension net work. There is a need to work on both systems keeping Gram panchayat as the nodal point and Agricultural Universities providing the most needed hotline of information flow. The Karnataka Agricultural Policy 2006 provided initiatives in extension and input supply chains placing the Gram Panchayat as hub.

3.1.8 Capital Formation and Rural Finance

Low level of agricultural productivity is associated with the shrinking flow of public and private investment towards the sector. Agricultural credit is one of the critical non-land inputs and stepping up of agricultural growth depends on availability of credit (the quantum) that has slowed down and in addition to this public investment has also slowed down. Capital formation in agricultural sector has to be taken on the public-private investment platform with groups of progressive farmers and processors of agricultural commodities taking lead.

3.1.9 Safety Net

There are a few significant safety net programmes operating in the State. These include crop insurance scheme, minimum support prices, Rayat Sanjeevine, KSKs. These have to be made efficient by revamping and bringing in decentralized administration and implementation up to Panchayat level.

3.1.10 Agro-Processing

Forward linkages in the sector automatically spurs growth and productivity enhancement. Agro-processing will help value addition and most needed forward linkages to the farmers. Processing facilities may be developed at different locations in the State for selected crops and fruits. These have to be spread according to commodities available for processing. This initiative, if taken with the partnership of industrial houses with a guarantee for protection of the farmers' interest by the state, can go a long way in enhancing the crop productivity and stepping up the growth in income.

3.1.11 Agricultural Marketing

Agricultural marketing in the State needs to focus on four goals. First, the farmers should get the prices clearly emerging out of market forces and not managed by cartels of traders. Second, market margins and price spread should be within the acceptable limits by the farmers. Third, the entire process of marketing should be farmer oriented and provide the producer required marketing freedom as envisaged in the new APMC Act. Finally, market infrastructure both in terms of spread and quality should be the focus in the coming decade. Steps such as e-tendering, restructuring of administration, active participation in procurement under MSP and MIS schemes will improve the effectiveness and provide most needed price support to the farmers.

3.1.12 Agricultural Labour

Currently about 60 percent of total work force in the State is engaged in the agriculture sector and they are unskilled manual labour. On the one hand the productivity and income flow are stagnating and on the other there is no ease in the carrying capacity of the sector. Following the basic tenets of development economics, it will be necessary to ease the over dependence of the workforce on the agricultural sector by providing alternative jobs which are remunerative and supportive. The Vision is to divert the surplus labour force from agricultural lands per se to non-agriculture activities but rural based.

3.2 Horticulture Sector

3.2.1 Status of Horticulture in Karnataka

Karnataka is a predominant player in the horticulture sector in India. Although the sector accounts only 15 per cent of total net area sown in the State, its contribution to gross value of output of agricultural sector is over 40 per cent. Karnataka is the largest producer of spices, aromatic and medicinal crops. Since the past decade, India has witnessed a huge demand for horticultural produce from domestic and international markets due to increase in per capita income and shift in consumption pattern of the population. This phenomenon has provided a big opportunity to the farmers for fetching higher income through high value horticultural crops. The sector also provides excellent opportunities to farmers in rainfed areas, where a significant shift in horticultural area and production is being evident. For instance, about 58,000 hectare area has been brought under horticultural crops through the watershed programmes. The diverse agro-ecological conditions prevailing in State has made it possible to grow different types of horticultural crops. The sector still has great potential to grow in the future through area expansion as envisaged in the State Agricultural Policy 2006. To achieve 4.5 per cent of growth rate in agriculture, the role of horticultural sector is vital as both farmers and agriculture sector suffer from low value crops grown in the state. The main focus of the sector will be to make horticulture as a viable alternative to agriculture sector.

Box. 3
Horticulture: Vision 2020

1. To make horticulture as a viable alternative to agriculture to fetch more income to farmers in rainfed areas.
2. To bridge the gap in the production and production potential and reduce the post-harvest wastages
3. To devise effective means to transfer technology to the farmers
4. To promote eco-friendly cultivation practices (organic farming)
5. To streamline the distribution and strengthen the marketing network for horticultural produce
6. To create gainful employment opportunities in the rural areas
7. To promote export of fresh produce and processed products.

3.2.2 Strategies for Horticulture Vision

The success for achieving high growth rate in horticulture sector will depend upon introduction of new varieties and bridging the gap between actual and potential production through transfer of technology and reducing the post-harvest wastages. In addition to this, marketing system will require a great deal of attention so that farmers get maximum benefits from their endeavours. For assuring better price for their produce, initiatives will be taken for streamlining the distribution and strengthening marketing network for horticultural produce.

3.2.3 Horticulture Exports

Expanding the market for the sector creating an environment conducive for promoting exports and strengthening the infrastructure are very crucial areas, where the State has a long way to go. The policy initiatives to promote the export of processed and unprocessed horticultural produce could be by attracting private investment in infrastructure and agro-processing units in the State. On the other hand, to satisfy consumers' need and safety of the produce, farmers need to be aware of the eco-friendly cultivation practices such as organic farming etc. To achieve sustainable growth of the sector priority should be given to promote eco-friendly cultivation practices.

3.3: Animal Husbandry

3.3.1 Prospects of Animal Husbandry Sector in Karnataka

Animal Husbandry sector has always played a significant role in the State's economy through supplementing assured family incomes and generating gainful employment in the rural areas. The major problems being faced by sector include shortage of fodder, inadequate and inaccessible credit, shortage of technical labour force for veterinary services and lack of infrastructure such as buildings, equipments, veterinary institutions, abattoirs, milk collection centres etc. Therefore, there is an urgent need for strengthening veterinary college infrastructural facilities, increasing livestock production through providing incentives for dairy, poultry farming and pig breeding (sheep /goat production), establishing more MPCS and devising special plans for fodder extension services, state livestock breeding farms and overall sector. Section 3.3.2 analyses these aspects.

Box. 4
Animal husbandry: Vision 2020

1. **Promoting value added dairy products**
2. **Expanding the coverage of MPCS, Veterinary Institutions, and Fodder Banks to all gram panchayats.**
3. **Expanding the coverage of small animal rural Abattoirs, Commercial livestock/ poultry farms and processing units to all taluks in the State.**
4. **To increase vaccination coverage up to 80%**
5. **To extend extension service and animal health coverage to all.**
6. **Augmenting Green Fodder Production**
7. **Strengthening of Veterinary College infrastructure.**

3.3.2 Extension and Capacity Building in Animal Husbandry Sector

To promote rural economic development through animal husbandry sector, the State will primarily focus on the activities like implementation of training programs, establishment of disease free zones and adoption of villages. The Animal Husbandry department will give training programs to the farmers at the

grass-root level on simple technologies that can be adopted at the farm level and Self-Help-Groups would also be trained on technologies that require machineries and co-operative efforts. These training programs will cover areas like, silage making, processing of crop residues, nutritional enrichment of fodders, azolla cultivation, backyard poultry rearing, rabbit rearing, piggery, and control of mastitis. The training programs proposed for the SHG's will include trading of meat animals and meat processing through establishment of small abattoirs, preparation of complete feed block or mash for ruminant livestock by establishment of small scale feed processing units.

3.3.3 Infrastructural Needs in Animal Husbandry Sector

The sector in State is plagued with several infrastructural bottlenecks and up scaling the performance of the sector can hardly be achieved without needed investments. Therefore, the State will direct needed investment in infrastructure such as Milk Producers Cooperative Societies (MPCSs), Veterinary Institutions, establishing fodder banks, abattoirs and commercial poultry processing units. By 2020, the target for the state would be to set up additionally 2000 MPCSs, 1700 Veterinary Institutions, 2000 fodder banks, 80 abattoirs, and 100 commercial poultry processing units. It is necessary to increase the infrastructure required for certifying livestock products.

3.3.4 Veterinary Health Issues

Regarding vaccination of animals, the experience of Bangladesh will be considered as a model and that will be improved upon to adapt to Indian conditions. The state will take initiatives to link vaccination with milk procurement. This can ensure 100 percent vaccination of food producing animals. There must be stringent mechanism for accountability of vaccination. The minimum milk required for the calves will be worked out and the weaning period for the calves will also be standardized for recommendation to the farmers.

3.3.5 Strategies for Achieving Vision 2020

A comprehensive approach is needed for sustainable development of animal husbandry sector as the current approach lack both a long term view and extent to which growing demand can be met at different level. The strategies required are:

a) To make the sector competitive domestically and internationally, strategies are needed for bringing down cost of production and improving quality of the produce. Therefore, the state will take initiatives for reducing cost of livestock and dairy produce by minimizing wastage of feed and fodder and increasing utilization of cereals and crop residues available at the farm.
b) Better animal health remains a key factor for maintaining quality of produce and hence fetching higher income per unit. The State will take initiatives to establish additional immunization cells and provide health and extension service coverage to all gram panchayats. Further, State will focus to reduce the cost of vaccination and other medicines as well as

conduct awareness programmes to reduce the use of antibiotics and pesticides to obtain health feed and fodder for livestock.
c) To provide a higher share in a rupee and generate more employment at local level, milk processing units as well as preparation of value added dairy product are needed to be taken at large scale.
d) The State will provide monetary support for establishing such entrepreneurship through evolving SHGs, NGOs and youths.
e) The working model for SHG's in setting up abattoir and feed processing plant will be developed and importance will be given to fodder trees as feed resources. The Department of Animal Husbandry will take lead on this regard instead of depending on Forestry Department.
f) To increase poultry production in the State, backyard poultry rearing and broiler production will be promoted by the State. The landless farmers depend on sheep and goat rearing. Therefore, the State will formulate the strategies to improve economic returns for such farmers.

3.4 Sericulture

3.4.1 Importance of Sericulture in Karnataka's Economy

Karnataka is a pioneer State in production of raw silk. The sector not only shares almost 50 per cent of the total raw silk production in the country, but also provides employment to 13 lakh workforce in the State. Even though silk production in the State is rising in terms of quantity, its share in the country's total output has declined by 15 per cent over a decade, consequent upon Andhra Pradesh and Tamil Nadu increasing their respective shares. Historically, the cultivation of mulberry has remained confined to 8 traditional districts in southern region of the State. However, recently northern region as well as some other non traditional districts of southern region have also witnessed some expansion in the area under mulberry. The districts of Dharwad and Tumkur are the most popular silk producing regions as they possess the perfect sub-humid to dry semi-arid climate most suitable for silk production.

3.4.2 Major Issues Relating to Sericulture

Sericulture the flourishing sector in Karnataka of late has been witnessing many structural changes such as slowdown in traditional areas due to shrinkage of mulberry cultivation, low quality of silk and competition from neighbouring states as well as countries like China and Tibet. While some of these cannot be reversed, the State should endeavour to move to high quality, high- yielding *bivoltine* sericulture on a much bigger scale. The other problem which is quite serious is the *tachnid fly* popularly known as Uzi fly (*Exorista bombycis*) which is an endo-parasitoid of the delicate silk-worm and causes 15 to 20 percent of crop loss per annum.

