

Development Research Group

**Study
No. 21**

**MODERNISING INDIAN AGRICULTURE:
PRIORITY TASKS AND CRITICAL POLICIES**

**V. M. Rao
P. D. Jeromi**

Department of Economic Analysis and Policy
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V.M. Rao

PREFACE

There is a lively debate in progress among academics and policy analysts in India about the role that the government should play in the economy including agriculture. The pendulum swings between the two extreme stances--- the government ruling from a commanding height at one extreme to the government as a low-profile facilitator at the other. Strangely, as the debate gains in intensity, several critical tasks and policies for agricultural development, which ought to be implemented with a sense of urgency, are seen to receive scant attention. There should be little controversy about the importance of these tasks and policies or about the primary responsibility of the government towards them. The intention of this paper is to present a systematic discussion of these tasks and policies keeping in mind two purposes. First, it is argued that, despite the controversies about the role of the government, it should indeed be possible to work towards a substantial measure of consensus on the priorities for agricultural growth and development on which the government should concentrate provided there is a sufficiently widely shared understanding about what the goal of agricultural development needs to be. It is hoped that modernisation of agriculture in the widest sense of the term which we take as a goal in this paper would seem a reasonable goal to most. Second, we believe that thinking and working along a pragmatic set of priorities would help lead the debate on the role of the government away from the entrenched extreme positions towards the wide region in between where compromises could be reached, balances struck and workable solutions discovered. The paper is intended as a modest contribution in this direction.

The paper has a two-tier structure. Part I discusses in some detail the pressing need to reform the present policymaking system for agriculture. Three aspects are identified for this purpose and, for each aspect, tasks are indicated which deserve high priority and speedy action. A disconcerting point about this agenda of tasks is that the policymakers are quite aware of the importance of these tasks and of the gravity of consequences arising from neglecting them. We see a glimmer of hope in the emerging pressures and crises which might elicit a better and more substantive response from the policymaker in the coming critical years to implement the priority tasks. It is necessary to bear in mind that it is not enough for the policymaker to work towards reforming the policymaking system which needs a long-term perspective and strategy. These have to be complemented with efforts to improve current policies and their implementation keeping an eye on the immediate years ahead. This is a vast and hazardous area with which high-powered commissions grapple for years! We consider it prudent to be very modest and selective in our approach. Part II reviews briefly the issues relating to a few selected policy areas which we regard as critical for promoting modernisation of agriculture. The purpose is the limited one of stimulating discussion on selected policy themes. For easy reference, the priorities identified in Part I and II are listed at the end of Part II.

The paper is an outcome of close collaboration between the two authors. The division of work on the paper among the authors was as follows. Prof. V.M.Rao designed the paper in consultation with Dr.A.Vasudevan, Executive Director, Reserve Bank of India, Dr.M.D.Patra, Director of Development Research Group and Dr.P.D.Jeromi. Part I is contributed by Prof. V.M. Rao and Part II by Dr. P.D.Jeromi.

Mumbai,
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Authors

CONTENTS

Contents	Page No.
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Part I – Reforming Policymaking: An Agenda of Priority Tasks

- 1.1 Introduction
- 1.2 Modernisation of Agriculture : Goals and Objectives
- 1.3 Towards a Self-Regulating System
- 1.4 Overcoming Limits to Growth
- 1.5 Promoting Human Development
- 1.6 Getting Oriented to Modernisation: The Prospects Ahead

Part II – A Review of Critical Policy Issues

- 2.1 Introduction
- 2.2 Capital Formation
- 2.3 Agricultural Credit
- 2.4 Agricultural Insurance
- 2.5 Globalisation
- 2.6 Watershed Development
- 2.7 Research and Development
- 2.8 Development of Non-Farm Sector

Modernisation of Agriculture: The Priorities at a Glance

Select Bibliography

MODERNISING INDIAN AGRICULTURE: PRIORITY TASKS AND CRITICAL POLICIES

V.M.Rao*
P.D.Jeromi

PART – I REFORMING POLICYMAKING: AN AGENDA OF PRIORITY TASKS

1.1 Introduction

The arrival of the new millennium has been heralded by numerous vision documents about the long-term prospects of the Indian economy. There is considerable anxiety about the likely course of the agricultural scenario in the country. While science and technology hold promise of plenty, doubts are expressed about our capacity to make productive and wise use of the technological opportunities. We are told that there is enough room for foodgrain production to expand but we cannot be equally sure that the arrangements needed to reach foodgrains to those in distress would be effectively organised. There is good evidence to show that agricultural growth benefits even the poorest but, regrettably, the impact on the poor appears to remain too modest to support a lifestyle meeting the minimum norms of human development like adequate education, health and nutrition.

