

Karnataka's Agriculture: A Submission to Farmers' Commission

R.S. Deshpande

**Based on Studies Carried out at
Agricultural Development & Rural Transformation Unit
Institute for Social and Economic Change
Bangalore-560 072**



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1. Introduction

Karnataka State has a typical combination of large share of its area under drought-prone category and a well-diversified agricultural sector. Severe climatic and infrastructural constraints inhibit the development process of the state. Despite these, the state has recorded an enviable growth performance in the recent past. The State has not only performed better in the industrial sector but also showed clear signs of surging ahead in the agricultural sector too. In addition to the proverbial IT sector, horticulture, floriculture, food processing, and other allied agricultural activities have contributed significantly to the growth performance of the sector despite some failures in the crop economy. In an aggregate appraisal, the state has always performed above the national average in most of the sectors and especially so in agriculture. This success should be attributed to the policy makers in keeping a control over the bottlenecks and achieving higher growth despite severe limitations. Thus the Karnataka model of development is typical in its content of overcoming severe limitations and encashing on the comparative advantages across sectors. Under the severe shadow of natural as well as production constraints, its achievements can be termed as exemplary – but the question about reaching these benefits to the bottom of the economic classes calls for further analysis.

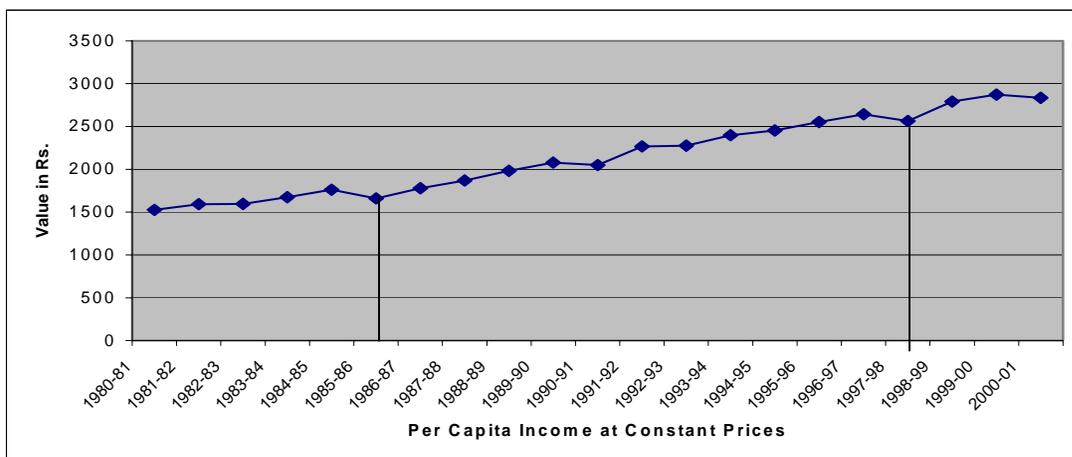
2. Growth Performance in State Income

The aggregate growth in the state can be traced from the viewpoint of the trends in the State Domestic Product (SDP) as well as the Work Participation Rates (WPR). The SDP trends provide indicators for the generation of economic activities in the state whereas WPR shows the employment situation across sectors. This analysis indirectly indicates the status of the state economy and can be connected to the income distribution and the process of marginalisation. The state income and work participation

rates are presented in Table 1, Table 2 and Table 3. It can be seen that the per cent of SDP originating from agriculture has been going down, whereas, at the same time the overall WPR is increasing but the workers' share in agricultural sector has stayed more or less the same (Table 3). This brings to the fore a few issues. First, the relative dependence of the agricultural sector has been declining but at the same time the workforce engaged in the sector is not receding at the same rate. This, in turn, indicates that workforce in agriculture generates less per capita SDP than the other sectors. The second issue generated out of this observation supports the earlier view that the agricultural performance of the state has a few strong and weak spots and that cause the mismatch between growth and employment. The third related aspect is the quality of growth. In other words, impact of the typology of growth on poverty and inequality situation in the state assumes importance. It is clear that the growth of agricultural sector during the five decades was relatively better, which has a strong bearing on distributional aspects.

A review of the growth performance indicates that the phase during 1985-98 was quite encouraging compared to the earlier phase. Even though during the year 1998, there was a small trough experienced by the State economy, it recovered during the following years. During these two decades the growth largely came out of non-agricultural sector but agricultural sector posted impressive performance. It is quite intriguing that the crops that have shown prominent growth were in the non-food grain sector.

Figure I: Growth Trend in Per Capita Income Over a Period of Time (Value in Rs.).



3. Growth Initiatives in the Agricultural Sector

Agricultural sector of Karnataka has been characterised by intermittent phases of growth and stagnation. It is a matter of deep concern as this sector relates directly to the overall growth as well as distribution performance of the state economy. Efforts, both at policy and at implementation levels, are being made to overcome the bottlenecks inhibiting growth. The constraints mainly relate to efficient utilisation of natural resources, existing infrastructure facilities, forward and backward linkages, and allied supportive activities. Besides these, current liberalization process has led to the emergence into prominence the role of allied agricultural sectors, e.g., horticulture, floriculture, fisheries, and agro-processing. These sub-sectors require better quality of supportive infrastructure for sustained development and only then they can contribute significantly to the growth of Karnataka's economy. The aggregate growth in agricultural sector is largely dictated by the growth in the crop economy. The growth rates during the last decade are presented in table 4. It can be seen that the last decade has not been very encouraging in the crop economy except for paddy, maize, wheat and sugarcane. But one cannot neglect the fact that the allied agricultural sectors have sustained the sectoral growth rates – despite the failure of the crop economy.

As history tells us, Karnataka has always taken first initiatives on many occasions be it pragmatic land reforms, democratic decentralisation, well-designed anti-poverty programmes, understanding human development (through HDI) at desegregated level, fresh initiatives in rainfed agriculture or rigorous participation in international trade. In most of the cross-section comparisons across states, Karnataka thus occupies a prominent position. But this is often at the median level. From one point of view, this can be interpreted as an average response to the developmental initiatives and not sliding down in the position despite the acute constraints faced. Another look at it indicates that this may be the inherent inability to climb up in the developmental hierarchy despite remaining at an average level for a long time. Probably, the developmental efforts are so critically placed that the state continues in the position without sliding down in the hierarchy and at the same time unable to climb up in comparison with other States of the country. Such situation will require placement of growth in the most crucial sectors (after locating such sectors) that hold ahead a promise and finding out new investment avenues in similar areas (Deshpande and Raju 2001). The efforts, therefore, must be directed towards optimising the value added and

at the same time not losing sight of human face of development. Any such effort requires a look at the composition of the poor in the state.

3.1. Policy Perspective

3.1.1. Overview of the State Agricultural Policy 1995

The Agricultural Policy Resolution (hereafter referred to as policy) adopted by the Government of Karnataka in 1995 is, by and large, based on the following guidelines:

- a) Land and land use policy to improve growth prospects.
- b) Policy to improve yields and achieve self-sufficiency in foodgrain production.
- c) Policy towards increasing the availability and improving the efficient use of scientific inputs and other supporting services like credit.
- d) Policy to provide adequate research, education and extension support for accomplishing b) and c) above.
- e) Policy to reduce regional imbalances in agricultural development within the state by identifying the needs and growth potentials of different sub-regions based on agro-climatic conditions.
- f) Policy to sustain the growth in output and yields through creating proper marketing and pricing structure.
- g) Potential for growth in other sub-sectors.

The agricultural policy resolution of Karnataka State emphasises that agricultural production policies need to aim at achieving higher growth rates which will help in meeting the requirements of the state. The objective of the policy documents spell out a clear direction for strategy to create a prosperous rural society in Karnataka. It aims at spurring growth in agriculture and allied sectors by taking advantage of opportunities opened up by trade at national and global levels in an overall environment of economic liberalisation. The policy document assumes that the growth in agriculture will provide a momentum to growth in other sectors through its backward and forward linkages. The nature of growth envisaged is expected to generate more employment and cut down poverty in rural areas in due course. It also aims at promoting efficiency in the use of resources simultaneously protecting environment.