3.4.3 Steps and Initiatives to Rejuvenate Sericulture

The following measures and initiatives are needed to ensure that the silk capital of India does not lose its prime place in the competition:

Box. 5
Sericulture: Vision 2020

- Modernization of technology in processing of silk in the state.
- Promoting Shifting towards high-yielding crops both in mulberry cultivation and rearing of silk worms.
- Extension activities within the reach of the farmers and all Rayat Sampark Kendras equipped with the sericulture know-how.
- Modernisation of silk worm rearing technology to reduce losses.
- Reducing market imperfections in Cocoon markets
- Modernization of technology in processing of silk in the state.
- Promoting sericulture in non-traditional potential areas.

i. The State will strengthen the existing Catalytic Development Programme and the Varadan scheme which benefit the growers and reelers through proper technology package including extension of credit and subsidies.

ii. To boost silk production and improve of its quality, the immediate focus of the State will be modernizing silk processing units by importing automatic reeling machines from China. Modernization of reeling machines is expected to increase the output of superior quality *bivoltine* silk by 25 per cent, processing 700 kg of cocoons per day and will help to strengthen the backward linkages and farmers get better market for their cocoons

iii. The field staff of the department will visit the mulberry gardens and silkworm rearing of the farmers at village level and guide them to adopt new technologies beside precautionary measures to be taken up to get better yield of mulberry leaves and silkworm cocoon crops. The good farmer's techniques will be demonstrated vide publicity and exhibitions for familiarizing among other Sericulturists at large.

iv. The technical training to the women folklore in adopting improved methods of mulberry cultivation and silkworm rearing helps in better yield of cocoon crops thereby increasing their income.

v. The Sericulture Department is taking care of the bacterial, viral, fungal, and protozoan diseases that could spoil the mulberry and silkworms. As a precautionary measure, the department is spraying bleaching powder solution and such other bacterial, viral and fungal controlling chemicals to the silkworm rearing equipments and rearing houses of the Seri culturists, - the process which is called 'DIS-INFECTION' before and after rearing of each crop by the farmer. This helps the farmer to protect the crop from the invisible infections and yields better cocoon crop which improves his financial position.

vi. Independent Disinfectable silkworm rearing house preferably near the mulberry garden is a must to get good Cocoon crop by every farmer. The sericulture department is assisting the farmers in building silkworm rearing sheds under different schemes viz., District Sector, SCP, 9th Five Year Plan - Direct assistance etc.

vii. Since India has to compete with China in production of international standard *Bivoltine* silk, the department is popularizing growing of *Bivoltine* variety of silk worms which are high yielding. To encourage *Bivoltine* rearing, the department is giving incentives like - disinfectants at the cost of the department, training in adopting new technologies, introduction of high yielding varieties of mulberry as well as silkworm races etc., to promote high production of *Bivoltine* variety of International quality silk in Karnataka.

viii. The shoot rearing system is a new technology which reduces the labor component in adult silkworm rearing whereas it needs more space for silk worm rearing. To popularize this system, the department is assisting farmers in constructing of spacious silkworm rearing houses by providing subsidy.

Steps needed to Improve Sericulture

- More FIGs sericulture would be formed in other sericulture areas in the district.
- Farmers will be encouraged regarding silk worm rearing/ silk cocoon production being a short duration crop with low capital investment for additional income generation by providing easy loan facility.
- Healthy disease free mulberry plants should be supplied by the Sericulture Department for quality silk cocoon production.
- More awareness cum training camps & exposure visit to success story sites should be organized by BTTs.
- Silk cocoon collection centres should be established for marketing on competitive rates.
- More silk reeling units should be established in public/private sector so that the cocoon should be sold by FIGs/WIGs on competitive rates to the silk production unit.

Training was proved very useful for the quality silk produce and increasing the production. These group leaders further dovetailed the learnt technology to other FIGs in the blocks

- Marketing support has to be strengthened by forming societies and federation. Group and cluster approach would enable the poor sericulturists to run the activities of silk-cocoon production, silk reeling and marketing etc. in much viable and sustainable manner. The only silk reeling unit requires working capital loan, so that it can purchase raw material according to its total capacity. Thus effective market tie up will improve profitability for the beneficiaries.

- For farmers rearing silkworm yet in scatted places facing marketing problem, awareness cum training camps were organized

3.5 Watershed Development

3.5.1 Importance of Watershed Development in Karnataka

Watershed Development is an integrated part of agricultural sector, because of the support it provides to a wider range of activities of agriculture, horticulture, fisheries and forestry. Watershed development is especially important for Karnataka on account of low irrigated area of 26% as against 39 % of national average and the scope for increasing irrigatable area has its own limitations. Development of rainfed assumes critical importance as more than 44% of crop production is from these areas.

3.5.2 Steps for Improving Watershed Development

i) Exploring the full potential of rain fed agriculture by investing in suitable soil and water conservation technologies

ii) Crop breeding targeted to rain fed environments, agricultural extension services, and access to markets, credit and input supplies in rain fed areas.

iii) Restoring ecological balance in the degraded and fragile rainfed eco-systems by greening these areas through appropriate mix of trees, shrubs and grasses.

iv) Assign Watershed development to PRIs, because first, watershed development quickly brings clearly visible benefits to local communities in ways more direct than in any other environmental protection programme. Economic prosperity though better agricultural and animal rearing productivity and improved quality of life through increased availability of firewood and drinking water are clearly linked to improving vegetative cover, preventing uncontrolled water-runoff and facilitating ground water regeneration. Second, a vital aspect of effective watershed development strategies is

Box 6
Watershed: Vision 2020

- Improving the productive potentials of selected watersheds and their associated natural resource base.
- Enhancing agricultural productivity and production in a sustainable manner.
- Restoring ecological balance in the degraded and fragile rainfed eco-systems
- Alleviation of Poverty through watershed development programmes.
- Developing and strengthening community based institutional arrangements for sustainable natural resource management
- Generating sustainable employment and employment opportunities through skill development/training programmes
- Promoting involvement of village communities in participatory planning, implementation, social and environmental management, maintenance of assets and to operate in a more socially inclusive manner.

essentially its decentralized character; large areas of land have to be treated according to micro plans developed through community participation. Both these reasons reinforce the logic that there has to be close involvement of PRI institutions in watershed development of course with the help of NGOs. Follow the principle of allowing greater flexibility for local PRIs to devise their own arrangements for interaction to combat the problems demarcating boundaries of PRI etc.

v) Recharging groundwater and renovation and maintenance of existing water bodies have to be on the agenda. Conservation of water, avoiding wastage, water recycling, water harvesting and building check dams.

3.6 Fisheries

3.6.1 Benefits of Fisheries Sector

The fishery sector also plays an important role in the socio-economic development of State. The sector contributes around 2-3 per cent in agricultural GDP and provides employment to nearly 7.49 lakh fisherman. Besides, the State also earns large amount of foreign exchange through exports of fish particularly marine. Historically, marine sector dominates the State fishery sector and only three districts viz. Dakshina Kannada, Udupi and Uttara Kannada have coastal line. Inland fishery has witnessed an increase in its share from 30 to 42 per cent and is spread in all the districts of the State.

Box.7
Fishery: Vision 2020

1. To achieve potential inland fish production of 2.75 lakh million tones
2. Promoting Bangladesh Model and scientific fish culture for increasing fish production
3. Encouraging Public-Private Participation in aquaculture
4. Strengthening infrastructure in fish seed, feed production and fish harvesting.
5. Strengthening fish marketing, storage and processing units
6. Strengthening existing extension services in the sector
7. Providing extension services to fish entrepreneurs for transfer of technology

3.6.2 Efforts to set up Fish Output

As fish production particularly marine fish has almost stagnated in the recent years, the rich inland water resources should be capitalised to promote inland fishery for overall development of rural areas. The constraints facing the inland fisheries like insufficient fish seed production, underutilization of natural resources, lack of entrepreneurship among the people, poor extension services and inadequate infrastructural and marketing facilities need to be tackled. Total deficit for fish seed is estimated at 32-33 crore fingerlings. Inland fish production could be stepped up through promotion of Bangladesh model of 'Seed village'. The natural water resource as well as area suffering from saline and alkaline could be brought under cultural fish.

In order to raise inland fish production to 2.75 lakh metric tonnes, the following steps have to be put in place:

i) Providing monetary support for construction of ponds, production of quality fish seeds, establishment of manufacturing units for production of fish/prawn feeds.
ii) Directing new investment in transports, storage and marketing facilities.
iii) The development of aquaculture could be further accelerated through Public-Private Partnership model and joint initiatives.
iv) Promote participation of private sector with the State in aquaculture activities right from fish production to marketing and processing.
v) Rural youths may be involved in activities such as fish seed production, fish pond construction, pond preparation, fish culture, fish harvesting, marketing, storage to open up many avenues for rural economic development
vi) The fishermen cooperatives have to be strengthened which would reduce the role of market intermediaries and this would enhance the income of the fishing community.

3.7 Forestry

3.7.1 Conservation of Forest Resources in Karnataka

Box: 8
Forestry: Vision 2020

1. Ensuring ecological security and environmental balance
2. Promoting sustainable management of existing forests and bio-diversity
3. Consolidation and protection of existing forests resources
4. Enhancing the forest and tree cover up to 33 per cent of total geographical area.
5. Conservation of biological diversity and strengthening of Protected Areas
6. Reversal of degradation processes
7. Enhancing carbon stocks in forests
8. Involvement of stakeholders in forest resource Management and promotion of participatory management & extension
9. Employment creation through forestry
10. NTFPs and development of medicinal plants
11. Conservation of soil, water, wetlands and lakes in forest catchments
12. Use of modern technology in forest planning , monitoring and evaluation
13. Capacity building of forest personnel for scientific management of forests

Forest resources are natural renewable biological resources and are an integral part of environment. The major services and goods provided by forestry include moderation of climate change, watershed protection, soil improvement, carbon sequestration, habitat protection conservation of biodiversity, besides maintaining the ecological balance. Therefore, the main focus of the sector will be to ensure ecological security and environmental balance by sustainable management of existing forests, and by enhancing the forest cover through available mechanisms including JFPM approach and by promoting tree based farming for better realization of ecological goods and services.

3.7.2 Arresting Degradation of Forests

The rapid increase in human and cattle population in the last five decades have enlarged the gap between demand and supply for the forest produce. In addition to this, there is a large-scale harvesting of medicinal plants, gums, fruits, fibers and seed for local use and sale are leading to forest degradation. The forests in the state particularly the Western Ghats have suffered serious depletion due to increasing demand for fuel, fodder and timber. There are increasing numbers of incidences of diversions of forest land into non-forestry purposes.

3.7.3 Steps to Protect the Forest Sector

i) Focus on consolidation and protection of existing forest and increasing the forest cover through afforestation activities.

ii) For consolidating and protecting the forests the boundary of the forest block will be attempted by tracing in the current village maps. Each and every notified forest will be identified in terms of survey numbers and the villages.

iii) The protected forest area hold repository of biodiversity (at species and ecosystem level) and managing them is integral part of sustainable development practices.

iv) Improve the quality of management by taking effective measures to develop the stakeholder ship of locals, NGOs, researchers, eco-tourists and others in maintenance of protected forest area.

v) Encourage use of modern technology for planning, monitoring and evaluation

vi) Capacity building of existing forest personnel for introducing modern management practices.

vii) Overcome institutional weakness for information sharing with the people and within forest personnel as well as receiving their feedback for planning inputs, publicity wing in the department should be established.

CHAPTER 4

ACTIVITY MAPPING OF VISION DOCUMENT: AGRICULTURE AND RURAL DEVELOPMENT

4.1 Broad Features of Activity Mapping of the Vision

Activity mapping broadly provides a three component classification of the programmes based on the envisioned future. As said in an earlier context Activity Mapping of the Vision for Agriculture and Rural Development is done in 3 stages:

- Short-term in the immediate 2 years 2010-12
- Medium-term for five years 2010-15 and
- Long-term, the next 10-year period 2010-20

In the short-term period, activities could be planned, which could be completed in the 2 year period once the project commences say in 2010-2012. The implementing department and officers ought to be aware of the ground realities and should modulate the projects to fit the needs and on going programmes.