Development strategy and policies, particularly those focused on agriculture and rural areas, would be a critical factor influencing the agricultural scenario as it actually unfolds in the decades to come. There is a vast literature on agricultural policies in India assessing their performance and suggesting reforms. The central and state governments and the associated bodies engaged in the task of formulation of policies have adequate in-house facilities for high quality policy analyses. It would be presumptuous on the

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part of two individual researchers like us to seek to prepare a full-fledged policy agenda for the future. This paper is motivated by a far more modest and limited objective. Our attempt is to identify tasks focussing on which could help the government in strengthening the policy-making process itself so that policies gain in relevance, reach and impact on intended beneficiaries. Part-I discusses the priority tasks.

One has to begin by taking note of the transition which is in progress in the process of policymaking for agriculture and rural areas. The transition has three inter-related dimensions. The first is the move towards decentralisation with the governments at the state and lower levels --- particularly those at the grassroots --- assuming larger role and responsibility than now for policy choices and their implementation. Decentralisation makes it necessary to have a framework enabling the governments at different levels – from the centre, states to districts and below—to work in a unified manner complementing each other. The second dimension relates to shift of emphasis from the government role as a intervener in the economy to facilitator enabling the different constituents in the economy—markets, business units, user groups, cooperatives etc.--- to operate in a smooth and efficient manner. Direct interventions by the government and its taking up functions normally done by other constituents in the economy were unavoidable in the past but over the years the negative features of direct interventions--- burgeoning bureaucracy, politicisation of economic decisions, administered prices flouting economic norms etc.--- have come to dominate. Also, the other constituents in the economy are now in position to take up functions in which they have comparative advantage over the government. Shifting of emphasis from direct interventions in the economy to the role as a facilitator would be of help in reducing the size of the government and the range of its direct and primary responsibilities. The policy agenda would become trimmer with many heavyweights dropping out and making room for modest and practicable measures. This would be a time-taking process but, happily, the growing burden of deficits and the prospects of bankruptcy might be of help in quickening the pace of the process! It is to underline the uncertainty about what would eventually remain on the policy agenda that we have chosen to focus the paper on tasks and selected policies rather than on the full range of policy agenda. Third, apart from the facilitating role, the government would have to participate more actively in the society's efforts to realise long-term macro objectives like conservation of environment

and promotion of human development where the primary responsibility for building up perspectives, institutions and mechanisms must rest on the government.

Our attempt in Part-I of this paper is to identify tasks focussing on which would make the transition described above in the policymaking process fast and smooth and also help the process get oriented towards the long-term goal in development. Section 1.2 describes the goal that we believe to be appropriate for Indian agriculture at the present juncture of its development viz. Modernisation of agriculture in its physical as well as community dimensions. A serious imbalance between these two dimensions has emerged over the post-Independence decades. Section 1.2 takes note of this imbalance and argues that to eliminate the imbalance the government should strive to have quick breakthrough in achieving three objectives:

- i) Making agriculture a self-regulating system with government confining itself to a facilitating role in the day-today business and routine operations. However, we do recognise situations in which the government would have to play an interventionist role.
- ii) Meeting the challenge of limits to growth imposed by India's land and water resources.
- iii) Promoting human development which is a critical ingredient in transforming modernisation as a broad-based development process.

The next three sections in Part-I — sections 1.3, 1.4 and 1.5 — deal in turn with each of these three objectives discussing their current status and the main problems impeding progress. The priority tasks are identified in the light of this discussion. It needs to be stressed that we have identified the priority tasks without going into their technical, administrative and organisational aspects. There is a rich literature on these issues and lack of information or expertise is hardly a barrier in the way of the policymaker. Second, the tasks identified in the paper do not form a blueprint for the future. Continuing progress towards modernisation of agriculture would need review at intervals to re-identify priority tasks in the light of what has been achieved till then, what remains and how best to move ahead keeping in mind the dynamics of the system. Looking ahead, Section 1.6 argues that the government would have to work towards modernisation of agriculture while remaining preoccupied with many and difficult problems threatening the stability of the Indian society.