The state's policy addresses to issues as well as solutions compatible with economic realities. It displays boldness in talking about phased reduction in subsidies by evolving a free market-oriented agricultural system capable of fending for it. It also promises adequate state funding for crucial sectors, including infrastructure, while creating conditions for the private sector to play a greater role in most areas concerning agriculture and related fields. Some of the progressive measures delineated in Karnataka's policy statement have not been adequately emulated by the centre in National Agricultural Policy Document as well as other states. These include fixation of realistic water and power rates, reversal of the declining trend in agricultural investment, ensuring free and fair play of market forces including introduction of futures market in agriculture, alteration of land laws to permit land lease by farmers among themselves, and legalising contract farming by food processing units.

3.1.2 Karnataka's Agriculture Commission

The Government also felt that a new direction and thrust to the state policy on Agriculture and allied activities need to be given to meet the above challenges. In April 2000, the government set up the Karnataka Agriculture Commission. The immediate task of the commission was to identify missions for bridging the gap between actual yields and possible yields in different Agro-climatic zones of the state. During early 2000, the government held an Agro Summit at Dharwad to set the direction for growth in agricultural sector.

In December 2000, the Agriculture Commission submitted three short-term reports focused mainly on three areas:

- The area under cotton had come down from 12 lakh ha to six lakh ha in the state due to enormous pest problems, plant protection costs and crop failures. Biotechnology seems to provide a solution to this problem through BT cotton hybrids. If BT cotton is adopted by the state, an important commercial crop will be rehabilitated, production costs will be lowered, and pollution problems will be reduced. The agricultural universities should directly involve in testing the technology in their own research stations and monitor the testing elsewhere in the state.

- The benefits of agri-biotech research must be used to improve all farm pursuits based on crops, livestock and fisheries. The Commission suggested to set up a common Agriculture Biotechnology Research Team (ABRT) for coordinating and monitoring all research in biotechnology. It also suggested to set up Karnataka Biotechnology corridor to generate more wealth and employment opportunities. For these requirements it suggested to seek non-resident Indian leadership for collaborative projects, advance training of scientific manpower and reinforcement of resource base.
- There is a need to double rice productivity in the state as the requirement will be around 73 lakh tonnes by 2025. In this context, the newly evolved and tested hybrid rice offers a good opportunity, the report said.
- Efforts should be made to negotiate public and private sector partnership in the interest of farmers and consumers with suitable networking arrangement for sharing ideas and information and exchange of materials.
- Some of the recommendations made to make agriculture more dynamic and efficient with rice as a base, includes a) formulation of suitable options for diversification for each region; b) breaking the yield barrier; c) building farmers' awareness; d) enlisting cooperation of private agencies; and e) ensuring a well-planned hybrid seed production programme

3.2 Marginalisation: A Land Resource Perspective

Land is a major determinant of access to resources in rural areas. Theoretically, access to resources determine the intensity and extent of poverty. In addition to this access to land also contributes to the process of marginalisation. In this case marginalisation takes place in two different stages. The first stage involves deprivation of the basic source of production whereas the second stage determines the economic viability of the household. The distribution of land determines this. It is clear from the table that the size of holding has been declining at a faster rate. The nature of holdings with less than one hectare of area are increasing at a faster rate. This movement is coupled with the shrinking size of land among the farmers of this group. As a consequence there is a high density of marginal and small farmers today compared with

these figures during 1970-71. One can also observe the declining number and area under medium and large holdings and thereby probably we can be misled into concluding that the size of holding is reducing at the cost of medium and large holdings. However, when one compares the rates of increase in the marginal and smallholdings, the conclusion is obvious viz., that the process of fragmentation is taking place not only among the medium and large holdings but that has not spared the small and marginal holdings too. As a final culmination one sees a steep trend in the process of marginalisation under land holdings. This process pushes a large number of marginal and small farmers under economically non-viable class.

Fig 2: Percentage Change in Landholding of Various Size-classes 1970-71 to 1995-96



Note: 1) Each block consists of marginal (<1 ha), small (1-2 ha), semi-medium (2-4 ha), medium (4-10 ha) and large (>10 ha) farm categories.
 2) Serial No. 1 to 5 refer to the years 1970-71, 76-77, 80-81, 85-86, 90-91 and 1995-96 respectively.

4. Review of Agricultural Performance

The trend in approved outlays for the agricultural sector (including cooperation, irrigation, and flood control) in the five year plans has kept declining over time. It has slided down to 31 per cent in the Ninth Five Year Plan (1997-2002) from 48 per cent in the First Five Year Plan. Stagnation of agricultural production in the state during the eighties can be attributed to some extent to the sliding of the approved outlays on agriculture in the state plans. The expenditure on agriculture (including irrigation and

cooperation) has exceeded the approved outlays in most plans (Eighth Plan being an exception) indicating inadequate approved outlays. This is also clear from the drastic fall in the share of agriculture (from 61 per cent of the SDP in 1970-71 to 37.60 in 1996-97 at current prices).

Agriculture and allied activities accounted for 37 per cent of the state income of Karnataka and 69 per cent of the population of the state was engaged in this sector. Within the sector, crop husbandry accounted for 34 per cent of the output, 32 per cent of the state income and 25 Per cent of the employment generated by the sector (GoK 1998). The dominant role of this sector in the state economy as core contributor is quite clear even ignoring the estimates relating to its forward linkages. The growth rate in agriculture, which was quite commendable till the end of 1970s decelerated during the 1980s. The production of foodgrains also allegedly stagnated. Productivity was low, both under rainfed as well as under irrigated agriculture, during the eighties. This was attended to immediately by taking quick policy steps. In the Eighth plan period, the emphasis was on integrated watershed development, strengthening the infrastructure base and ensuring the adequate supply of inputs. During the late eighties and early nineties, with the help of state level policy interventions, the state achieved recovery from the large looming stagnation. This was the time when the state also brought out a policy document for agricultural sector covering major aspects. A number of Centrally sponsored thrust programmes were implemented like the Intensive Rice Development Programme, the Pulses Development Programme and the Oilseeds Production Programme focused on stepping up production and productivity on watershed basis.

In the Soil Conservation sector, National Watershed Development Programme was implemented during the nineties along with some externally aided projects. Participatory process and integrated development of watersheds became the key components of these projects. Some them of are: Indo-Swiss Project for Watershed Management with assistance from the Swiss Development Cooperation; Integrated Watershed Management project with KFW assistance. The *Bayaluseeme Abhivridi Mandali (Wasteland Development Board)* was constituted and soil conservation work was taken up in northern rainfed regions of the state. These components gave the required fillip to rainfed agriculture in the state.

Since, 1997-98, the emphasis of state's policy has been directed towards hi-tech agriculture. The programmes undertaken included incentives for registered seed growers, the popularization of plant protection measures and strengthening of agricultural laboratories. To train women and youth, an extension project has been taken up with external assistance. In the last decade, area under horticulture increased by over three lakh ha. indicating an average annual growth rate of about 3 per cent per annum. The emphasis has been on rainfed horticulture. Karnataka Horticultural Producer's Co-operative Marketing Federation is functioning effectively. The Agricultural Universities at Bangalore and Dharwad have geared up for the purpose and given responsibilities to cater to the needs of agricultural education and research in the new emerging areas. It has been proposed to strengthen the existing research stations and equip them with new technology. While the Water and Land Management Institute at Dharwad has already been functioning for the last ten years, it is proposed to set up a Sugarcane Research Institute at Sankeshwar, a Cotton Institute at Raichur and Rainfed Horticultural Institute at Bijapur.

The development of agricultural sector in the state thus began with the seemingly formidable constraints in the form of large rainfed areas, meagre irrigation, low value, low yield dominant cropping pattern and large share of dependent population. The struggle of the sector to achieve respectable growth pattern is well documented in Shri Satish Chandran Committ Report, but what has been achieved in the face of constraints sets a role model. The rainfed agriculture also participated and contributed equally in the growth. This is the main component of the role model of achievement despite hard constraints. Now, the state is poised to enter a new era of hi-tech agriculture and venture into sectors like food processing and horticultural exports. Therefore, the investment needs and capital formation in the sector assumed significance during this phase. The trends in capital formation in the state are more or less on the lines of national trends. In addition to this, the complementarity in the private and public sources has also been noted in earlier studies. In the following paragraphs we trace the development of the agricultural economy of the state during the last four decades.