This also needs to keep in view the staff involved. The participation of the stakeholders in every step is an essential pre-condition across the board and for the activities indicated in the mapping. Above all these are only the indicative activities in the broad outline of the Vision statements made earlier. Nevertheless concerted efforts are needed to adhere to the timely completion of the envisaged project to avoid delay and time and cost overruns. The Activity Mapping is presented sector wise in the following chart:

4.2: SECTOR WISE ACTIVITY MAPPING & STRATEGIES FOR ACHIEVING VISION 2020 FOR AGRICULTURE AND RURAL DEVELOPMENT IN KARNATAKA

1. Agriculture

	Short- Term (2010-12)	Medium-Term (2010-15)	Long – Term (2010-20)
1.	**Growth in Production & Productivity**		
	• Crop Diversification in Irrigated areas to overcome productivity stagnation	• Timely availability of agricultural inputs within a radius of 3 km. This can be achieved through the Fair Price Shops, PACS, or Gram Panchayat led new institutions. • Accelerating mechanization with emphasis on implements suitable to small size holdings • Creation of separate quality control wings with legal officers in each district for efficient enforcement of Acts.	• Encouraging Integrated Farming System (IFS) model for sustainable agriculture. • Placing restrictions on absentee land lords (Cultivable lands not to be left fallow) as per Land Reforms Act. • Improving soil fertility – Use of bio fertilizers, micronutrients, organic manures • Increase area under micro-irrigation (sprinkler and drip) for all crops. Use of available water resources judiciously by bringing 6 lakh hectares of land under micro Irrigation system. • Encouraging bio fuels plantation in waste lands with targeted area of 7.88 lakh ha.
2.	**Public / Private Investment**		
		• Development of seed farms under PPP model. • Development of new extension model to begin at the village panchayat level. • Supply of electricity continuously for long and fixed time in rural areas to support bore well irrigated agricultural systems.	• Encouraging seed production/processing and distribution centres at taluka level. • Establishing agri - clinics and custom hiring centres at Taluk level. • Alternate sources of power generation in rural Areas. • Encourage use of solar pump sets.

			• Provide subsidy for the solar pump sets equivalent to the power saved.
3.	**Infrastructure**		
	• Establishment of Warehouses at Hobli / panchayat level following Agricultural Policy 2006.	• Developing cold storage chain for the fresh and processed produce • Strengthening of agro processing industries for value addition through special investment drive • Providing incentives for private sector R&D and encouraging public-private partnership. • Expanding cold storage capacity by 10 percent	• Improvements in rural infrastructures facilities to hasten the agricultural growth (Roads, Rural Market) • Strengthening of RSK's with computers and internet facility. • Expanding coverage of Agriculture Technology Management Agency to all districts of the State.
4.	**Marketing**		
	• Announcing minimum support price well before the sowing season and administering the scheme jointly with MIS. • Ag-mark grading of agriculture products to ensure fair price • Introduction of e-tendering system in all APMCs of the state to ensure transparency in the sale of notified agricultural produce thereby farmers get competitive price in short time.	• Establishing Market Intelligence Cell. • Market led extension activities with the linkage of various line departments • Overhauling APMC's use of electronic weighing machines, e-auctioning, elimination of middlemen. • Encourage contract farming and evolve legal procedures, rules and regulations to improve the transparency and efficiency in agreements. • Effective implementation of bio-metric system • Computerization of issue of permits, realization of market fee in APMCs	• Restructuring the administrative set up of the Agricultural Marketing Department. Redeployment of officers and staff for effective functioning of APMCs and district level offices. • Market led extensions activities with the linkage of various line departments
5.	**Research & Extensions**		
	• Extension network under public-private partnership. • Induction of improved technology available in private domain.	• Intensifying Agricultural Extension Service through recruitment of graduate officers at Gram Panchayat level. • Linking of universities and Rural Agricultural Extension Programme (RAWE) with RSK's by	• Creation of farmers' interest groups/commodity groups and their networking with research institutes, extension agencies and entrepreneurs and NGO,s on a common platform.

		providing financial assistance to students for a minimum of 6 months. • Convergence of Line Departments for effective extension (Single Window System). • Job oriented agriculture courses for rural youth at KVKs and DATC's. • Decentralize agriculture development process at Gram Panchayat level.	• Encouraging FFS mode of extension. • Creation of data base and issue of Smart Cards to all the Farmers (land holdings, crops grown, soil type, benefits availed, etc). • Expanding the coverage of farm schools to all gram panchayats.

2. Horticulture

	Short- Term (2010-12)	Medium-Term (2010-15)	Long – Term (2010-20)
1.	**Growth in Production & Productivity**		
	• Effective implementation of all the approved schemes to achieve maximum progress against the target fixed. • Convergence of the schemes to enhance the effectiveness of programmes • Fast clearances of pending/arising issues at the concerned Directorates and the Secretariats.	• Formulation of new schemes for production of quality planting materials in both public and private sectors. • Assisting existing agencies and assigning them regional jurisdiction for tackling the production and productivity related problems of the farmers. • Formulation of schemes for assisting existing and new Agri-Clinics in all the taluks of Karnataka. • Encouraging cultivation of crops suitable to particular agro-climatic zones and soil-water conditions. • Crop insurance to affected farmers • Encouraging horticulture in dry land areas • Supplying of soil amendments and micronutrients to the farmers at subsidized rates. • All commercial crops should be included under weather based crop insurance scheme.	• Increasing production of horticultural planning materials from 10 millions to 125 millions. Targets for horticulture production 2020 i) Fruit production from 52.25 lakh tones to 66.50 lakh tones ii) Vegetables from 76.10 lakh tones to 108.6 lakh tones iii) Flowers from 2 lakh tones to 3.8 lakh tones and iv) Plantation crops from 4.68 lakh tones to 4.80 lakh tones. • Promoting region specific crop planning and cropping systems • Introduction, acclimatization and multiplication of new crops, elite and high yielding verities. • Legalising contract farming for cultivation of various horticulture crops in the State. • Encouraging protected cultivation of flowers and vegetable crops and formulation of schemes to assist the farmers to undertake such protected cultivation
2.	**Public / Private Investment**		
		• Farmers will be encouraged and assisted for	• Development of departmental farms and

		creating more number of rainwater harvesting structures for ground water recharge and protective irrigation purposes. • Setting up quality testing and residue analysis laboratories at all districts and providing authority to issue phyto-sanitary certificate to the respective district deputy directors. • Establishment of online marketing information system • Provision for renewal of drip system every five years with appropriate subsidies. • Support to the farmers to improve the crop pollination through bee-keeping. • Farmers should be encouraged to establish pack houses and ripening chambers and formulation of schemes to provide subsidies. • Priorities for setting up of large number of fruit and vegetable processing industries in the State.	nurseries through public-private partnership model • Creating of intensive crop zones to bring the processing industries • Support for on farm Co-generation of energy (solar and wind energy). • Formulation of schemes to encourage entrepreneurs to establish processing industries.
3.	**Infrastructure**		
	• Undertaking repair works and reconditioning of all the existing infrastructures such as , poly houses, green houses, mist chambers, shade pendals	• Strengthening of all the existing Disease Forecasting Units and establishment of new Disease Forecasting Units in all the taluks of Karnataka and close surveillance should be undertaken by these organizations. The information will be broadcast and telecast to the farmers on daily / periodical basis. • Setting of expert cells for devising crop planning and providing strategic feedback to extension squads in horticultural department • Making soil and water testing mandatory to	• Promotion of export of commodities through establishment of crop specific zones for export oriented crops such as mango, grape and pomegranate etc. • To facilitate refrigerated transport in case of perishables. • Expanding cold storage capacity by 33 per cent

		all the horticulture farmers in Karnataka and devising the scheme for implementation of this task. • Strengthening existing disease forecasting units expansion of these to taluk level for horticultural crops • Apiculture needs to be brought under the control of Dept. of Horticulture. • The satellite organizations like IFAB, KHF, and KAPPEC should be brought under the technical and administrative control of the Dept. of Horticulture. • Horticulture Price Commission to be set to advise Government on the procurement prices and fair selling.	
4.	**Marketing**		
	• Enhancing propagation activities make use of mother plants available with farms and nurseries of the Dept. of Horticulture and with farmers.	• Collection and introduction of elite and high yielding clones and varieties in all farms and nurseries of the Dept. of Horticulture and propagate them through vegetative means. • Strengthening of Revolving Fund to provide MSP to sensitive horticultural commodities under MIS • Effective implementation and simplification of rules and regulations of wine policy. • Establishment of Online Marketing information system.	• Promulgation of Nursery Regulation Act in the state to ensure quality and availability of genuine planting materials. • Simplification of procedure for import of planting materials from abroad by amending the existing seed policy of government of India • Separate cell should be established at apex level to formulate Horticultural Policy.
5.	**Research & Extension**		
	• Carrying out the awareness and technology dissemination activities vigorously for horticultural crops through various means • Training to extension and	• Reorganization of the Department of Horticulture to make the transfer of technology more effective. • Identification of organizations and institutions for rendering technological	• Introduction of new teaching courses and modification of teaching methods in horticulture education. • Greater priority research on horticulture crops to solve the burning field problems.

	development officers for horticultural crops • Filling up of vacancies of all the sanctioned posts in horticultural sector • Coordination with input agencies and organizations for quick, effective distribution and deliverance of all the inputs in required quantity and with the required span for higher growth in horticultural production.	dissemination services of horticultural crops. • Strengthening of existing RSKs with technical personnel and facilities in horticultural sector • Rendering free guidance on soil and water management issues and establishing co-ordination with Watershed Department. • Creation of self-employment through encouragement of Horticulture education system • Encouraging technology dissemination through teleconferences and phone-in-programmes. • Horticulture Crop Policy, including Floriculture Policy should be brought into effect. Similarly, promulgation and enforcement of various other policies on horticulture should be made. • Development of close link between the extension wing of agriculture and horticulture departments.	• Encouraging private consultancy services with suitable incentives. • Developing programmes to provide online information on cultivation and post-harvest management aspects of commercially important/export oriented crops, such as grapes, mango and pomegranate, etc. • Strengthening coordination between all the stakeholders in development process such as Developmental Departments, University of Agricultural Sciences, Indian Institute of Horticultural Research, commodity Boards, NGOs, Farmers' Associations, Marketing Organization and export promotion organization for development of horticultural crops

3. Animal Husbandry

	Short- Term (2010-12)	Medium-Term (2010-15)	Long – Term (2010-20)
1.	**Growth in Production & Productivity**		
	• Input support (like concentrated feed) for dairy dependent SHG members • Introduction of chaff cutter to reduce the wastage of fodder. • Removal of restrictions on importing of bulls and promoting cross-breeding for enhancing milk production. • Introduction of elite rams/bucks to increase the production.	• Increasing livestock population through monetary support for green fodder production and providing better veterinary services • Promoting backyard poultry to increase the income of the farmers. • Increasing livestock produce through monetary support to farmers on cattle-buffalo purchase • Introducing better feeding practices to improve fat and SNF content of milk.	• Achieving insurance coverage up to 80 % • Achieving vaccination coverage up to 80 % • Achieving health coverage up to 100%
2.	**Public / Private Investment**		
	• Setting up mechanism for animal rescue in disaster affected areas. • Setting up Immunization Cells for ensuring quality control of milk.	• Setting up around 2000 multi-purpose Tree-Fodder Bank at village levels. • Setting up additional 1000 Community Milk Procurement Centres at village levels. • To continue the process of setting up mechanism for animal rescue in disaster affected areas. • Setting up village based milk processing units	• Setting up additional 2000 Community Milk Procurement Centres at village levels. • Setting up additional 17000 veterinary service units at village levels. • Setting up around 80 small animal abattoirs centres at taluk levels. • Setting up additional 500 cold storage units.
3.	**Infrastructure**		
	• Collection of milk through BMC and AMC.	• Establishment of Village training Centers • Purchasing new equipments and vehicles.	• Expanding milk processing capacity up to 10 lakh liters per day

	• Providing quick transportation facilities through insulated trucks.	• Upgrading infrastructural facilities of veterinary services.	•
4.	**Marketing**		
	Attending to the market imperfections in products and livestock	• Strengthening marketing infrastructure	APMCs for promoting livestock products.
5.	**Research & Extensions**		
	• Training to rural dairy farmers involving SHGs and KVKs for preparation of value added dairy products. • Training MPC staff on chemical micro-biological quality assurance of milk. • Designing Special development plan for fodder development, extension services, and state-livestock breeding at disaggregated level.	• Training to farmers involving SHGs and KVKs in various activities like silage making, feeding practices, slaughter and processing and prevention and control of mastitis, creation of diseases free zones, trading of animals, hygienic meat production and massive vaccination programmes etc. • Increasing awareness on breeding practices for ram/bucks to increasing return on livestock sale.	• Research support for reducing cost of vaccines and medicine production. • Strengthening education and research infrastructure • Designing and developing Mobile-Training-cum Demonstration Unit to impart hands on training for promoting preparation of value added dairy products in rural areas. • Achieving extension service coverage up to 100% • Establishing 16 training centres for improving extension services.