1.2. Modernisation of Agriculture: Goals and Objectives

The post-Independence decades have witnessed a veritable transformation in Indian agriculture. What is most readily noticed is the increase in agricultural production, particularly the nearly four-fold rise in the production of foodgrains which saved the country from one of the gravest crises it faced after Independence. The increase in production was made possible by expansion of irrigation, spread of new technology and additions to rural infrastructure like irrigation works, roads, market yards and warehouses. These changes in the physical features of agriculture needed changes in the institutional structure - like new credit institutions, extension agencies, regulated markets, control of moneylenders. The cumulative effect of these changes has been reflected in the farmers - their perceptions, attitudes and behaviour - and in the changing features of rural communities such as stratification, diversification, commercialisation and exposure to outside influences. The total process bringing about these wide ranging changes could be described as modernisation of agriculture. In a rural-cum-agriculture-based society like India, the process of modernisation of agriculture through its direct and indirect impacts would be a major determinant of economic status, development and welfare of rural people.

A striking feature of modernisation of agriculture in India is the contrasting scenarios through which it is unfolding. The aggregative physical parameters of agriculture show remarkable achievement. Listed below are a few striking indicators of improvements in the physical aspects of agriculture.

-
- Between 1949-50 and 1996-97, Index (base 1980-81) of agricultural production increased from 49 to 176, index of foodgrains from 52 to 161 and non-foodgrains from 45 to 201. Index of per hectare yield (all crops) increased from 74 to 149. It may be mentioned that the agricultural scenario has been one of stagnancy in the decades prior to Independence.
 - Between 1950-51 and 1994-95, gross cropped area increased from 132 million hectares to 188 million hectares implying a rise in cropping intensity from 111 to 132. Gross irrigated area went up from 23 million hectares to 71 million hectares.
 - Between 1950-51 and 1996-97, distribution of improved seeds increased from negligible to 70 lakh quintals. Fertiliser use increased from only 69 thousand tonnes to 14 million tonnes with per hectare fertiliser use going up from negligible

to 77 Kgs. Pesticides use increased from 2.4 thousand tonnes to 56 thousand tonnes. Consumption of electricity in agriculture went up from 15200 Million KWH in 1981-82 to 85736 Million KWH in 1995-96.

- Institutional credit (Cooperative Societies, Commercial Banks and Regional Rural banks) was 28653 crores in 1996-97 as compared to 10186 crores in 1989-90.

Source: Agricultural Statistics at a Glance, Government of India, March 1998.

On the other hand and paradoxically, despite the good performance of agriculture, the rural communities in India have poor development indicators. Before taking a look at the indicators, it may be mentioned that UNDP's Human Development Report, 1997 shows that judged by Human Development Index (HDI) India ranks lower (rank 138 out of 175 countries) than Myanmar (rank 131) which figures among "Least Developed Countries"! The development indicators for the rural communities given below are from a recent large scale survey conducted by National Council of Applied Economic Research (Shariff A, 1999).

- "About half the population of rural India is illiterate and suffers from 'capability poverty', about 40 per cent have extremely low incomes".
- "Over 50 per cent of Indian population is still vulnerable and cannot afford the cost of education and health care".
- "National policies and programmes during the last half a century have not helped the SCs and STs to emerge from the perennial poverty trap".
- 63 per cent of villages do not have pucca/all weather connecting roads. In some states this is true of over 80 per cent of villages.
- "About one-half of all villages in India do not have any source of protected drinking water".
- "Overall, 88 per cent of all villages in rural India have a primary school within the village (but) about a quarter of villages in Uttar Pradesh, Himachal Pradesh and Orissa do not have even primary schools. Given the relatively poor transport network in these states, implementing the goal of universal primary education in these states seems remote".
- "Only about 22 per cent of all villages have a (health) sub-centre within the village".