4.1. Changed Land Use, and Diversified Crops

Karnataka State with 19.10 million ha accounts for 6.3 per cent of India's geographical area. Area under forest in the state is around 16 per cent as against 22 per

cent at the national level but the share of net area sown is much higher in the state (55.62 per cent) than the national average of 47 per cent. Expansion of cultivation on pasture and grazing lands, and wastelands have contributed to the increase in the net area sown by 0.53 million ha in the state between 1955—93 (Table 7). It is not surprising that in the state, the percentage of area sown more than once (8.58 per cent in 1995-98, up from 1.8 per cent in 1955-58) is lower than the national average (about 13 per cent, up from 6.1 per cent) owing to lower level of irrigation development. Proportion of area under other fallows declined during the last four decades. The decline in the share of pastures and grazing land is also more pronounced in the state, compared to the national level trend. More area under industrialization and urbanization has resulted in increasing the share of land put to non-agricultural uses almost by 50 per cent both at state and national levels between 1955 and 1993.

4.2. Crop Diversification

The area under total cereals in the state stood at 45 per cent, down by 11 per cent (in 1990-2000) from 56 per cent (in 1955-58). The decline is mainly owing to reduction in area under jowar and bajra. The area under paddy increased by 3 per cent (from 8.7 to 11.6 per cent) between 1955-58 and 1990-93 and stabilized around that level after that. The area under maize increased from about 0.1 per cent in 1955-58 to 2.5 per cent of the gross cropped area in 1990-93 and further to 4.31 per cent. Though there is a decline in the proportion of area under cereals, paddy, jowar, bajra, maize and wheat continue to be the dominant cereal and millet crop in the state.

At the macro level, cash crops shared relatively larger irrigated area when compared with the food grain crops across the farm sizes and social groups. The proportion of cereal area under irrigation was relatively higher on small farms when compared to large farms and the opposite was true in the case of oilseeds. The changes in the cropping pattern in Karnataka and in India in terms of the proportion of gross cropped area under different crops have been presented for four points in Table 9. The crops included here cover more than 85 per cent of the gross cropped area in the state and are triennium averages. One can visualise three broad trends in the area allocation across crops. Firstly, it is found that the area under cereals and millets is decreasing over the years and this area is largely transferred to commercial crops. Secondly, large share of resources (in terms of irrigation and inputs) are allocated to irrigated high value crops

and thus, the yield rates of irrigated crops are comparable to the national averages. Lastly, the northern Karnataka and rainfed portions of southern Maidan have a largely diversified crop pattern whereas the coastal Karnataka and irrigated regions seem to prefer mono-cropping.

Production trends of important crops have been analysed here with the help of compound rates of growth for production and productivity for the period 1955-56 to 1993-94 and separately for 1990 to 2000. It is observed that the production of cereals in the state grew at 2.13 per cent per annum during the period 1955-56 and 1993-94. The entire growth has been contributed by yield as area under cereals in the state decelerated during this period. The expansion in area under cereals during 1955-56 through 1967-68 resulted in significant growth in cereal production in the state (Tables 10 and 11).

4.3. Irrigated Agriculture

Irrigation development in Karnataka as compared to many other states and the country as a whole is quite low. The gross irrigated area in Karnataka is 23 lakh ha (net 17 lakh ha). Until now, only 52 per cent of the ultimate potential (46 lakh ha) of all sources has been developed. Minor irrigation constitutes 46 per cent and canals 40 per cent of the total irrigated area. The state has energized 8.7 lakh irrigation pumpsets and they account for 42 per cent of the total power consumption in the state. Capital disbursements of plan outlays for irrigation as per cent to total outlays by the state has reduced to 27 per cent (1988-89) from 34 per cent (1980-81). But there is 75 per cent increase (from 1980-81 to 1988-89) in non-plan expenditure on major and medium irrigation projects of the state. Future investments in surface water irrigation can be on completion of schemes under construction and improvements to enhance the performance of existing schemes. Additional groundwater development is possible.

Karnataka has to depend to large extent upon harnessing rivers like Krishna, and Tungabhadra. The river waters of Cauvery and its tributaries have been fully exploited. But there are inter-state disputes in the process, affecting future investments concerning both Cauvery and Krishna. By 1995-96, about Rs.2,000 crores had been invested on irrigation development in Karnataka. Since then about Rs.680 crores have been further invested on irrigation. However, the utilisation of potential created depended upon

command area development for which adequate investments are necessary. These involve investments in the construction of field channels, land levelling, construction of field drains. For financing irrigation development Karnataka has established five irrigation development corporations (like Krishna Bhagya Jal Nigam Limited) and has been borrowing from the market through the issue of long-term bonds. Till June, 1999 KBJNL has raised Rs.21,000 million through seven issues. With that, the company is confident of raising the remaining Rs.9,500 million to meet the target. Because of the regular flow of funds through KBJNL, the Upper Krishna Project has made reasonably good progress.

4.4, Rainfed Agriculture: The Core of Future Policy

Nearly 80 per cent of the cultivated land in the state falls under rainfed farming. Out of 10 agro-climatic zones, 5 zones can be classified broadly 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 Karnataka. Because of the fluctuation in rainfall, the crop yield under rainfed cultivation varies across the districts. For optimal utilization of resources like land and rainwater, the Government of Karnataka, in the early 1980s, initiated rainfed farming through watershed approach. Dryland Development Board (DLDB) was constituted and District Watershed Development Programme (DWDP) was undertaken for implementation since 1983-84 in all the districts of the state. It is an integrated approach covering soil conservation involving crop husbandry, animal husbandry, forestry, irrigated agriculture, horticulture, etc. Activities undertaken under the watershed approach cover both arable and non-arable land.

The achievement (2.80 lakh ha) compared to the target area (3.47 lakh ha) treated was around 80 per cent, of which again 80 per cent was under soil conservation; forestry and horticulture accounted for 10 per cent each in the DWDPs of the DLDB in the state. The impact of the DWDPs on crop yields showed an increase of about 25 per cent of both food crops and also cash crops. Significant changes have been noted in the cropped area under watersheds. In other words, there is a shift from inferior cereals to high yielding varieties and to commercial crops in the treated watersheds. This resulted in the increase in the incomes of rainfed farming community. Apart from DWDP of DLDB watershed, there are other Watershed Development Projects, viz., National Watershed Development Programme (NWDPPA), River valley watersheds, world bank assisted

Watershed Development Programmes (WDPs), DPAP watersheds, WGDP watersheds and NGO/VOs etc., that are implemented in the state. Even then the task of WDP in the State is stupendous so also the investment required for the programme. But, for rainfed agriculture presently this is the major policy intervention that may help in the long run.

In the recent past, the changes experienced in Karnataka agriculture are quite noteworthy and the sector is poised for a breakthrough in these new ventures. Development of horticulture and floriculture are two such enterprises that prominently feature in the discussion.

4.5. Emerging Sectors in the State Agriculture

(a) Horticulture

Karnataka occupies a very important position in the horticultural map of India.. The shift from subsistence farming to more remunerative horticultural crops has been a marked phenomenon in the recent past. In recent years, the area under horticultural crops is growing much faster on account of liberalization and NEP induced market changes, availability of infrastructure and the incentive structure. The area under horticultural crops in the state has increased to 1.4 million hectares (from 0.8 million ha) registering a growth rate of 4 per cent per annum over the period of 1980-81 to 1995-96. This is higher than the all India growth rate as well as that of China and Brazil. The production levels have gone up to 11 million tonnes in 1995-96 from 5.6 million tones in 1978-79. The share of Karnataka accounted for 10 per cent of the area and production in this during this period.