4. Sericulture

	Short- Term (2010-12)	Medium-Term (2010-15)	Long – Term (2010-20)
1.	**Growth in Production & Productivity**		
	Vigorous promotion of bi-voltines	Promoting sericulturists to make groups for the seed multiplication and distribution.	• Increase the area under mulberry cultivation from 77, 329 ha to 1.7 lakh ha. Increase the productivity of multivoltine and bi-voltine cocoons at present 54 kgs and 42 kgs per 100 dfl to 66 kgs and 54 kgs respectively.
2.	**Public / Private Investment**		
		Three private players have already shown interest in the project which is expected to be in place by March, 2009. It takes about Rs 2.5 crore for setting up of each unit including the cost of the machine and other required infrastructure.	A single imported reeling machine would cost Rs 1 crore. While the Central Silk Board would bear 50 per cent of the cost, the state government would bear 25 per cent. The remaining Rs 25 lakh will have to be paid by the private silk reelers interested in setting up such units.
3.	**Infrastructure**		
	Availability of the seeds and planting material of the mulberry. Extension support for the diseases.	Constituting sericulturists groups to operate from production to marketing and undertake even international trade.	Setting up Karnataka sericulturists forum that will participate effectively in World Silk trade after satisfying the domestic demand
4.	**Marketing**		
	Efficient functioning of sericulture market cocoons as well as yarn market. Evaluation of the inefficiencies and dealing with those.	Establishment of marketing network and groups of sericulturists to lead as market functionaries.	Establishment of the world trade participation in silk raw as well as processed and clothes.
5.	**Research & Extensions**		
	Strengthening research and extension	Establishing sericulture research Labs in important districts	Developing competent silk market and research to meet the challenge posed by China and other competitors

5. Watershed

	Short- Term (2010-12)	Medium-Term (2010-15)	Long – Term (2010-20)
1.	**Growth in Production & Productivity**		
	Constitution of decentralized watershed management system. Taking the programme to dryland areas top priority and with an increased coverage.	• Construction of at least one Tank at village level for life saving irrigation.	• Making watershed development as the fulcrum of the dryland development strategy
2.	**Public / Private Investment**		
	Enhancing participation of the stakeholders	Handing over the treated watershed areas to the participants and continue a short term hand holding	Getting stake holders to look into operation and maintenance.

6. Fishery

	Short- Term (2010-12)	Medium-Term (2010-15)	Long – Term (2010-20)
1.	**Growth in Production & Productivity**		
	• To promote Bangladesh model (seed village concept) for higher fish production • Introducing farmers with quality fish seeds and feeds to fetch higher income	• Encouraging farmers to bring their small proportion of farm area under fish culture. • Providing monetary supports for construction of ponds, net and other input purchase.	• To achieve potential inland fish production of 2.75 lakh million tones by 2020.
2.	**Public / Private Investment**		
	•	• Promoting Public-Private Partnership in aquaculture activities in natural water bodies • Strengthening food production supply through investment in the sector • Encouraging private investment in marketing storage and processing units.	• Promoting fish seed & feed production through Public-Private Partnership model (PPP) for reducing deficit of fingerlings.
3.	**Infrastructure**		
	• Upgrading and expanding the existing public infrastructure in marketing, storage and processing units etc.		
4.	**Marketing**		
	Fishery marketing cooperatives	Development of larger fish market and setting up processing, cold storage facilities at district level.	Developing the Bangladesh Model in the long run.

5.	**Research & Extensions**		
	• Devising Action Plan to revive extension services in fishery sector. • Providing training to existing staffs on scientific fish culture and encouraging farmers to take fish production on farms • Creating awareness among the farmers about benefits of taking fish production, technology and available schemes of the states	• Recruitment of extension staffs	Reducing the distance between lab to land especially in treating the emerging problems.

7. Forestry

	Short- Term (2010-12)	Medium-Term (2010-15)	Long – Term (2010-20)
1.	**Growth in Production & Productivity**		
	• To demarcate around 5,000 kms forest boundary every year. • To increase the availability of seedlings in the countryside in selected 7000 villages. • To enhance the productivity of forest and agricultural land, planting of 100 seedlings of local species per ha will be taken. • Plantation of genetically superior trees • Control of the irregular and illegal harvesting of bio-resources.	• To demarcate around 25,000 kms forest boundary by 2015. • Promoting agro-forestry in degraded forest lands, community lands and in private land. • Roadside afforestation activity will be initiated • Promoting bamboo & sandal resource and managing it on Estate Model • Raising seedlings of biofuel species in large scale distribution to farmers. • Distribution of seedlings of medicinal plants and NTFPs at subsidized rates.	• To bring about 20742 sq kms area under forest and tree cover to achieve the target of 33 per cent of forest cover to total geographical area. • To demarcate around 50,000 kms forest boundary by 2020. • To enhance productivity of forest land about 200 ha area in each Village Forest Committee domain will be brought under for ridge-to valley treatment • Protection, management and monitoring of plantations throughout its harvest cycle and ensuring full canopy cover.
2.	**Public / Private Investment**		
		• To set up oil expellers at village level for promoting bio-fuel production in the state and creating employment opportunities for local communities inhabited in forest areas. • Development and implementation of GIS	• To improve involvement of Joint Forest Management Committees/ Village Forest Committee (JFMC/VFC) in the development of forest cover necessary investment will be made. • Implementation of afforestation activities

		based Forest Land Management System • Establishment of Regional Biodiversity offices at Gulbarga, Belgaum, Shimoga, Mysore, Mangalore and Tumkur. • Building ridge to valley treatment for soil and water conservation with contour trench, tree planting, vegetative check dams etc.	on 2.2 lakh ha every year for creating approx. 4.3 crore man days work every year. • Acquisition of land for identified elephant corridors.
3.	**Infrastructure**		
		• Creation and up gradation of forest data base using GIS/MIS • Increasing number of forest beats/sections/survey units and provide adequate trained staff with necessary physical infrastructure facilities including equipment • Establishment of biodiversity museum in Bangalore • Consolidation of boundaries of the protected areas and demarcation of the buffer zone areas of Tiger reserves.	• Development of eco-tourism opportunities in 20 wild life protected areas/ forests • Establishment of Dry-zone biodiversity conservation site network, covering all districts of dry /rainfed regions. • Establishment of bio-park with RET species in each district • Identification of species of lesser importance for their preservation. • Establishment of Tiger Park.
4.	**Research & Extensions**		
	• Identification of volunteer in the villages and training them for raising of seedlings, planting and maintenance and monitoring	• Providing institutional mechanism for dissemination of information and communication with stakeholders through a dedicated 'Public Wing in Forest Department of the State.	• Research support for planning intervention in forest and wildlife management and measuring impact of climate change. • Creation of mass awareness on Biodiversity conservation and sustainable use

	• Sensitization, awareness and Training to VFC to create awareness and thereby enhancing conservation status of NTFPs • Identification and declaration of Agro Biodiversity hot spots • Survey of demand & supply of Bio-resources used by Bio-industries. • Preparation of Biodiversity Atlas • To fill up vacancies in wild-life wing of the forestry department. • Local volunteers to be engaged in the surrounding villages to deal with human-elephant conflict. • Enforcement of wildlife laws • Engaging NGOs in creating awareness in wild-life.	• Recruitment and training of forest personnel • Research for documenting the quantity of carbon assimilated in arboreal mass. • Commissioning integrated study on ecological carrying capacity of Western Ghats • Documentation of local Traditional knowledge on Bio-diversity • Identification & declaration of Heritage Trees • Preparation of a documentary film on Biodiversity for mass awareness programme. • Periodic evaluation of ecological services rendered by the Tiger Task force. • Encouraging peoples participation in fire control • Building more synergy with forest based corporations for forest development, medicinal plants development, value addition and standard products.	• Identification of suitable sacred groves, declaration of heritage sites and management of the same • Monitoring of the development of genetically modified food/crops • Formation of People's Biodiversity Registers and monitoring of changes in Biodiversity through them. • Special attention on R & D on utilization for weed control, genetic improvement • Encouraging synergy between personnel of forestry department and schemes. • Restructuring of beats and rounds • Establishment of research wing for technological development, genetic improvement of forest species and technologies for standardization and mapping of useful materials.

CHAPTER 5

ILLUSTRATION OF SECTORWISE ISSUES

A large number of issues confronting growth of agriculture and allied sectors have been widely discussed by policy makers, researchers and farmers' representative in Karnataka State. These issues could be classified into seven broad areas. Firstly the Mission is concerned about the slow and decelerating growth rates noticed in the production and identification of the factors constraining potential rates of growth. Some of these are: the large pockets of rainfed areas, a large proportion of the drought-prone areas coupled with harsh climatic pattern, inadequate supply of inputs, imperfections in both product and input markets and stagnation in productivity of major crops. Second, is the stagnation observed in productivity of almost all major crops in the State which can be attributed to technological fatigue or fast reaching technological optima. The main thrust of development and expansion of yield improving technologies has remained confined to irrigation-based and commercial crops and this has resulted in the neglect of potential and major stakeholders namely small & marginal farmers predominantly inhabiting in rainfed areas of the State. Third, the institutions governing agricultural sector in technology, extension, safety-nets, marketing, processing, production and distribution of inputs and administration have not been utilized to their optimum potential. There is a strong need felt to make them sufficiently dynamic and accommodative to the changing rural situations and markets. Fourth, the issues of regional imbalances arising out of structural weaknesses are incidental but inequitable resource allocation and policy neglect over years of the backward regions one of the major issues. However, in the recent decade, the issue has received some attention with a constant demand from different groups to address the regional backwardness. Growing recognition is being noticed in the policy circles and business communities for the potential role that the backward regions could play in the growth of the economy as a whole. Fifth, the issues related with the failures in achieving sustainable growth of agricultural and other allied sectors, have primarily pointed the failures in integrating agricultural sector with overall rural development. The future of sustainable development of the sector will hinge upon means and ways adopted for not only reducing the poverty among

Box 9
Major Issues of Agriculture and Rural Development

- Threatened deceleration in growth rates.
- Low value addition in agricultural / rural sector. Failure on the marketing front.
- Fast approaching optima on technological front. Transfer of technology and rural employment.
- Large proportions of rain fed /dry land area.
- Marginalization of agricultural land base.
- Inadequate growth in public and private investment. Inadequate vocational employment.
- Regional disparities in investment, Technology adoption and Growth
- Inadequate safety nets and institutional support.
- Conflicting growth vs environmental options.
- Supply stress on the input Sector
- Poor performance of seed sector
- Soil Health and water use efficiency
- Rural talents to agro-based rural activities.

farm households, but improving standard of living through integrating agriculture with the overall rural development. Sixth, the continuous neglect of the environmental issues coupled with forest degradation need to receive attention as the potential supporters of the income and employment growth in rural areas and the undesired trends need to be reversed and lastly, the allied sectors such as horticulture, animal husbandry, sericulture, fisheries and other sunrise vocations namely floriculture, precision farming have all need to be placed high on the agenda. These issues are discussed below under five different components whereby the views expressed by the participants in the discussions have been consolidated and presented.