The purpose of this paper is to look at our experiences to seek clues about how modernisation of agriculture could be harnessed for enhancing the economic status and

welfare of rural people. It would be helpful to keep the following points in mind as we undertake the search.

- Linking modernisation of agriculture with modernisation of rural India is a critical part of the larger task of nation-building in India. Nation-building is an outcome of numerous socio-economic and political processes at macro, regional and micro levels. The government's development role requires it to influence, regulate and modify these processes, but, in a democratic polity, the government itself would to an extent be a product of these processes.
- It is the fundamental responsibility of the government to ensure that its role and actions are guided by a national perspective and by the long term goals and interests of the nation as a whole. This is a difficult role to play for a government in a democratic polity where it has to continually respond to innumerable sectional demands. This is particularly true in India where elections threaten to become an annual chore!.
- The development strategy so far has been centre-dominated with a metropolis-cum-elite bias and a top-down approach in implementation. The recent reforms and the philosophy underlying it favour a market-led strategy with the government playing a facilitating role, to promote growth, to make growth more broad based, to improve the access to growth by the backward and the poor and to provide safety net to the weak and the vulnerable.

Harnessing modernisation of agriculture for the development of rural areas and people is a distant goal which needs to be approached through a sequence of phases. The first step in preparing an agenda focused on this distant goal is to specify the objectives which would help in identifying the priority tasks forming what may be regarded as the beginning phase for moving towards the long term goal. The priority tasks would depend on the current status of agriculture and the promising directions for taking the next steps. The agenda we are seeking in Part-I of this paper is a modest exercise to prepare a tentative list of priority tasks on the basis of available research studies and policy analyses. Such an agenda would be useful as a discussion document and as a framework which could be filled out and extended through further consultations. Our discussion of agenda is organised around three objectives described below.

(a) Towards a Self-regulating System

A remarkable feature of agriculture is the wide gap between what the technologist gets in the experimental farm and what a farmer gets on his farm and also a wide gap between the "best-practice" farmer and the common run of farmers. The government's interventions through providing subsidies and organising extension services have had an

impact only in a few areas with large parts of agriculture remaining barely touched. As a long term goal, the objective should be to have an agricultural system operating through well-organised markets, efficient farmers and a smooth process integrating technology generation, its adoption on farms and optimum production basket for end uses. Such a process would need well-behaved markets providing clear signals for farmer decisions, farmers able and willing to respond to the signals and supply and demand responses occurring with reasonable speed and accuracy. In the real world, the process would be far from smooth as it would be buffeted by succession of shocks and disturbances. We propose the following specific objectives for the government to push the present system towards self-regulation.

- i) A national perspective for agriculture compatible with market-led growth, its implications for regional comparative advantages and preferred opportunities; a time frame and a clear set of priorities for investments and creating infrastructures.
- ii) Handing over of development functions to Panchayati Raj Institutions (PRIs) as visualised by the recent constitutional amendments. This could become a catalyst in the emergence of grass root level participatory institutions like user groups and beneficiary unions apart from the functions directly undertaken by the PRIs. The chief weakness in the present government role in agriculture is the inability of the top down approach to look after the development functions at the grassroots level which need a system based on devolution, participation and local leadership and initiatives.
- iii) Providing an environment for steady improvements in the self-regulating features of the system. Acquiring capabilities to monitor the system and to make corrective interventions.

(b) Overcoming Limits to Growth

The extensive margin of cultivation has already reached its limit in Indian agriculture. In the three decades (1967-68 to 1996-97) since the green revolution began, area under crops increased at a rate of 0.38% per annum as compared to 3% per annum increase in agricultural production. The rest of increase in production came from improvement in yields. Net area sown increased from 119 million hectares in 1950-57 to 140 million hectares in 1970-71 and has, since then, been fluctuating between 137 million hectares and 143 million hectares. Agricultural growth targeted in the Ninth Plan is 3.8% per annum. It would be a reasonable assumption to make that sustained agricultural growth around 4% per annum would be critical to the future growth of Indian economy.