In value terms, the horticultural production in Karnataka in 1995-96 was Rs.5,819 crores, accounting for 44 per cent of the state's gross value of production from agricultural sector. This is increasing every year although the share of agricultural sector in the state total domestic product is declining. According to available trends, the state ranks fifth in the area and third in the production of fruits in the country, sharing 11 per cent of the country's total fruit production. Similarly, the state occupies fifth position in respect of area and production of vegetables in the country. Some of the major factors responsible for this position are: conducive natural resources and agro-climatic conditions; proper skill formation, information dissemination; and active support from the state government in terms of incentives. Export of horticultural crops increased to 17,828 tonnes in 1996-97 (April 1996 to February 1997) from 16,171 tonnes in 1994-95. This accounted for 0.013

per cent of the total horticultural production of the country during 1996-97. The value of exports of horticultural crops in the state increased from Rs.3,719.42 lakhs in 1994-95 to Rs.5,190.45 lakhs in 1996-97. This accounted for 1.42 per cent of the total horticultural exports of the country. During the last five-years the area under most of the crops increased at a faster pace compared to other crops. The area under spices increased from 3.91 lakh hectares in 1995-96 to 6.15 lakh hectares in 1999-2000.

A major constraint located in the development of horticulture is the lack of organized marketing system. The horticulture department with the objective of bridging the gap between the producer and the consumer, has organized HOPCOMS (Horticultural Producer's Cooperative Marketing Society) in Bangalore and 15 District level co-operative societies. Presently, HOPCOMS is operating in 5 districts with 7,881 grower members and 228.02 lakhs share amount. HOPCOMS has 350 retail outlets and handles 160 to 170 mt of horticulture produce daily.

(b) Floriculture

Floriculture is emerging as an important commercial crop both in Karnataka and also at the country level owing to its multiple use and export potential. The major traditional flowers grown are marigold, jasmine, rose, aster crescendo and the cutflowers with stem including rose, gladiolus, tuber rose and carnation. Floriculture in Karnataka has achieved an impressive growth. Karnataka occupies the second position both in terms of area and production, next to Tamil Nadu. In Karnataka, area under floriculture has grown from 4,000 hectares with 21,000 tonnes of production in 1978-79 to 17,419 hectares (46 per cent share in the country area) with 102,205 tonnes of production by 1995-96. Export of floriculture produce has impressively increased to 607 tonnes (value Rs.425 lakhs) in 1996-97 from just eight tonnes (Rs 15 Lakhs) in 1994-95. The current export level of the state forms 7 per cent of the total earnings of the country's floriculture.

These measures have now started yielding positive results. The new economic policy pursued since August 1991 has resulted in the approval of 134 floriculture export units till 31st December 1995 with a total outlay of Rs.1,091 million in the country. Already 32 units of floriculture have started functioning in different parts of the country. Most of these projects are based in southern India, particularly in Bangalore. Many of the Dutch aided floriculture units have entered agreements and tie-up with Indian companies in

Bangalore. These trends indicate that Bangalore may emerge as the hub of floricultural activities in India and the state may possibly emerge as major floriculture exporting state

4.6. Agricultural Extension and Training

Agricultural Training which is part of education plays an important role in the transfer of technology to the farming community in the state. Sustained high levels of agricultural production and incomes are not possible without an effective agricultural extension service supported by agricultural research relevant to the farmers' needs. Training and Visit (T&V) system is one of the many ways in which extension services are organized along effective professional lines. The Government of Karnataka started a New Agriculture Extension Project (NAEP) in the year 1979. The programme was taken up in three phases and by 1980-81 all the districts had been covered under the T & V system of extension. The department has worked out new methodologies in order to improve the working of the field functionaries. Under the NAEP-II (completed in 1992-93, and after that under the State Plan scheme), efforts were made to strengthen the monthly and fortnightly training programmes by providing additional infrastructure facilities at various levels. The Expert Committee (GoK 1993) has recommended to dispense with the present T & V system. Over the years, the approach of transferring of technology through contact farmers has proved to be inadequate under the existing socio-economic conditions. Under these circumstances the alternative extension system recommended by the expert committee and the sub-group on Agriculture of the State Planning Board is the "Group Approach". Hence, the expert committee and the sub-group recommended for re-organization of the department in order to achieve the said tasks.

Box 1

- The existing government regulations pertaining to implementation hinder extension work. Extension workers are loaded with administrative work. Many a time the programme stipulations and regulations conflict with the farmers' interest.
- Research institutions do not always provide usable results. Communication channels between the extension service and the research institutes are not smooth.
- Extension workers are not adequately motivated; they are not involved in the planning process and their career opportunities provide them with limited upward mobility.
- Extension staff is not adequate to perform the task assigned; basic training provided to them is inadequate to meet the demand of the programmes.
- Farmers are not involved in the development of innovations and planning of the programmes. Therefore, there is a mismatch between the farmers' needs and innovations made.

Keeping in view these concepts, the Department of Agriculture was reorganized during May 1995, by merging the crop husbandry and soil conservation wings of the department. In the new set up, the Gram Panchayat has been taken as a unit for carrying out all the extension activities and the grass root level extension worker, i.e., Agricultural Assistant placed at gram panchayat level carrying out all the extension activities of the department including horticulture. The major constraints faced in the agricultural extension and training sector cover five broad areas.

5. Karnataka Model of Development

The state of Karnataka has always provided an interesting case for the development thinkers. The Karnataka development model has five important dimensions. First, it is a predominantly agrarian economy with severe climatic and natural resource constraints. The speed of technology adoption in agriculture is

certainly not comparable to Punjab, Haryana and Tamil Nadu. Second, the state has vast patches of drought-prone areas. With these two strong constraints, the economic activities in the state have achieved exemplary progress during the last decade. Its industrial sector is focussed on right kind of product and services group whereas the agricultural sector is taking advantage of the changing market forces. Unfortunately, the state could not overcome the employment bottleneck successfully. But presently, we do not find the employment situation in Karnataka as precarious as it used to be during the seventies and eighties. Third, the state has sustained its position at the average level in most of the indicators compared across states. This achievement is despite the fact that the economy and resource constraints predominated in the state and employment generation is not of very high order. Fourth, with this background the state could achieve poverty reduction significantly over the last three decades. But the core problem of poverty (prevailing amount of SC and STs) continues to dog the performance especially in social sector. Lastly, Karnataka happens to be the state taking significant initiatives in the schemes of economic as well as social well being. These initiatives will certainly help in boosting the growth trends in the long run. Thus, the development model of Karnataka is characterised by its strategy of optimal sectoral combination to achieve growth in the presence of difficult constraints and along with the trends in marginalisation.

Agriculture remains the main bread winner of the population of the state. The trends in the agricultural sector provide conducive setting for a strong process of commercialisation. This process has two dimensions. One dealing with the domestic commercial requirements (cotton, oil seeds, pulses and sugarcane) and the other with the commercial requirement (sericulture, rose-onion, floriculture and other horticultural crops) for international trade. The achievements in these sectors are quite good. The state has recorded good progress in the export of agricultural commodities. With the background of this the performance of the crop economy gets masked. Probably, therefore, the trickle down of these benefits is not visualised as yet and that has not shown discernible impact on the process of marginalisation.

Marginalisation of peasantry and agricultural labour is a process commonly inflicting most of the states in the country and Karnataka is no exception in this process. The land based marginalisation has been quite visible in the state with the swelling of marginal and small holdings beyond the natural growth rate which is largely due to the

uneconomic sizes of the lower class of holdings. The process has been quite sharp during the last two decades. One of the intriguing points coming out of this discussion is that the holdings of SCs and STs are shrinking at a faster rate than the general trend in marginalisation. In aggregate terms, this indicates that the poor from the higher social classes are making good to reach above poverty line whereas new segment of poor is getting added to the lot of poor from among SCs and STs. This process of marginalisation is not typical to Karnataka alone, but probably a phenomenon infesting a few more states. The issue of the quality of poverty and its location specifically assumes significant importance in the development dynamics of the state. That probably needs attention, if the Tenth Plan promises have to be kept.