5.1 Production

5.1.1 Agriculture

Lifting the agricultural sector to a higher level of development process has been a challenging task for the State, essentially on account of certain structural constraints and failures in managing development process itself. The well identified structural constraints relating to development of the sector include predominance of rainfed areas, large share of dependent population, presence of complex agro-climatic regions and limit on creation of potential irrigation. The nature of these constraints allows very little space to the State and therefore not much significant changes could be expected from the State at least in short run. However, in other areas, where role of the State has been identified and development processes initiated, much can be expected from the State to correct the anomalies in its management. Some of the inadequacies observed in managing development process are, a) achieving potential level of irrigation, b) effective management of watersheds, c) making agricultural endeavours profitable by transforming traditional low value crop sector to high value agriculture through appropriate technological interventions and their disseminations, d) supply of high quality of inputs (seed, electricity, fertilizers, credit) and e) strengthening marketing system. The higher growth rates achieved by the sector during 1970s and 80s were largely contributed by adequate availability of inputs and technological improvements. However, the emerging trends in stagnation of the productivity across the crops except maize since early 1990s and the agrarian crisis leading to a spate of farmers' suicides in the State, have all posed a serious question over achieving higher growth and its development. Most of the research studies highlighting these issues have identified the factors responsible such as, unplanned diversification of crops, presence of imperfect factor and product markets, technological fatigue and increasing cost of cultivation and absence of safety nets against the risks.

Box 10
Major Constraints in Agriculture

There is a need to form farmers' groups for the input purchase as well as the output sales to have a strong bargaining power. Efforts towards reducing cost of cultivation will help the farm sector a long way. Timely availability of inputs is critical and therefore procedural, administrative and delivery problems should be dealt effectively. Increase in the productivity in the crops of cereals, pulses and oilseeds should be taken on a mission mode to arrest further declining trend in these crops.

5.1.2 Horticulture

The Horticulture sector accounts nearly 40 per cent of total value of agricultural sector of the State and ranks 3rd in its area and 6th in production in the country. The State is also a major exporter of floriculture and fruits and vegetables. Through the massive support of Central/State Government and implementation of many schemes like National Horticultural Mission, Micro Irrigation Mission, National Medicinal Plants Mission, RKVY, the production, productivity, quality, post harvest, marketing and exports of the horticultural produce are all showing remarkable growth in the State.

However, the large share of horticultural production is concentrated in few pockets of irrigated regions and there is still much scope for increasing horticultural production by expanding its coverage in rainfed regions as well as hilly regions of the State, through watershed development programmes and de-siltation of tanks. The productivity and production could be improved by increasing moisture content in the soil. Nevertheless, infrastructural bottlenecks and inadequate extension services are major constraints in increasing horticultural production. Along side there is a strong need for public investment in infrastructural development along with private initiatives of the farmers.

5.1.3 Animal Husbandry

Historically, the sector has maintained its prime importance both in terms of policy attention (to reduce poverty) and supplementary source of livelihoods to the poor. Apart from providing assured family incomes and employment to landless labourers, small and marginal farmers, it also contributes in terms of providing nutritional security. Several activities of the sector require less capital but provide flexible employment (part or full time), ready cash in needy hours, assured income and quick returns. Moreover, these activities can be taken at different scales and by all classes, age groups and landless and landowners, with less dependence on high technology. Over the years, the State has maintained good record in dairy and livestock sector. Karnataka ranks fifth and tenth respectively, in eggs and milk production. However, despite having a high potential in expanding production of milk, meat and eggs, the State has not been able to meet the ever growing demand for these products. The major problems faced by the sector in increasing production are, low productivity of milch animals, shortage of fodder, rise in incidences of disease attacks on poultry, inadequate animal vaccines, inadequate and inaccessible credit and lack of infrastructure such as buildings, equipments, veterinary institutions, abattoirs and milk collection centres. It may be noted that, a substantial proportion of the production of this sector is also exported. Quality and sanitary issues need more serious attention than ever before.

The performance of the sector remains short of its optimum level of production. For increasing production, the key areas of livestock sector with growth opportunities inter alia include livestock development with new breeds, feed development, organized animal breeding service, veterinary services, extension and training services, meat processing, cold storage facilities, wool processing and cow urine processing and strategies to avoid problems related to

diseases and reducing the cost of production of vaccines and medicines. These will require lot more attentions towards training the farmers by involving SHGs and KVKs in activities like silage making, feeding practices, prevention and control of mastitis, creation of disease free zones, trading of animals, hygienic meat production, massive vaccination programmes, preparation of value added dairy products, fodder densification, development of new fodder varieties with low cost of production, group rearing of animals and development of cost effective medicines and vaccines.

5.1.4 Sericulture

Karnataka is one of the major silk producers of the country and has been consistently contributing to the export of raw silk. However, the production of silk has fallen in the recent years due to decline in area under cultivation of mulberry. Karnataka produced 8,240 metric tonnes of silk in the year 2007-08, a growth of 4.5 per cent compared to the previous year. Currently, the State accounts for 50 per cent of the country's total output, which is around 16,525 metric tonnes. A decade ago Karnataka accounted for 60 per cent of the country's total silk production. This has a serious implication for employment and poverty as this sector provides employment to almost 2 lakh farmers who are mostly marginal and small farmers. The major identified problems for slow growth in the production of silk is the non availability of land for mulberry cultivation due to faster urbanisation in the traditional growing areas, lack of infrastructure, poor coordination among the various institutional organizations, poor thrust in policy implementation and increased competition from China and Tibet. Area under silk cultivation has witnessed a decline during the last financial year. It has gone down by about 6.3 per cent to 91,431 hectares in 2007-08 compared to the previous year. In addition, scarcity of labour and water have also contributed.

5.1.5 Fisheries

The fishery sector provides cheap source of protein to a significant proportion of population in the coastal region of the state. The State government has also taken special measures for promoting both inland and marine fisheries as reflected in Marine Fishing Policy 2004 and Agricultural Policy of Karnataka 2006. However, the State has not been able to realize its potential in fish production due to infrastructural bottlenecks such as lack of adequate cold storage facilities and handling and processing facilities.

Fish production since mid 1990s has almost remained unchanged in the State and marine fish production has shown a declining trend in the recent years. Moreover, other factors like pollution of marine waters through oil spills, release of industrial wastes, radioactive residues, and untreated sewage discharged by the coastal cities have adversely affected fish growth and size of fish production. The State has huge inland water resources of reservoirs, tanks, river stretch and irrigation canals, besides innumerable wells and other small water bodies. These resources provide immense scope for increasing fish production. But there are constraints constrains faced by the inland fisheries such as, insufficient fish seed production,

under utilization of natural resources, lack of entrepreneurship among the people, poor extension services and inadequate infrastructural and marketing facilities. The decline in indigenous fish population and fish production from freshwaters has been noticed more recently. Adverse effects caused to their habitats through the construction of dams and anicuts, indiscriminate fishing, siltation, weed infestation, pollution by industrial and domestic effluents etc are the prominent issues which need policy attention.

5.1.6 Watershed Development

The State has nearly 80 per cent of the cultivated land under rainfed farming. Out of 10 agro-climatic zones, 5 zones can broadly be classified as drought-prone areas, which cover 14 districts and 106 taluks of the State. The annual rainfall ranges between 450 and 3,932 mms in the State and due to this wide difference in range, the crop yields under rainfed cultivation exhibit large variation across the districts. For optimal utilization of land and rainwater, the State Government initiated rainfed farming through watershed approach in the early 1980s. The Watershed Development Programmes were undertaken for implementation of large scale covering activities like soil conservation involving crop husbandry, animal husbandry, forestry, irrigated agriculture, horticulture, etc. Activities undertaken under the watershed approach covered both arable and non-arable land. The watershed activities have had significant impact on cropping pattern. However, the lack an integrated approach along with soil conservation and agro-processing has reduced their effectiveness substantially. In addition, though participation of stakeholders in watershed programmes is being encouraged, there has been complete negligence towards policy design with built-in measures to sustain the watershed structures in the future while transferring watershed activities to watershed committees.

There is a need to adopt an integrated approach along with soil conservation and agro-processing. While considering the possibility to transfer watershed activities to watershed committees, it is necessary to take into account the built-in measures required to sustain the watershed structures of the future. Farmers need to be trained and educated on water management, soil conservation in the dry land areas and their participation in watershed activities should be encouraged for its success. Micro irrigation is a major source of irrigation in water stressed areas and therefore encouraging micro-irrigation should be the vision for the irrigation sector and not the flow irrigation.

5.1.7 Forestry

Natural and productive forest have suffered over the last five decades as development activities particularly, energy power generation and irrigation prospects were carried out, in a large scale. In almost all project areas the spot of destruction is quite visible and has so far been neglected due to poor governance of land, water and forest. Most of the irrigation projects have been built at the heart of forest and the minor and major dams have caused rapid siltation and loss of high value renewable natural resources. Moreover, forests also were under severe pressure for meeting the growing demands for fuel, fodder, livestock grazing, timber and NTFPs on one hand and on the other, large-scale deforestation and degradation of existing natural

resources due to encroachment, diversion of forests and deemed forests for non-forestry purposes, unplanned removal of construction wood, excessive harvesting of medicinal plants, NTPFs for local use and sale, firewood, weeds, forest fire, grazing, and soil erosion. The pressure of ever- increasing demand for forest and forest produce from locals and urban areas are causing unsustainable extraction of forest produce and forest degradation. Total area under forest cover is merely 16.12 percent of the total geographical area (2008-09), as against the benchmark of 33 per cent. Hence, there is a pressing need for taking initiatives towards consolidation and protection of forest on one hand and extension of forest cover and resource base through various activities like, affectations in forest lands, free distribution of seedlings of forest produce (NTFPs), bio fuels and medicinal plant and promoting tree based farming for better realization of ecological goods and services.

5.2 Technology

The second problem confronting the agriculture and rural development related to technology. Technology is considered as an engine for achieving faster growth in the production process. The income flow to the farm household is decided by the use of inputs coupled with technological knowledge and market conditions to reap maximum benefits from the farming endeavour. There is a feeling that the technological optima are being reached at a faster rate and most of the sectors require initiation and adoption introduction of new technology on a mission mode. These are discussed sectorwise in the following paragraphs.

5.2.1 Agriculture

It is surprising and even more agonizing to note that technologies developed in labs have not reached the farmers in the State. In addition, technologies so developed are also not those which are suitable for local conditions. Almost 95 per cent of the hybrid varieties which are grown in the State are not those which have been recommended to the farmers. There is stagnation in the productivity due to the technology fatigue in agriculture. A need to re-engineering agriculture is essential with demand based research so as to increase the productivity and thus income of the farmers. New varieties of seeds have to be developed and seed growers need to be encouraged to grow sufficient quantities of seed so that overall demand can be met. Public and private partnership model could be adopted in seed production and distribution programme. Short duration varieties need to be promoted in dry land areas. Farmers should be trained on usage and dosage of plant protection chemicals and equipment. The suppliers dealing with chemical and plant protection equipment should be qualified and well trained in distribution network. To facilitate technological adoption, policies related to prices and marketing in an organized manner ought to be strengthened since in the crop sector the market forces are very strong and dynamic. Electronic weighing machines should be provided to all markets by 2020.

5.2.2 Horticulture

Area expansion on unscientific basis leads to fall in productivity and fluctuation in market prices. Upgradation of technical knowledge - the technical advances in the field of horticulture is quite satisfactory. Lack of extension personnel is the main reason for the farmers not being properly exposed to these advances. This has resulted in blockage in the transfer of advanced technology. There has to be intensified training programmes for farmers and extension personnel. Attention should be given to breeding those varieties that can grow with low-input agro techniques and in an extended growing season, and to develop varieties and production technologies suitable to urban and peri-urban locations. Research work should be augmented on promoting fruits, vegetables, spices, medicinal and aromatic plants to preventing various non-communicable diseases, and on antioxidants and nutraceuticals aspects. Use of biotechnological tools and genetic engineering is less pronounced in horticultural crops, particularly in developing countries, therefore and should be strengthened and accelerated. Emphasis should be laid on specific traits like resistance to insect pests, drought and heat tolerance and extension of shelf-life of produce. Protocols/technologies may be developed / standardized for production of botanicals/plant products, bio-pesticides, bio-fertilizers and bio-control agents at the farm gate levels. Cost effective hybrid seed production protocols may be developed to reduce the cost of hybrid seeds, which are affordable to small and marginal farmers. Phytosanitary certification standards for various seed and plant materials of horticultural crops for imports/exports need to be reviewed. Various organic cultivation practices in vogue for different horticultural crops should be validated scientifically and cost-benefit-ratios should be worked out. Among the developing nations, the Transfer Technology Structure needs a drastic change in order to meet the needs of the rural populations.