Thus, in the years to come, Indian agriculture would be using up its potential for intensive cultivation. The progress in this direction achieved so far has been by bringing more area under irrigation. Gross Irrigated Area increased from 23 million hectares in 1950-51 to 38 million hectares in 1970-71. By 1994-95, gross irrigated area had gone up to 71 million hectares. Thus, in the green revolution phase, irrigation increased at the rate of 1.4 million hectares per annum as compared to 0.7 million hectares in the preceding decades, 1950-51 to 1970-71. It would be only prudent to visualise that Indian agriculture would be getting close to the limits to growth imposed by its water resources in the coming decades. It could happen that the water constraint becomes operative even as India's population continues to grow though at a diminishing rate. Even the optimistic estimates made by demographers put India's eventual population at a staggering 1500 millions. Apart from the looming threat of reaching the physical limits of land and water resources, Indian agriculture also faces the challenging task of establishing effective arrangements for conservation of resources and protection to environment. The specific objectives suggested by us in this area are:

- i) Building up a comprehensive, reliable and periodically updatable information system for land and water resources.
- ii) Numerous programmes have been implemented for soil and water conservation without enduring results. These programmes seem to be particularly difficult to implement when the development strategy relies on top-down approach. Conceptually sound principles like development of watersheds in an integrated manner which have fared poorly so far might do better when PRIs take over the grass root level development tasks.
- iii. Infrastructures created in the field need to be handled with care and maintained in good condition. It is necessary to encourage formation of informal groups of beneficiaries which could be in a position to do these tasks efficiently and in a cost-effective manner.
- iv. Populist policies in relation to land and water are believed to have resulted in serious distortions in the form of restrictions on markets, low administered prices and regressive subsidies. This is an area where the conflict between meeting short term political pressures and long term goals need to be resolved.

(c) Promotion of Human Development

As agriculture becomes self-regulating and the arrangements for ownership and use of land and water conform to the desired norms, conditions will become favourable for

the poorer sections in agriculture - forming the hard core poor - to gain opportunities for upward mobility. Ultimately, the development of these sections could be promoted only by creating such opportunities and enabling the poor to actively seek them and benefit from the gains these opportunities provide. The present antipoverty programmes give only a modest measure of relief to the poor without touching the system which has reduced them to poverty and frustrates their aspirations and efforts to move upwards. While policy makers and researchers spend considerable time and energy to monitor the changes in the proportion of population falling below the poverty line, they do not seem to pay equal attention to the rapid marginalisation which has occurred in recent years of the population depending on agriculture and the widening gap between the per capita income in agriculture and that in other sectors. There are clear indications that the sectors which are growing faster than agriculture do little to relieve the pressure of population on agriculture. The reasons for the low absorption of labour outside agriculture need to be sought in the development strategy influencing the overall growth of the economy and its pattern and composition. This is beyond the scope of this paper but there is substantial potential for expansion of employment in rural areas through diversification of agriculture and the resulting rise in rural incomes and improvements in rural lifestyles. The specific objectives which would be of help in exploiting this potential are the following:

- i) Diversification of agriculture creates wide-ranging opportunities for value addition, supplementary activities and additional employment. As the system becomes more self-regulating, more would the endogenous processes stimulate the rural economy by activating the potential for new activities and additional employment. The government would have to play an enabling role to assist the poor in agriculture to participate in the new activities.
- ii) Rising rural incomes would expand the demand for goods and services. In addition to rise in income, the rural areas are also getting influenced profoundly by urban lifestyles and by growing rural - urban linkages through markets, migration, commuting and extending urban frontiers. This scenario would have to be kept in mind while choosing the activities for extending initial support and help.
- iii. This emerging context would be favourable for acquisition of training and skills by the rural people, particularly the rural poor, to take up new occupations. It may also be expected that in response to rising demand for new goods and services, the supply of facilities for training and for acquisition of skills would expand. The government would have to be watchful to ensure that the facilities match the requirements and remain within the reach of the poor.

The next three sections - sections 1.3 to 1.5 deal with identification of priority tasks in the light of the objectives mentioned above.