Karnataka State has picked up the advantages of agricultural sector under larger constraints on its growth. Even though the commercialisation of agriculture has been taking place probably the side-effects of such commercialisation have been positive in overall distribution of service. Despite the content of poverty, the level of poverty has been reduced significantly in the state. However, this does not allow any complacency in the overall development planning of the State. The regional dimension of poverty is still quite precarious and we have a sizeable number of patches of acute poverty as against islands of development. Therefore, regional dimension of growth and distribution takes the prime seat in the new development process. Secondly, the quality and location of poverty is an interesting feature of the state. Like any other state in the country, in Karnataka also, poverty is largely concentrated among Scheduled Castes and Scheduled Tribes. More than that, the real alarming feature is that the poverty is increasing among these classes of poor. Therefore, the future policy focus should be to rope in these classes in to mainstream growth. This is possible only if organisations of these poor stem out of the pressure of backwardness and work for the purpose of distribution and economic justice. It is quite expected that these organisations will have to closely work under three important constraints viz., the process of commercialisation, activities relating employment generation and dealing with social equity. Therefore, the state has good scope for social activism to lead growth towards development.

6. General Observations

Over the last five years, Karnataka has gained better momentum in its agricultural reforms. The state has formulated various schemes, commissions to boost up

the agriculture and allied sector. Promotion of biotechnology, facilitating private participation has been prominent in its efforts. Protecting farmers from price-crash and providing market assistance are gaining more momentum in recent months. Establishing WTO cell in the state, establishing Agricultural Commission, commissioning a separate board to reduce the regional imbalances are its pivotal steps. But the State has a lot to do to transform its intentions into actual operations.

Karnataka is a pioneering state having prepared a policy document at the state level in the year 1995. The policy document argues for getting the status of industry to the agricultural sector in a graded but assured manner. The agricultural policy resolution emphasises that the production policy should not only aim at growth but also at the quality and distribution of growth. Following the first policy initiative, the state also appointed a Commission on Agriculture to advise the State government on various issues pertaining to the sector. The Commission is focussing mainly on bridging the yield gaps in the crop economy. Further, in response to the requirement of the day the state government constituted a Cell consisting of experts and administrators to look into the impact of WTO on the agricultural sector. Thus, on the front of policy formulation the state is quite ahead of its counterparts in the country.

In the crop sector, the state has a diversified cropping pattern and the regional differences are not only of acute nature but create inequalities across the groups and discourage investment flow. These differences mainly originate from the climatic constraints and fuelled by the mixed reactions to the developmental initiatives. Therefore, it is necessary to prioritize the removal of regional imbalances as the first priority of the state. A policy step is already taken by the state through appointing a Committee to investigate into the existing regional imbalances and suggest ways and means to overcome the problem. Apart from the regional imbalances across the agro-climatic regions, the state has an unduly large proportion of the area coming under rainfed conditions having meagre irrigation facilities. The future policy to boost the agricultural growth in the state, therefore, should be directed towards locating growth in the rainfed sector in the crop economy and providing an opportunity for economic diversification. Two important initiatives must be mentioned in this context. First, the horticultural economy of the state has shown flamboyant growth in the recent past. The sector has a good spread effect in the rainfed areas of North Karnataka. Floriculture, though a very localised activity, has created new avenues for growth in the state. Therefore, these two policy

options are quite important as far as the state is concerned. In the non-farm sector, livestock, marine and fresh water fisheries, agro-processing have been emerging as important economic activities with good growth potential for the purpose of diversification.

In the agricultural economy of the state, infrastructure plays quite a predominant role. The inadequacy of infrastructure has been one of the important drag on the growth process of the agricultural economy. Density and quality of market, a proper state level pricing policy and sufficient as well as timely resource availability are some of the important issues. It is essential that quick steps be taken in order to boost the infrastructure in terms of roads, transportation, and availability of markets. At the same time, at the state level, there should be an Agricultural Prices Commission, which can monitor prices and advise the state government on price situations. The input delivery system has been one of the important lacunae entering the growth of the agricultural sector. We do not have in place a proper input delivery system and economic pricing of inputs. This is one of the impediments causing deceleration in the growth.

The crop yields in the state have stagnated during the last five years. The coverage of HYV under irrigated cereals is impressive. There is a need to bring in more rainfed cereal area under HYV/Hybrid. This requires an extensive coverage of scientific watershed approach for rainfed agriculture. To reduce the gap between the potential and actual yields, there is a need for continuous interaction between extension and research stations to bringing qualitative difference in extension workers and make them knowledgeable in the eyes of the farmers. As the HYV/Hybrid seeds supplied by the state are not sufficient to meet the requirements of the farmers, private sector should be encouraged to develop research facilities and enter seed business in a big way. However, the hybrid seed released by private organisation should be brought under compulsory certification and quality control by the state, as the interests of the farmers are involved.

The insecticides control laboratories of the state have to increase their operation and cover more number of traders and test the samples collected from them in each season for its quality. Water use planning should cover both major and minor irrigation systems. The members of the water user association should be told about the cost of water and the water rates should cover at least the cost of operation and maintenance and a portion of interest on capital. The state is going in a big way in creating potential under major and medium irrigation schemes. Under minor irrigation, the state has at last

felt the need for desilting of tanks and going in a big way of desilting of tanks under the World Bank assistance. Desilting of tanks should be made an annual phenomenon. The local panchayats and water user associations should be given the responsibility of desilting of the tanks. The allocations given under antipoverty programmes to the village panchayats should be used for desilting of the tanks. The members of the water user associations should be allowed to take the silt to improve the fertility of their fields.

The present insurance cover is only for the loan part and this is not covering the other cost incurred by the farmer and also the normal return for his survivor. Hence, there is a need for a comprehensive risk cover for agricultural crops covering the normal returns to the farmer. This comprehensive risk cover brings in more stability in cropping pattern and thereby stability to the prices of agricultural produce. The stability in prices of agricultural produce not only brings in stable incomes to the farmers but also reduce government subsidy on procurement. There is no significant increase in the area under horticulture crops though the southern part of the State is very much suited for horticultural crops. To increase horticulture and floriculture in a big way, there is a need for corporate agriculture by involving the farmers. The modalities are to be worked out so that the interests of farmers are not hampered. The corporatisation of horticulture solves many post harvest problems faced by horticulture sector, viz., cold storage facilities, processing and marketing and export.

Though the magnitude of subsidies is not alarming when compared to macro parameters, there is need to prune the subsidies. For this, a detailed study on the quantum of subsidies in various sectors is required. The Institute for Social and Economic Change is currently working on this aspect. At the outset it can be said that proper targeting can reduce the subsidy on public distribution. The weaker section oriented programmes were started in the state much earlier than the Government of India stepped into the programmes. With the entry of Government of India in introducing the new programmes, the state's liability on these programmes appears to be coming down. Public distribution, and Bhagyajyothi programme are the examples to highlight the point.

There are some successful stories of co-operative movement in the state. Dairy and Horticultural producer's co-operative marketing and processing society Ltd (HOPCOMS) come in the classification of successful stories. On the other hand, many societies are facing the usual managerial problems and incurring losses. Hence, there is a

need for a comprehensive training to cooperators in the areas of cooperative act, management, marketing, etc.

The experiment of Panchayat raj Institutions in the state has brought some awareness in the people about their claims on the government programmes. This itself is a useful change in the attitudes of the people and help in better delivery system. Panchayats are entrusted with the responsibility of identifying the beneficiaries for various government programmes. Hence, to have more transparency in their functioning, maintaining of roster registers should be made mandatory and these registers should be available for verification by any aggrieved person in the village.

The employment generation programmes specify the minimum wage to be paid per day. However, many departments operating this programme pay according to the quantum of work performed by the labourer as per the guidelines of the department. Hence, there is a need to work out by the departments the quantum of work to be entrusted to a worker per day so that the worker gets the minimum wage. This will also ensure that there is no conflict between the guidelines of the programme and the department and also brings in transparency in their operations.