5.2.3 Animal Husbandry

Disease control is of immense importance from the farmers' point of view. Therefore a massive programme is required to eradicate some of the diseases. There is a need for adopting new animal breeding practices such as gene sexing, cloning and transgenic reproduction for breeding good varieties of livestock with higher productivity in terms of milk and meat using technology. However, before opting for cloning of native cattle species and trying out transgenic breeding of animals to produce species that suite the local requirements and expectations, one should work out the feasibility and viability of such programme. No breeding programme can be successful unless it is backed by a proper health cover system. It will be essential to map the movement and incidence of the major infectious and/or contagious diseases that cause a great concern relating to the reproductive and general animal health of the State. There is a need for quality up-gradation of traditional technology to handle commercial scale using modern equipment and management skills and to develop news pieces of birds and low input technology for poultry farming among rural farmers.

The State should encourage and support research for development and adaptation of technology for low and medium input system. Focus should be on meeting the low cost

technology needs of genetic enhancement and upgradation, evolving better and cheaper feeds, processing of livestock products, diagnostics, treatment and control of animal diseases etc. The large existing infrastructure in terms of hospitals, vaccine and diagnostic production units, bulls' semen stations and Al centres, gaushalas, livestock and poultry breeding farms and fodder production and demonstration units shall be reoriented for effective utilization. Cooperatives, NGOs, breed societies and farmers will be encouraged to participate actively to improve production efficiency. Continuous interaction will be encouraged between research institutes and Agriculture / Animal Science Universities on the one side and the State and Central set up on the other with a participatory role of industry, NGO and farmers' organizations. The objective is to undertake research on field-oriented problems relating to breeding, feeding and health cover commensurate with the requirements of livestock and poultry farmers in the field. Such technologies shall be appropriately disseminated to all stakeholders. Infrastructure for livestock sector is grossly inadequate and needs radical revamping. While augmenting existing infrastructure, focus will be on meeting the low cost technology needs and disseminating the same for the smallholder system

5.2.4 Sericulture

With constraints in increasing area under mulberry crops, the only alternative left to revive the sagging sericulture is adoption of appropriate technology. Sericulture can help the farmer to see prosperity as well as employment. It can also earn foreign exchange for the country. Today, we are confronted with low silk productivity due to lack of adoption of new technologies are up-gradation of skill and low level of trained manpower. In order to enhance the quality silk production and to meet the future demands, there is demand for skilled man power. Increase in trained human resource at grassroots level will increase the silk production by implementing scientific techniques. *Bivoltine* is undoubtedly the key for quality silk production in India. While bulk of the Chinese silk is of *bivoltine* with higher productivity and of superior quality, Indian silk, by and large, is confined to the local *multivoltine* species. Indian sericulture scientists have been striving to introduce *bivoltine* silk production in India for the past one decade and some breakthrough has been achieved in acclimatising and propagating *bivoltine* silkworm species in parts of Karnataka.

The phase of development has been considerably slow and the needed focus accorded to *bivoltine* programme could ensure the production of quality *bivoltine* silk. Quality raw silk cannot be ensured just by producing good quality cocoon alone. Appropriate reeling technique is equally important for the production of good quality raw silk. Conventional Charkha reeling that which was in practice for a long time is being phased out by mechanised reeling. Multi-end reeling machines introduced by CSTRI - the Research Institute under CSB have become quite popular among the silk *reelers,* giving more *reelability* of quality silk. A silent revolution is, in fact, taking place in this vital area especially in southern silk states. Modernisation of silk weaving is on the top of the agenda for the production of Indian silk especially for exports. Notwithstanding the fact that the demand for our traditional handloom goods still persists in certain selected markets, we need to produce finer fabrics in *powerlooms* and *autolooms* to enable us to compete and sustain the fashion-conscious export markets, in keen competition

with China, Korea and Thailand. One cannot ignore the fact that EOUs and other organised units are now fully equipped with jet looms, *shuttleless* looms and auto jacquards.

It is true that area under cultivation in the state has come down to some extent in the last couple of years. However, per hectare silk production has gone up, which is a very promising sign. In fact, in terms of productivity, we would soon be on par with China. Despite shrinkage in area, per hectare silk production, which was 81 kg in 2006-07, went up to 90 kg in 2007-08. Productivity in Karnataka is 25 per cent more as compared to States like Tamil Nadu and Andhra Pradesh. Per hectare silk production in China is about 100 kgs. Karnataka can soon reach that mark.

5.2.5 Fisheries

Small and medium players, who are predominant in the fisheries sector, lack the technology and modern equipments. These players are unable to meet new environmental and safety norms including sanitary and phyto-sanitary standards. There is a need for value addition in order to get better price for some of the cheaper varieties of fish. Low value of their produce and consequent low net income generated are the main reasons why the fishing community continued to remain backward. Value addition to cheaper varieties of fish will ensure higher income to them. Value addition essentially meant, transfer of a particular technology and since most of the fishermen and farmers are illiterate, there is a need to properly educate them the science behind the technology.

5.2.6 Watershed Development

Watershed development has been one of the major strategies to overcome the productivity bottlenecks. *Sujala* watershed development has seen a great success. Further, the State has to get into new Guidelines issued by the Government of India. While the transition towards the new Guidelines is taking place but the sector needs a new boost of investment which will bring back the required vibrancy in the development. Watershed department has to dovetail the technological advances of the agricultural department into its strategy and that will go a long way in getting the required results.

5.2.7 Forestry

The critical technological needs of the sector in the process of planning and monitoring have always been neglected. The major issues confronted by the sector are i) inadequate data on bio-diversity, ii) lack of GIS/MIS based data, lack of modern technology in forest planning, iii) monitoring and evaluation, iv) lack of research support for improvement of productivity of plantations, v) exploring bio-diversity and genetic aspects of available species, vi) planning and wildlife management and vii) lack of technologies for measuring impact of climate change. These issues ought to be addressed for forestry development.

5.3 Institutional Set Up

Strong network of professional institutions are very important to transform the technology into action. The rational for institutional set up is analysed sector wise in the following paragraphs.

5.3.1 Agriculture

Karnataka has two well established Agricultural Universities at Bangalore and Dharwad. In addition, newly set up Universities have also started functioning. The one at Bangalore caters to the needs of the farmers of southern Karnataka and the one at Dharwad takes care of the farmers of north Karnataka through a network of colleges, demonstration plots and research stations. Research and extension play a key role in development of agriculture. In the post-green revolution technology environment, significant paradigm shifts have taken place in the nature of demand for technology and extension services. While the number of farmers has increased substantially over last four decades, the extension infrastructure, manpower and institutional framework available in 1970s, have remained more or less unchanged over the period of time. There are many vacancies in extension wing of the department which compels the extension workers to take care of a larger number of farmers. The situation is reflected in the substantial decline in the ratio of public extension staffs/ infrastructure per hectare, GCA and public extension staff per unit of farmer. At the same time it has been seen that private players have emerged in extension services.

The emergence of private players is a welcoming thing. A strategy of 'contract research and extension' consultancy can satisfy the market-driven demands on commercial considerations which are outside the public research extension system. However, the needs of small and marginal farmers and the dry land ecosystem can not be met by the market alone due to their low purchasing power. In addition, research and extension services in the State are largely directed towards specific commercial crops and in specific areas. Hence, it is quite essential to restructure the institutional set up of public extension services for which the Agricultural Universities and line departments are required to focus on the vulnerable sections and regions.

The demand pattern for Agricultural Education is changing rapidly and the public institutions may not be able to cope up this speed. In the general education sphere, private institutions have played a pivotal role and therefore the State could consider allowing more private institutions to venture into this area. Procedures for the scheme on *Raitha Sanjivini* should be simplified.

The institutions ought to focus on several areas, like i). enriching soil health; ii) soil testing in all the farms to be completed by 2020; iii) ensure recovery of soil to the extent of 80 percent; iv) implementation of policy prescriptions require institutional reforms which will make administration more accountable; v) effective regulation and quality control of inputs to check the low quality of inputs such as seeds and chemicals; vi) setting up of institutions for grading of products, their standardisation and deal with IPR issues; vii) encourage commodity

exchanges in order to link the domestic markets with international markets; viii) formation of commodity based SHGs for marketing purposes and marketing to be part of extension activities and finally marketing of rural products should be done through integrated kiosks.

5.3.2 Horticulture

Horticultural crops need continuous extension support. This could be channelised through *Hortnet*, the interactive website that can be operated through the rural kiosks placed at the Raitha Samparka Kendras. The services of the media network of regional TV channels could be fully exploited to provide the services and for the spread of Horticulture knowledge.

Institutional set up in horticulture have to address several issues: i) standardising post-harvest practises; ii) publicity of the same among the farmers by utilising the existing training centres of the Departments of Agriculture, horticulture KSAMB and universities etc.; iii) these institutions have to impart crop specific training to farmers, traders and other market intermediaries; iv) provide cold chain system for perishable commodities, pre-cooling centres, cold storages, refrigerated vehicles for transport to link the markets by all operators, private, cooperative and public sectors; v) location of cold chains at appropriate places with incentives to ensure their viability; vi) providing good market information system with marketing cards for optimum utilisation of the cold chains; vii) extending crop insurance to a number of horticultural crops against adverse climatic conditions and natural calamities; viii) Input Insurance for identified horticultural crops; ix) establishment of alternative modernised horticulture markets to ensure effective domestic marketing system and lastly; x) facilitate appropriate and sustained market support by establishing **SAFAL** kind of market channels in specific horticultural crops. It has to be recognised that horticulture can thrive only with good market support.

5.3.3 Animal Husbandry

Institutional mechanism in Animal Husbandry has to tackle the low quality of milk because it has been observed that the State is not able to realise better prices for the milk due to its low quality both in domestic as well as international markets. The absence of information centres and adequate veterinary service centres are major reasons for low quality of milk. The situation could be dealt with by establishing information centres and immunization cells integrated with milk federation branches (milk collection centres). Further, to incentives farmers to improve the quality of milk, milk prices may be linked to quality. This will require restructuring of current institutional procedures to reap potential benefits. Farmers' field schools are quite successful in agriculture, which could be adopted for animal husbandry and other allied sectors. There should be institutional support for input delivery to SHGs for the promotion of the dairy. Sheep and goat rearing has proven its success in supporting rural livelihoods in dry land as well as in hilly regions of the State. However, due to genetic erosions of rams/bucks in breeding, it is adversely affecting the economic returns to farmers. There is a need for training the farmers on breeding. The major problem relates to inadequate manpower for providing veterinary services. Apart from this, the present restrictions on cross-breeding needed to be relaxed to enhance milk production. Vaccine production is far below demand and

in addition, new diseases are also to be tackled for which extension services are essential. There is a need to improve infrastructure facilities for milk procurement and strengthen extension services.