The analysis of regulatory environment in the rural sector suggests that agriculture though a private activity is controlled by the state regulation in the factor market, product market, and the product process market. It has been highlighted in the analysis that there are a large number of Acts and Control orders which govern the agricultural sector. A good number of them have outlived their lives and, therefore, these require a fresh look. In the context of liberalised economy, it is improper to control the agricultural sector through such a heavy legal framework. Mid-seventies had given a boost to the proliferation of institutions in the public sector. We have analysed 19 public sector enterprises directly connected with the agricultural sector and it is not surprising that as many as eight among them have been incurring huge losses whereas five have become defunct. These institutions have also outlived their purpose and it is felt that only the fittest should survive and therefore, it will not be erroneous if the loss making institutions are analysed in depth and closed down in order to save on the public funds. Various commodity boards are functioning in the agricultural sector. It is surprising that quite a few of them have an efficient track record but this should not be interpreted as a success of co-operation among the commodity producers. The credit

should go to the management of the boards. The co-operative sector has a large coverage but its success is mixed. The recent amendments in the Co-operative Law substantially reduce the role of the state in managing co-operatives. Unfortunately, the new Co-operative Law, viz., Souharda Co-operative Act has no takers. Therefore, it is necessary that the Act be given its due credit.

There are about nine major challenges enlisted in this report. The first challenge comes in terms of the threatened stagnation in the agricultural growth and possibility of deceleration in the near future. This can be dealt with locating growth in proper sectors and providing incentives for achieving such growth. The low value added in the agricultural sector has been the second important shortcoming looming large on the sector. No wonder a large proportion of poor are located in the rural sector. The diversification of economic activities towards agriculture, floriculture and non-farm sector will help to provide a way out of this situation. On the technological front, it has been stated that we are approaching the optimum technological level at a very fast rate. Therefore, there is an urgent requirement of investment in research and development to facilitate achieving the new technological frontiers. This comes up as an important challenge. Marginalisation of the land base is another emerging challenge, which needs to be tackled through an institutional frame. It should not be interpreted that one has to go back on the land reforms agenda of mid-seventies, but proliferation of un-economic holding may cause a drag on attaining higher rates of growth. This will require not only a political will but also a supportive and pragmatic institutional framework. Growth of investment in the agricultural sector has emerged as another important impediment, which needs to be attended to through enhancing investment from private sources.

7. Emerging Challenges

7.1 Enabling Environment

Karnataka State faces threefold challenge in the current growth-oriented environment. The agro climactic situation of the state divides the state into a large number of Agro climatic zones. The crop patterns as well as cultivation practices differ across these zones. More than that, resource endowments availability and delivery system of inputs differ across these zones. Even directing public investment towards agricultural development across regions has not yielded the desired results to merge the differences in developmental initiatives across these regions. Broadly, one can group these regions into five zones according to the agrarian and agro-ecological systems,

namely: the Bombay Karnataka Northern zone, the Hyderabad Karnataka Northern zone, Southern dry zone, Southern irrigated zone, and Western coastline. Among these regions, the unirrigated plateau zone of Northern Karnataka and that of southern Karnataka are the main lagging regions of the state. Even in terms of investment from public and private sources, these two broad regions have remained at the lowest rung. Therefore, failure to make investments or initiate investment in the rural areas of these two regions has caused impediments to growth. In the absence of the data on region-wise investment, we cannot conclude about the exact failure. But sensing the acuteness of the problem, the state of Karnataka has taken initiative in constituting a committee to investigate into regional imbalances across the state. It is expected that this committee will bring out a report highlighting the requirement for initiating these in areas in the mainstream growth. The recommendations have to be graded to concentrate at various levels of development in the lagging regions of Northern Karnataka.

Most important challenge that the state faces presently is to facilitate private investment in the backward areas of the state. While initiating such schemes, it is essential to understand the resource endowments and competitive advantages of these regions to participate in the mainstream growth pattern. Hitherto, agriculture has been considered as the only alternative to bring these regions into mainstream growth. Unfortunately, the climatic and weather patterns do not support agricultural growth, and weather induced instability continues to inflict misery on agriculturists. Therefore, the growth culture has to be created even in the allied agricultural sectors. Horticulture development, especially the dry land horticultural crops, has proved to be a promising alternative. In the recent past, it has been observed that horticultural crops have been picking up both in terms of area as well as productivity in these regions despite the climatic constraints. The state government is taking sufficient initiatives to boost horticultural development in these regions. These efforts are, however, concentrated on the individual farm households. Contracting of horticultural crops to a consortium of small and marginal farmers with an assurance to provide them proper marketing facilities will go a long way in bringing this group of farmers into the mainstream development process.

The second major impediment that causes the challenge for the State government is the availability of funds to initiate agricultural and rural development schemes in the fragile regions. Therefore, it is required that private initiatives can be

taken either in terms of corporate farming or bulk purchase and marketing facilities. The requirement of investment in the backward regions can also be met by siphoning the excess savings from well-endowed regions to the deserving backward areas. This can be achieved by floating low interest investment bonds to be purchased by the private contributors from developed regions of the State. Development boards specially set up to guide the process of development of these regions can take initiative in this respect.

Box 2: Major Challenges for Agricultural Growth

SI No	Major Challenges	Responses for Enabling Acceptance
1	Threatened stagnation in agri growth. Possibility of decelerating yield growth.	Locating growth in the emerging growth inducing crops/ sectors
2	Low value added in agricultural sector.	Removal of marketing bottlenecks and enabling remunerative price situation.
3	Fast approaching optima on the technological front.	Investment boosting in R & D sector.
4	Large proportions of rainfed/dryland area.	Technological options and diversification of economic base
5	Marginalisation of agricultural base..	Group initiatives and arresting the process through institutional options
6	Inadequate growth in public and private investment.	Attracting private investments in the sunrise sectors. Locating sub-sectors with new growth options
7	Regional disparities	Prudent regional allocation of growth inducers
8	Inadequate safety nets.	Revamping and redesigning the safety net programmes. Effective delivery
9	Conflicting growth vs environmental options.	Resolving the issues amicably. Reducing the intensity of negative externalities

The third and important problem faced by the State is in terms of participation in the process of liberalisation by enabling a proper conduit towards the most deserving regions and groups of farmers. The state has been performing well as far as its participation in the international trade is concerned. In the past four years, the State has shown good progress on the front of exports of agricultural products. If this tempo has to be continued and enhanced in future, it is necessary to support the agricultural and horticultural sectors in terms of crucial information as well as creating an enabling environment for the participation. The State has set up a Cell to advise on the WTO related issues. The Cell has submitted its interim report and noted that the State has a promising potential to participate in the international trade. This can be harnessed for fueling the growth process.

This note is based on the Studies Completed at the Agricultural Development and Rural Transformation Unit, Institute for Social and Economic Change, Bangalore:

Details of Some of these Issues are given in Appendix II.

Bhende, M.J. (2000). *Cropping Pattern and Resource Use Efficiency in Major Crops: A Case Study of Karnataka*, ADRT Unit, ISEC, Bangalore.

Bhende, M.J. (2002a). *An Analysis of Crop Insurance Scheme in Karnataka*. ADRT Unit, ISEC, Bangalore.

Bhende, M.J. (2002b). *Flow of Credit to Small and Marginal Farmers: A Case Study of Karnataka*. ADRT Unit, ISEC, Bangalore.

Deshpande, R.S. (2002). *Causes and Remedies for Farmers' Distress in Karnataka*. ADRT Unit, ISEC, Bangalore.

Deshpande, R.S. and J. Prachitha (2004). *Building up of an Efficient Marketing System to Obviate the Need for Large Scale State Intervention in Karnataka*. ADRT Unit, ISEC, Bangalore.

Deshpande, R.S. and K.V.Raju (2001), *Rural Policy for Growth and Poverty Reduction*, Agricultural Development and Rural Transformation Unit, ISEC, Bangalore.

Deshpande, R.S., M.J. Bhende and P. Thippaiah (2003). *Output and Impact Monitoring Study of KAWAD Project*. ADRT Unit, ISEC, Bangalore.

Deshpande, R.S. and T. Raveendra Naika (2003). *Impact of Minimum Support Prices on Agricultural Economy: A Study in Karnataka*. ADRT Unit, ISEC, Bangalore.

Deshpande, R.S. and V.M. Rao, (2000). *Prospects for Coarse Cereals in Drought-Prone Regions: An Exploratory Study in Karnataka*, ADRT Unit, ISEC, Bangalore.

Erappa, S. (2000). *Impact of National Watershed Development Programme for Rainfed Areas (NWDPR): A Case Study of Raichur District*, ADRT Unit, ISEC, Bangalore.

Erappa, S. (2001). *Evaluation of Employment Assurance Schemes (EAS): A Case Study of Two Districts in Karnataka*. ADRT Unit, ISEC, Bangalore.

Gopalappa, D.V. (2004). *Employment in Non-Farm Sector in Karnataka*. ADRT Unit, ISEC, Bangalore.

Rajasekhar, D. (2003). *Poverty Alleviation Strategies of NGOs*. ADRT Unit, ISEC, Bangalore.

Thippaiah, P. (2001). *Evaluation of Soft Loan Schemes for the Development of Post-Harvest Infrastructure for Horticultural Produce in Karnataka*, ADRT Unit, ISEC, Bangalore

Venkatachalam, L. (2003). *Infrastructure and Agricultural Development in Karnataka State*. ADRT Unit, ISEC, Bangalore.

Appendix I: Tables with Notes

Table 1: Sectoral Contribution to State Domestic Product at Constant Prices.

Sectors	1990-91	1994-95	1995-96	1996-97	1997-98	1998-99
Agri. and allied sectors (%)	39.10	36.90	33.70	31.30	28.60	29.50
Industry (%)	23.60	25.20	26.80	28.30	29.40	28.10
Services (%)	37.30	37.90	39.50	40.40	42.00	42.40
Total NSDP (Rs. crores)	38,641	41,787	44,504	49,358	51,478	57,013

Source: Government of Karnataka, 1999-2000, Bangalore.

**Table 2: Growth Rate of GSDP and NSDP Across Various Sectors
1993-94 to 2000-01 (at 1993-94 Prices).**

Sectors	GSDP	NSDP
Primary Sector	4.796	4.833
Secondary Sector	9.055	7.942
Tertiary Sector	10.449	10.976
All the sectors.	8.410	8.140

Note: GSDP – Gross State Domestic Product; NSDP – Net State Domestic Product
Source: Government of Karnataka (2002).

Table 3: Classification of Workers Across Various Sectors.

Year	Cultivators	Agril. labourers	Workers engaged in manufacturing, services and repairs	Workers engaged in constructions, transport, storage and communications	Workers engaged in trade and commerce	Total workers	% of total workers to total population
1981 (in '000)	4,461	3,046	1,659	632	894	11808	31.80
Per cent	37.78	25.80	14.05	5.35	7.57	100	-----
1991 (in '000)	5,143	4,314	1,851	883	1,380	15,369	34.17
Per cent	33.46	28.07	12.04	5.75	9.00	100	-----

Note: The marginal workers constitute 9.45 per cent (1981) and 11.68 per cent (1991), Therefore the percentages do not add to 100 per cent.

Source: Government of India, 1981 and 1991.

Table 4: Growth Rates in the Crop Economy: 1999-2000.

Crops	Area	Production	Productivity
Rice	2.55	2.09	-0.45
Ragi	-3.22	-4.32	-1.14
Jowar	-1.28	-4.54	-3.3
Bajra	-1.40	-9.18	-7.89
Maize	7.75	6.86	-0.83
Wheat	3.98	4.78	0.77
Minor millets	-6.68	-5.43	1.35
Total cereals	0.14	-0.03	-0.17
Tur	1.50	-1.26	-2.72
Total pulses	3.92	-1.11	-4.84
Total foodgrains	1.02	-0.12	-1.12
Groundnut	-2.03	-10.4	-8.54
Total oilseeds	-3.81	-9.56	-5.98
Sugarcane	-0.70	1.49	2.21
Cotton	-3.01	-3.42	-0.42
Tobacco	5.74	4.75	-0.93

Source: Based on the data collected from the Directorate of Economics and Statistics, Government of Karnataka.

Table 5: Distribution of Outlays and Expenditure on Agriculture under Five Year Plans: Karnataka

(At Current Prices. Amount in Rs. Lakhs)

Plans	Total outlay			Total expenditure			Proportion of expenditure in outlay of all sectors	Proportion of expenditure to outlay of agriculture
	All sectors	Agriculture	Percentage to the total	All sectors	Agriculture	Percentage to the total		
PLAN	2	3	4	5	6	7	8	9
2 I -1951-56	4,759	2,306	48.46	4,052	2,117	52.25	85.14	91.80
3 II - 1956-61	14,513	6,329	43.61	14,027	5,653	40.30	96.65	89.32
4 III - 1961-66	24,622	9,976	40.52	26,414	11,523	43.62	107.28	115.51
5 Annual 1966-69	16,464	7,512	45.63	19,096	8,880	46.50	115.99	118.21
6 IV- 1969-74	35,000	17,115	48.90	35,985	16,417	45.62	102.81	95.92
7 V -1974-78	69,343	26,432	38.12	80,232	28,491	35.51	115.70	107.79
8 Annual 1978-80	73,066	26,468	36.22	80,232	22,915	35.41	109.81	86.58
9 VI -1980-85	226,500	89,281	39.42	2,60,753	1,06,213	40.73	115.12	118.97
10 VII -1985-90	357,500	1,04,780	29.31	5,52,178	114,962	20.82	154.45	109.72
11 Annual 1990-91	270,280	71,192	26.34	305,970	71,596	23.40	113.20	100.57
12 VIII -1992-97	1,454,000	3,78,267	26.02	1,489,408	379,330	25.47	102.44	100.28
13 IX1997-2002	2,340,000	7,28,400	31.13	NA	NA	NA	NA	NA

Note: Agriculture includes Co-operation, Irrigation and Flood Control. Table excluding these two is not presented here.

Sources:

- Government of Karnataka, Statistical Abstract of Karnataka-1983-84, Directorate of Economics and Statistics, for the First five-year Plan to Fourth Five Year Plan.
- Government of Mysore, Draft Five Year Plan 1974-79, Planning Department, 1988, for the expenditure 1974-78 and Annual Plans 1978-79-1979-80.
- Government of Karnataka, Background Papers Written for the Economic and Planning Council for Karnataka, Vol. II, March 1983 for the Sixth Five Year Plan Approved Outlay and Estimated Expenditure.
- Government of Karnataka, Economic Survey 1997-98, Planning Department, for the Eighth Five Year Plan,
- Government of Karnataka, Ninth Five Year Plan 1997-2002, Annual Plan Statistical Statements, Planning Department, for the Outlay of Ninth Five Year Plan.

App: 1.1: Outlays and Expenditure under Five Year Plans in Karnataka

The Union and the state budgets govern the incentive structure of all sectors including agriculture in terms of taxes and concessions declared. The gap between the ideal and actual agricultural practices in India is so vast that any pre-determined move in a given direction requires significant time-lag (some say, ten years) to show the results. This experience is quite similar in the process of development of the nations and Karnataka's farm economy. The state's agricultural economy is profoundly influenced not only by the state government's fiscal policy but also by the central fiscal policy. In these circumstances, the impact of public allocations to the sector through budgetary resources both at state and at central levels needs a review.

The outlay for the Eighth Five Year Plan for the State was Rs. 12,300 crores at 1991-92 prices, which was more than double that of the Seventh Plan. But as revealed by the Ninth Plan of Karnataka the expenditure has fallen 8 per cent short of the annual approved outlays during 1992-97 (GoK, 1998). In the case of agriculture, allied sectors and rural development the annual plan approved outlay was reported as Rs. 1931 crores of which the expenditure incurred was only Rs. 1780.80 crores. In other words it was 12.8 per cent short of the allocations. The production achievements during the Eighth Plan period were about 16 per cent short of targeted foodgrain production. Among the allied agricultural sector dairy performed well (GoK 1999).