5.3.4 Sericulture

Sericulture is a remunerative enterprise with a very short gestation period, having the potential to generate adequate returns from a very small piece of land. However, lack of irrigation potential, depleting ground water and high initial investment costs limit large-scale adoption of sericulture as a livelihood option for majority of the poor families. Sericulture is a profitable business for irrigated farms in Karnataka. However, there is a significant proportion of farmer population who lacks the knowledge and skill of mulberry cultivation and silk worm rearing. In addition, this population also faces the problem of a lack of appropriate soil moisture conservation skills and technologies. As a result there is under-utilization of rain water and exploitation of ground water apart from severe soil erosion. There is an urgent need for extension services and capacity building measures for increasing production of sericulture. There are several factors that limit the spread of sericulture among marginal and small farmers. Therefore, apart from extension services, the situation also demands more support from government in providing technical support and water facilities. Moreover, egg production is a scientific skilled activity, which necessarily has to take place in a hygienic environment. Earmarking production sites for silk worm eggs are necessary for the purpose. Since cocoons have very short life, crops need to be sold straight after harvest.

There are large number of small farmers and *reelers* who, in spite of limitations of the decentralised system in which they work, are capable of producing good quality *bivoltine* silk in small quantities. However, the need of the hour is to produce them in bulk so that a concerted effort can be made to address the challenges of the international market. There is thus a need to introduce and organise a system for planned production of *bivoltine* silk by groups of farmers catering to the needs of large *reelers* or group of *reelers* capable of producing quality silk yarn in bulk. Blending the present system with corporate and cooperative concepts will be an added advantage. Such an organised effort can effectively make use of the new technologies of tropical *bivoltine* production and practise large-scale sericulture, making use of mechanised approaches, which have been evolved by the Central Silk Board (CBS). This would require investment from the industry, along with credit from the banking sector. Reeling technology has a significant influence on the quality of silk. The CSB should, therefore, pay more attention to reeling technology, and make efforts to improve the capabilities of textile machine manufacturers and the availability of modern technology based machines for reeling.

5.3.5 Fisheries

There is not much awareness among the fishing farmers about production of exportable varieties as well as attaining EU quality standards. This is on account of poor extension services. The poor quality of fish production is the major constraint in improving earnings of the

fishermen in the State. Market margins and inability of the fisher community to organize their marketing renders fishing a low income vocation. The cooperatives in the fishing sector have been functioning and have members but the transfer of income to the members has not been effective. Proper organisation of the cooperative institutions can take care of this issue.

5.3.6 Watershed Development

Establishment of an exclusive department for Watershed Development Activities is the foremost institutional arrangement in this sector. The institutional designs for watershed development had to undergo many amendments by changing the guidelines due to insistence by the funding agencies. One of the best suited designs was the **Sujala Watershed programme**. The present Department of Watershed is well organized and equipped but the frequent changes in the guidelines and the methods of implementation usually coming from above allows less flexibility for utlising the local expertise in implementation. This needs to be examined.

5.3.7 Forestry

Institutional arrangement in respect of forestry is essential for better management of forests and forest products and for an understanding of the stakeholders. In order to ensure ecological security and environmental balance, there is a need for sustainable management of existing forests and enhancing the forest cover through available institutional mechanisms and involving stakeholders of forest. In the past 15 years, there have been concerted efforts towards constituting Joint Forest Management Committees (JPMCs) and involving them in planning, development, protection and maintenance and conservation of forest. However, the major problems facing forestry sector inter alia are a) inadequate staff, b)lack of training and physical infrastructure, c) lack of adequate trained staff, d) absence of capacity building measures, e) lack of institutional mechanism for information sharing with people and receiving their feedback for planning inputs, f) lack of communication with stakeholder and other intended target groups for maintaining coordination between JPMCs and forestry department and g) policy to protect forest land from its diversion for non-forestry purpose and existing forest resources.

5.4 Regional Dimensions

Any issue related to regional dimensions in Karnataka, can never overlook the famous Document on regional imbalance i.e. the High Power Committee for Removal of Regional Imbalances (Prof Nanjundappa Committee, 2002). The committee has identified 114 taluks out of 175 taluks in the State as backward. Most of these backward taluks are in Northern Karnataka as compared with Southern Karnataka. As many as 59 taluks out of 114 backward taluks are located in Northern Karnataka. The committee has also identified 39 taluks as the most backward of which 26 are in Northern Karnataka. Therefore an attempt to get a Vision of the Development of the State has to keep in view the backward regions not only from the point

of equity but also as potential contributors to the process. In the following paragraphs the Mission Group have charted out a few points envisioning the development of the backward regions of the State.

5.4.1 Agriculture

It needs to be emphasised time and again that agriculture sector in Karnataka has large steppe of drought-prone area coexisting with small regions having assured irrigation. Nevertheless the performance of agricultural sector in Karnataka is much better when compared with those states having similar climatic constraints. Drought is a frequent visitor to the State especially in the Central and the Northern Karnataka region. Hence future strategy for the region will be to think away from irrigation alone as a solution but to concentrate on rainfed horticultural development and fodder based animal husbandry.

5.4.2 Horticulture

Karnataka is in the forefront in respect of area and production of many horticultural crops, but the large potential available to increase area under fruit crops in the North and North-Eastern Dry Regions of the State is yet to be exploited. There is considerable gap in the productivity of fruits and vegetable crops across the districts of the State. Therefore, there is sufficient scope to increase the productivity of fruit crops by adopting high-tech horticulture. Dryland horticulture and horti-processing can take the best advantage of the resources of these regions.

5.4.3 Animal Husbandry

Animal husbandry also is a promising activity in the backward regions. The input requirements of this sector are not as much as it is in agriculture and can thrive well in the rainfed conditions. Therefore the future strategy has to focus on enhancing activities under animal husbandry in the rainfed regions. Likewise Sericulture is gradually becoming popular in the backward districts of North Karnataka, in Bagalkot, Koppal, Gulbarga, Bellary and Raichur where farmers are opting for mulberry cultivation. There is not much scope to develop sericulture in the traditional areas because of: i) rising land value in the traditional sericulture areas of Old Mysore, such as Mandya, Mysore and Chamarajanagar, which had discouraged farmers from extending the activity to new areas; ii) The production cost is also rising and so are the labour charges and further; iii) those engaged in the activity could not transport their produce to the markets in the Mysore region because of the distance.

5.4.4 Bridging the Regional Inequality

The State Government is committed to bring the most backward and the backward taluks identified by the High Power Committee for Redressal of Regional Imbalances (Nanjundappa Committee) into the mainstream development, and therefore all efforts have to

be made to boost growth of agriculture and allied sectors in these regions. It is well known that these regions are also the core rainfed areas of the State with slow development of infrastructure, including irrigation. Therefore, the strategy for development of these regions has to rest on three important initiatives. First, it is essential to concentrate on intensive watershed development activities in these regions that will improve water conservation and the natural resources base, as also step up production. Second, allied agricultural activities including rural industrialization conducive to the local resources and skills would be the supporting factor to absorb the available work force at remunerative wages. This will also generate backward and forward linkages with other sectors of the economy galvanizing the income generation activity. The third strategy involves capitalising the available resources and suitably directing the cropping pattern towards horticultural and other less water consuming crops. The investment density in these regions is presently at a dismal level. If stepped up, it can induce the required growth.

5.4.5 Agriculture and Rural Development

Agriculture is the core of rural development but not essentially equivalent to rural development. The later covers a wider canvass that includes rural industries, infrastructure (education, health, PRIs, rural decision making process and many other facets). As mentioned earlier many of these aspects fall out of the ambit of this Mission Group and hence the Group has left those out of its purview. However, in the definition of agriculture all the agricultural and allied activities have been taken into consideration. However, the Mission Group on Decentralization has dealt with the process of rural development from the PRI angle.

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ANNEXURE

A NOTE ON THE DISCUSSIONS HELD AT THE MEETINGS OF THE MISSION GROUP ON AGRICULTURE AND RURAL DEVELOPMENT

1. Proceedings of the first meeting held on September 09 at Vikasa Saudha, Bangalore

At the outset, Prof. Deshpande, Chairman, Mission Group on Agriculture and Rural Development while welcoming all the members emphasized the point that in order to maintain continuity and consistency in the deliberations of the Group it is utmost important that the members present here need to attend all the meetings of the Mission Group. Prof. S. Bislaiah, former VC of the University of Agricultural Sciences, Bangalore, a special invitee at the meeting, stated that for the development vision for agriculture and rural sector there are three major domains which need to be focused upon – a) technological solutions, b) institutional changes and c) policy objectives or instruments etc. The Mission Group would therefore, need to address these three areas. He also stated that the first task of the Group would be to get acquainted with the problems of the rural economy of the state e.g. the widening divide between the rural and urban areas etc. Thereafter, department – wise and sector –wise issues were taken up for discussions:

i) **Agricultural Production and Related Issues:** a) Stagnation in the yields of most of the crops for the Past 7 to 8 years and its implication on net income of the farmers; b) unplanned diversification of crops and mismatch in demand; c) research and extension services are directed towards specific commercial crops and in specific areas; d) the extension wing in the Department is weak as there are many vacancies as a result the existing extension workers are overburdened as each one of them has to cater to around 800 to 1000 farmers approximately; e) the public investment in agriculture has declined in real terms and to target for a growth rate of 4 per cent envisioned in agriculture, the public investment required to be 12 per cent of GSDP, whereas at present it is only about 6 per cent; f) clear method has to be followed to provide fertiliser subsidy which need to be on nutrition basis; g) there are issues relating to post harvest and marketing facilities; h) many command areas have become wastelands due to soil degradation (alkalinity and salinity of soil) which need to reclaimed; i) repeated monoculture has reduced the micro nutrients in the soil leading to decline in production, soil health can be improved perhaps by adopting the practice of crop holiday.

ii) **Employment:** One way to provide employment to agricultural labourers during the off-season is to encourage shifting of the labour intensive industries to rural areas. NREGA alone would not be able to solve the problem of agricultural labourers since the programme is restricted to 100 days only in a year. The other major issue relates to reducing the migration of agricultural labourers to the urban areas, as such migrations create shortage of labour and adversely affect agricultural production.

iii) **Irrigation –** The potential created is around 22 lakh hectares, whereas the potential utilised is 18.5 lakh hectares. This gap is primarily because of violation of cropping

pattern by farmers. The imbalance between sources of irrigation needs to be corrected and efficiency in irrigation is to be increased.

iv) **Horticulture** –This sector has been facing lack of proper market, interrupted/inadequate power supply, absence of a network of market through which proper regulations could be maintained to avoid distress sale, lack of proper planning of crops area-wise and ineffective means of transfer of technology. There is a need for creating horticultural crop map of the state.

v) **Animal Husbandry –** All developmental activities are being undertaken through the institutions and there are around 4500 veterinary institutions throughout the state. The problem in this sector is inadequate manpower which is the biggest constraint faced by the Department in providing veterinary services, especially in the North Karnataka region. One way to solve this problem could be to increase the seats in veterinary colleges for which the Indian Veterinary Council need to relax norms regarding intake of students. There are restrictions on importing of bulls which are required for artificial insemination, and they need to be relaxed to enable cross breeding for enhancing production of milk. Vaccine production is not as per demand and in addition, new diseases are also to be tackled, for which extension services are essential. Infrastructure for procurement of milk and extension services needs to be strengthened. It was also observed that conserving of native breeds is essential and therefore any programmes/schemes in this regards should be strengthened. Although the state has been facing fodder deficit for a long time, there are no schemes or programmes for promoting fodder production/cultivation. However during the current year, , the department has taken up a Fodder Development Programme in 114 talukas of the State, where demonstration plots are being developed. As regards to poultry it is proposed that backyard poultry could be intensified and incentives, since it is a source of additional income to farmers/ agricultural labourers.

vi) **Forestry** – In order to develop forestry in the state, it is important to know as to what extent the rural people depend on forests. The National Forest Policy envisages 33 per cent of land area under forests. To achieve this target, the forest department will have to resort to additional planting to the extent of 2.20 lakh hectares whereas currently the Department is able to plant in much lower area of 80, 000 hectares only. Therefore, the balance area for plantation has to be community areas. The rural folk need to be convinced that to meet their demand for firewood, they should not depend on forest areas which are under the jurisdiction of the Forest Department. In this regard, the Village Forest Committees need to be evolved. Of the available wasteland, other fallows and cultivable wastes can be utilised for fodder plantation and green manure. It is crucial to stop conversion of cultivable land for other use. Fodder banks can be raised and ecological species can be grown along with plants for bio-fuel and fodder.

vii) **Agricultural Marketing** – Prices of agricultural produce depends on demand and supply in the market and the department does not have any role in controlling it. The farmers are therefore, exposed to the fluctuations in the markets which often affect them adversely, although a Revolving Fund of around Rs. 500 crore is available for ensuring MSP to farmers.

viii) **Rural Development** – The general problems cited for the rural sector relate to a) provision of roads, drinking water, sanitation, education and healthcare; b) data on the density and availability of these basic services in the rural areas as well as the norm for their provision; c) the opinion on NREGS, where ever they are not successful; while asserting the reasons for such failures an alternative shelf of projects which can be implemented under the programme; d) what is the role of the PRIs in rural development, a policy for involvement of NGOs in rural development activities is required, essentially because of the successes of the experiments with SHGs in this regard; e) many corporate houses are contributing for social causes, perhaps villages could be adopted by specific corporate houses for developing these villages

ix) **Agro-processing Industries** – The main problems facing small scale agro-processing industries is marketing of products, financial assistances to entrepreneurs and competition with MNCs especially in terms of quality.

x) **Agriculture University** – Research and contribution towards extension services need to be aligned to the agro-climatic zones of the State. With the climatic changes, adaptation and mitigation technologies have to be developed so that productivity and production are not adversely affected.