Table 6: Plan Expenditure for Agriculture & Allied Services

(Rs. in crores)

Head of Development	Eighth Plan expenditure (1992-97)	Ninth Plan (approved outlay) (1991-2002)	Annual Plan 1995-96 accounts	Annual Plan 1996-97 accounts	Annual Plan 1997-98 accounts	Annual Plan 1998-99 (R.E)	Annual Plan 1999-2000 (B.E)
Agriculture & Allied Services							
1. Crop husbandry	169.12	325.50	39.36	41.20	36.72	37.57	56.61
2. Soil & water conservation	103.37	138.00	21.14	22.56	22.18	29.52	25.73
3. Animal husbandry	107.55	169.00	30.19	30.48	24.14	20.17	28.83
4. Dairy development	20.26	27.50	1.89	2.62	2.55	1.87	2.50
5. Fisheries	45.99	110.50	10.25	10.78	14.77	17.86	11.60
6. Forestry & wild Life	248.46	350.00	54.17	47.78	84.98	126.43	136.38
7. Food, storage & warehousing	3.14	2.00	0.20	0.20	1.29	0.15	0.15
8. Agri. Research & education	88.45	130.00	16.01	23.17	23.49	18.75	27.00
9. Investment in agricultural financial Institutions	52.32	58.00	11.69	21.30	9.90	5.63	3.05
10. Marketing & quality control	1.91	2.50	0.52	0.40	0.50	0.30	0.30
	117.85	160.00	24.25	16.16	14.20	22.88	15.80
Total	958.42	1,464.00	209.67	216.28	234.72	282.13	307.95

Source: Economic Survey.

Table 7: Distribution of Landholdings by Size Class in Karnataka Between 1970-71 and 1995-96

Size classes	Percentage of landholdings					
	1970-71	1976-77	1980-81	1985-86	1990-91	1995-96
< 1 ha.	30.45	33.44	34.55	36.43	39.16	42.00
1 to 2 ha.	23.64	23.3	24.53	26.29	27.45	27.40
2.01 to 4 ha.	22.2	21.47	21.3	21.04	20.13	19.40
4.01 to 10 ha.	17.54	16.57	15.36	13.13	11.01	9.50
Above 10 ha.	6.17	5.22	4.26	3.11	2.25	1.70
Total in lakhs	35.51	38.11	43.09	49.19	57.77	62.21
Percentage of Area						
< 1 ha.	4.83	5.62	6.24	7.29	8.54	10.30
1 to 2 ha.	10.74	11.61	13.13	15.9	18.38	20.50
2.01 to 4 ha.	19.4	20.14	21.9	24.24	25.48	27.20
4.01 to 10 ha.	33.36	33.97	34.21	32.67	30.02	28.80
Above 10 ha.	31.68	28.66	24.52	19.9	17.59	13.20
Total in lakh hectares	113.68	113.57	117.46	118.79	125.59	121.09

Source: Government of Karnataka, 1995-96.

Table 8: Land Use Pattern in Karnataka During 1955-58 to 1995-98

Land use class	1955-58	1979-82	1990-93	1995-98
1. Forest	14.89	15.80	16.10	16.08
2. Land put to non-agricultural use	4.21	5.58	6.25	6.67
3. Barren and un-cultivated land	4.72	4.46	4.19	4.20
4. Cultivable Waste	3.51	2.62	2.33	2.31
5. Pasture and grazing land	9.63	6.96	5.71	5.34
6. Land under misc. trees, crops	2.05	1.77	1.66	1.66
7. Current fallow	4.34	6.07	5.86	7.15
8. Other fallow	2.90	3.34	2.27	2.17
9. Net area sown	54.15	53.39	55.62	54.42
10. Area sown more than once	1.79	4.30	8.19	8.58
11. Total geographical area	100.00	100.00	100.00	100.00
12. (Area in mill ha)	(18.65)	(19.12)	(19.10)	(19.10)

Source: Directorate of Economics and Statistics, Govt of Karnataka, Bangalore.

Table 9: Changes in Cropping Pattern

(Area as Per cent to GCA)

Crops	1955-58	1979-82	1990-93	1997-00
Rice	8.68	10.41	10.86	11.60
Wheat	2.91	3.17	1.80	2.16
Jowar	25.45	19.04	17.76	15.61
Bajra	5.11	5.67	2.98	3.04
Ragi	8.64	10.15	8.71	7.95
Maize	0.10	1.40	2.50	4.31
Total cereals	56.46	53.28	44.97	45.31
Gram	1.55	1.32	1.90	--
Tur	2.80	3.31	3.60	3.74
Total pulses	12.64	14.19	13.59	14.62
Groundnut	8.80	7.74	10.53	9.95
Sesamum	--	1.02	1.09	--
Safflower	--	1.48	1.35	--
Sunflower	--	1.00	10.22	--
Total oilseeds	12.08	12.56	24.39	19.56
Cotton	10.21	9.31	4.88	4.83
Sugarcane	0.52	1.50	2.32	2.71
Chillies	1.03	1.40	1.36	--
Tobacco	0.39	0.44	0.47	0.64
Coconut	0.86	1.59	2.02	-
Arecanut	0.29	0.50	0.55	-
Banana	--	0.35	0.27	-
Citrus	--	0.28	0.19	-
Mango	--	0.42	0.45	-
Coffee	0.61	1.03	1.19	-
Mulberry	--	1.07	1.29	-
Others	16.27	13.47	9.51	-
(Total GCA inLakh ha)	(104.3)	(110.3)	(121.9)	(120.02)

Source: Directorate of Economics and Statistics, Govt of Karnataka, Bangalore.

Table 10: Compound Growth Rates in Crop Economy: 1955-56 to 1993-94

(Per cent per Annum)

Crops	Area	Production	Productivity
Rice	0.60	2.21	1.60
Wheat	-0.63	2.73	3.38
Jowar	-0.84	1.26	2.12
Bajra	-0.47	2.19	2.67
Ragi	0.44	2.17	1.72
Maize	10.76	15.52	-
Total cereals	-	2.13	2.43
Gram	1.02	1.80	0.77
Tur	1.42	1.94	0.52
Total pulses	0.83	1.79	0.95
Groundnut	0.65	1.55	0.90
Total oil-seeds	2.18	2.74	0.54
Cotton	-1.60	2.39	4.06
Sugarcane	4.40	4.87	0.45

Note: Figures in the parentheses are values of 't' statistics

Table 11: Growth Rates in Crop Economy: 1990-2000

(Per cent Per Annum)

Crops	Area	Production.	Productivity
Rice	2.55	2.09	-0.45
Ragi	-3.22	-4.32	-1.14
Jowar	-1.28	-4.54	-3.3
Bajra	-1.4	-9.18	-7.89
Maize	7.75	6.86	-0.83
Wheat	3.98	4.78	0.77
Minor millets	-6.68	-5.43	1.35
Total cereals	0.14	-0.03	-0.17
Tur	1.5	-1.26	-2.72
Total pulses	3.92	-1.11	-4.84
Total foodgrains	1.02	-0.12	-1.12
Groundnut	-2.03	-10.4	-8.54
Total oil-seeds	-3.81	-9.56	-5.98
Sugarcane	-0.7	1.49	2.21
Cotton	-3.01	-3.42	-0.42
Tobacco	5.74	4.75	-0.93

Source: Based on the data collected from the Directorate of Economics and Statistics, Government of Karnataka.

Table 12: Area under Important Horticulture Crops in Karnataka

Items	Area		Percentage to total		Production		Percentage to total	
	1978-79	1995-96	1978-79	1995-96	1978-79	1995-96	1978-79	1995-96
	1. Fruits	1.41	2.66	17.05	19.10	23.41	45.14	42.00
2. Vegetables	1.26	2.29	15.24	16.44	20.10	46.72	36.06	42.84
3. Garden/ Spices crops	5.56	8.81	67.23	63.24	12.02	16.17	21.56	14.83
4. Commercial/ Flowers	0.04	0.17	0.48	1.22	0.21	1.02	0.38	0.94
5.Total	8.27	13.93	100.0	100.0	55.74	109.05	100.0	100.0

Source: Statistical data on Horticultural crops in Karnataka state 1993-94 and 1995-96, Govt of Karnataka

Table 13: Area under Horticulture 1995-2000

(in Lakh Hectares)

Crops	1995-96	1996-97	1997-98	1998-99(P)	1999-00(A)
Fruits	2.76	2.86	3.14	3.25	3.36
Coconut	4.25	4.31	4.94	5.14	5.35
Spices	3.91	3.96	5.61	5.87	6.15
Vegetables	2.43	2.45	2.59	2.65	2.71
Cashew	0.67	0.68	0.67	0.68	0.69
Flowers	0.19	0.20	0.20	0.20	0.20

Note: P: Provisional, A: Anticipated Source: Directorate of Horticulture