At the conclusion of the meeting, representatives of all the departments present were requested to prepare a brief note on the problems faced in their respective areas/ sectors, and propose technological solutions, suggestions on the institutional framework and policies and programmes for ameliorating the problems.

2. PROCEEDINGS OF THE SECOND MEETING OF THE MISSION GROUP ON RURAL ECONOMIC DEVELOPMENT HELD ON OCTOBER 09, 2009 AT THE UNIVERSITY OF AGRICULTURAL SIENCES BANGALORE.

Initiating the discussion, the Chairman of the Mission Group on Rural Development, Prof. R.S. Deshpande, stated that while working on a vision for any sector, one needs to focus primarily on three components i.e., the knowledge domain of the subject, the implementation issues and the concern of the stakeholders. Further, the solution for each problem can be sought either through technology, institutional framework or policy instruments. Some of the general problems of agricultural sector which were discussed in the previous meeting were listed and thereafter the discussions followed:

i) **Agriculture-** a) The market forces in the economy are driving farmers to grow eucalyptus, mango, cashew and other horticulture crops especially in dry areas of the state; b) cultivation of foodgrains declining in rain-fed areas due to increase in cost of cultivation and shortage of agricultural labourers; c) farmers' income could be increased by adopting cost effective cultivation practices; d) short duration varieties could be encouraged as a technological solution to dry land farming; e) to deal effectively with shortage of labourers, small implements could be provided at subsidized rates which could help farmers for weeding and sowing and reducing drudgery; f) re-examination of subsidy distribution process for improving fair and proper distribution; g) timely availability of quality inputs such as seeds, pesticides and fertilizers is critical and subsidized inputs could be given to group of farmers or SHGs without involving the functionaries in between to avoid procedural, administrative and delivery problems; there is also a need to educate farmers on the proper usage and dosage of these chemicals; dealers in chemicals should be qualified and well trained personnel for its distribution; h) institutions to be strengthened and operationalised for effective implementation of policies; i) regulations at all levels and quality control of inputs essential for making the sector competitive in the domestic as well as international level; j) institutions are to be established in order to enable grading, product standardization and to deal with IPR issues ; k) Public -Private partnership in agricultural marketing could be encouraged to deal with inefficiencies in existing marketing system; l) commodities exchanges needs to be encouraged to develop link with international markets; m) commodities based SHGs can be formed for marketing and marketing should be a part of extension activities; n) marketing of rural products could be encouraged through integrated kiosks; o) Farmers' Field Schools (FFS) could be adopted in allied sectors of animal husbandry and fisheries as they have been successful and cost effective.

ii) **Animal Husbandry –** Agriculture alone cannot sustain farm incomes, it needs to be complemented with activities of animal husbandry and fisheries. The dairy sector has

been quite successful in supporting and getting an assured income for the farmers. Meat has yielded the highest returns as result of sustained price rise, therefore, next round of growth in the agricultural sector has to be propelled by animal husbandry; some of the major interventions required for the sector are a) input support for dairy dependent SHG members for enabling them making them to provide concentrated feed to milch animals especially during pregnancy and lactation stage; b) establishing village based milk processing units as only 10-11 per cent of total milk produced in the state is being processed for milk products like ghee, butter, khoa etc. This will be bring value addition to their produce and increase their returns and encourage entrepreneurship among rural youth; c) chaff cutters could be introduced to reduce wastage of fodder; d) elite varieties of rams and bucks could be introduced to solve the problem of genetic erosion and increasing the production of high value livestock. In addition, people need to be educated on breeding practices and health issues of animals.

Karnataka has a relative advantage in growing of pulses and oilseeds, in the rain-fed areas which fetch high value in the market. Pulses and oilseeds are also important as its by-product- oilcakes is used as fodder and moreover oilcakes are nutritious and cost effective feed for animals. One strategy to sustain farmer's income could be to combine growing of pulses and oilseeds along with animal husbandry by forming groups of such farmers to raise their bargaining power and income. It is also essential to take steps in mainstreaming women in agriculture and allied activities to benefit them from state initiatives and programmes.

3. PROCEEDINGS OF THE THIRD MEETING OF THE MISSION GROUP ON RURAL ECONOMIC DEVELOPMENT HELD ON OCTOBER O7, 2009 AT THE OFFICE OF THE COMMISSIORATE OF AGRICULTURE, BANGALORE.

The Salient Features of the Discussion are presented below:

i) **Agriculture** – a) There is a need for setting a goal for achieving higher productivity of crops grown in the state; b) nearly 95 per cent of the hybrid varieties grown in the state are not the one recommended to the farmers; c) market forces are very strong and dynamic in the crop sector, hence policies related to prices and marketing need to be strengthened in organised manner; d) need for a mechanism to transport the surplus produce to deficit areas; e) need for creating farmers' groups for input as well as output market to increase their bargaining power; f) electronic machines need to be provided to all the markets by 2020; g) a complete market development strategy need to be prepared; h) establishing a Godown in each of the GPs with a provision of warehouse receipts; i) Initiatives are needed to increase the productivity of pulses and oilseeds on a mission mode to arrest declining trend of their productivity j) initiatives towards de-silting of tanks can enhance the productivity of crops through increase in moisture content in the soil; k) the supply side in terms of infrastructure, inputs have to be strengthened and development of agro-processing is necessary for good marketing;

l) expansion of crop insurance for all farmers is critical for supporting agriculture against risks; m) need for re-engineering agriculture with demand based research in technologies to raise the farmers' income; n) new varieties of seed need to be developed and seed growers need to be encouraged to grow sufficient quantities to meet the demand of seeds seed of the farmers; public-private partnership in seed production and development programmes could be explored; o) The State Agricultural Plan and the Comprehensive District Agriculture Plans prepared under RKVY should become an integral part of the Report of the Mission Group on Rural Economic Development; p) safety net programmes for farmers are essential; q) Afforestation is necessary in the southern region of the state; r) need for simplification of procedures for the scheme on Raitha Sanjivini; and s) focus should be given on enriching soil health and all farms should be tested by 2020 and recovery of 80 per cent of soil should be ensured.

ii) **Watershed** –Certain queries were raised at the meeting on the watershed sector. They are , i) should the Sujala Model be upscaled and replicated or should a different model be adopted; ii) what impact did the watershed programmes had on incremental productivity and income of the farmers; iii) can watershed sustain the biological equilibrium necessary for agricultural activities?; iv) what has been the impact of watershed on water level; v) can additional investment for this sector be generated by the farmers through their participation; vi) since cost of cultivation has been increasing while cultivable area is declining; which are the alternatives available. The other issues discussed relate to, a) there is a need to adopt an integrated approach along with soil conservation and agro-processing; b) while considering the possibility of transferring watershed activities to watershed committees, it is essential to take into account the built-in measures to sustain the watershed structures for the future; c) farmers need to be trained and educated on water management, soil conservation etc, especially in dry land areas to increase water use efficiencies; d) micro irrigation should be the vision for the irrigation sector since it is a major source of irrigation in water-stressed areas and not flow irrigation; e) farmers' participation is a must in watershed activities for their ultimate success; some studies show positive impact of watershed programmes on farmers' income (1.7 to 2.5 per cent) through increase in the crop productivity (13 to 23 percent) and multi-cropping; f) in the background of recent guidelines issues by Department of Land Resources, Government of India,(GOI) which state that by the end of 14th Five Year Plan, there would be complete coverage of watershed if the state and the Gram Panchayats (GPs) show their ability to absorb the funds allocated for this sector. Since the major share of allocation is from the GoI, it is essential to assess the investment needs in those areas which have been covered under watershed;

4. PROCEEDINGS OF FOURTH MEETING OF THE MISSION GROUP ON RURAL ECONOMIC DEVELOPMENT HELD ON OCTOBER 30, 2009 AT THE KARNATAKA VETERINARY ANIMAL AND FISHERIES SCIENCE UNIVERSITY, VETERINARY COLLEGE, HEBBAL, BANGALORE.

The highlights of the discussion in the meeting are as follows:

i) **Agriculture and Allied Sectors** – This sector has to be understood in terms of income generation for farmers and not merely in terms of resource sharing; technologies and market conditions, need a careful analysis as they will change the development paradigm for agricultural sector; need to explore the steps necessary for maintaining food self- sufficiency.

ii) **Animal Husbandry and Veterinary Services**- a) The sector has huge potential. To achieve a 5 percent growth target, an additional budgetary support of Rs. 628 crore is required; b) insurance cover is essential for risk management; c) the coverage of economic indicators of this sector has to be widened and should include other products too. As of now milk is the only product which is being considered; d) need a strategy which will enable the authority to gear up to face any new disease threats that may pose challenges in any region of the state; e) disease control at zonal points is necessary and an awareness need to be created among the farmers on this, f) cost of production of vaccines and medicines is very high; g) need for training farmers involving SHGs and KVKs in various activities like silage making, feeding practices, slaughter and processing, prevention and control of mastitis, creation of disease free zones and h) trading of animals, hygienic meat production, massive vaccination programmes etc.

iii) **Dairy** – a) Training should be given to rural dairy farmers involving SHGs for preparation of value added dairy products and to MPC staff on chemical micro-biological quality assurance of milk; b) regulatory measures should be taken to prevent artificial milk entering into market and awareness should be created among the farmers and consumers to find out the purity of milk; c) need to develop technologies which are friendly to common people and affordable especially, the poor; d) a system needs to be established at the milk federation branches where milk is collected from the farmers as a check to ensure that the milk so procured is disease free; e) vaccination points (Immunisation Cells) have to be set up at milk collection units towards solving the loopholes in this regard.

iv) **Fodder** – Transportation of huge quantities of fodder to neighbouring state (Maharashtra) from north Karnataka, should be prevented and be effectively diverted to other parts of the state to meet its own demand; Multi-purpose Tree-Fodder Bank to be set up; strategies and procedures need to be formulated to rescue the animals in calamity and disasters situations

v) **Fisheries** – a) Bangladesh model has to be adopted for increasing the fish seed/fish production; b) Public-private participation should be encouraged at higher scale; c)

need to produce more fish seed to utilize all aquatic resources to their optimum potential; d) involve the rural youths in activities such as fish seed production, fish pond construction, pond preparation, fish culture, fish harvesting, marketing, storage, etc. These would definitely open up many avenues to improve rural economic development as all activities related to fisheries are carried out in rural side.