1.3 Towards a Self-Regulating System

Independent India inherited an agricultural system not oriented towards growth and development. During the pre-independence decades, rural communities have had a prolonged exposure to monetisation, commercialisation and penetration by markets. But these processes served the interests of the colonial power and of the organised industries. They disrupted the traditional systems which enabled the villages to survive through succession of adversities over the historical past as relatively cohesive communities. With the disruption of the traditional system, the villages had to struggle on their own to adjust to the changing wider world around them. They could neither go back to their erstwhile relative isolation nor quickly linkup with the modernising mainstream society. When Independence came, the villages were in a state of disorientation lacking the pre-requisites - organisation, institutions and native leadership - to participate in the new era of planned development. Ironically, the sections in society which led the freedom movement and which became the new rulers did not have deep enough roots in the village society and were fascinated by development priorities far removed from the Gandhian commitment to villages and the poor.

This was the setting in which the government struggled in Independent India to modernise the agricultural system. We have already described the transformation brought about in agriculture in which the government played a leading and substantive role. Along with the achievements there were also biases resulting in gaps and shortfalls. Large projects which could be handled from the top received priority at the cost of small local level works. When the food crisis came, the green revolution was engineered by pouring in resources and investments in a relatively small but better-off part of Indian agriculture but the much larger poorer part of agriculture and the farming communities subsisting in that part received much less attention than what was needed to modernise the agricultural system as a whole. The Centre played a dominant role in policy making than the states; the PRI tier of government was yet to take shape. As a result, the advantages of top-down approach were reduced while its defects were made worse. It is important to keep in mind

the biases mentioned above when considering the role of the government in promoting modernisation of agriculture in the years to come.

Since the focus in this section is on strengthening the self-regulating features of agriculture, let us do a quick stock-taking exercise which would be of help in suggesting the priority tasks to be attended to by the government. We draw on a few recent studies which have looked at the responsiveness of the agricultural system to technological change and to emerging economic opportunities offering better returns as also the resilience of the system in the face of critical weather conditions. There is a large literature on the rationality of farmer's decisions and behaviour. However, our interest here is in the dynamics of the agricultural system as a whole to move ahead and to respond to the challenges it faces.

Response to Technological Change

Reviewing the period of 1980s and beyond, Sawant and Achutan (1995) give the following assessment.

- There has been an upsurge in the aggregate production and productivity in Indian agriculture during the 1980s which cannot be attributed merely to favourable weather. The fact that the contribution of yield improvement has been far more important than that of expansion in area indicates that the process of growth has been technologically more dynamic (as compared to the earlier green revolution years).
- Unlike in the past, yield growth has been more impressive for non-foodgrains than foodgrains and, among the foodgrains, for kharif foodgrains vis-à-vis rabi foodgrains. Acceleration in yield growth occurred in case of rice, maize, other pulses, rapeseed, sesame, soyabean, rubber, cotton. For many other crops, yield continued to expand at the pre - 1981 rates. The indication, on the whole, is that of a much wider diffusion of technology across crops than in the past.
- Foodgrains output growth picked up in many less developed areas from the central and eastern regions where growth has been sluggish in the early phase of the green revolution. With fairly rapid expansion in productivity of non-foodgrains, growth in agricultural incomes too accelerated in majority of the states in the 1980s. In sum, agricultural growth has become more broad based in recent years.

What explains the performance of agriculture during the 1980s? Sawant and Achutan offer the guess "Many factors associated with the wider adoption of new technology must have contributed".

Optimisation of Resource Use

Looking again at the post-1980 period, S.K. Ray (1998) finds

"Agricultural growth became more widespread from the early 1980's. Growth rate exceeded 3 per cent in all the regions, ... crop diversification and choice of appropriate technology made by the states in the 1980s reduced significantly the interstate disparities in agricultural growth the inter state disparity in overall crop yield levels declined sharply... It appears resource endowments of the regions are reshaping the locational pattern of production ... areas better endowed with assured water supply are progressively moving towards production of rice, wheat and other high-value non-foodgrain crops. Coarse cereals, pulses, oilseeds and some other non-foodgrain crops - which can withstand short dry spells, require less water for production and are amenable for cultivation under drip and sprinkler techniques of irrigation - are increasingly moving towards water scarce areas. The processes of change in locational pattern of production, initiated from the early 1980s, has contributed in making more efficient use of natural resources ... seasonal changes in the pattern of production have improved productivity coefficients of modern technological inputs. In the post - 1985 period, the impact of these mutually reinforcing changes has given a new look to Indian agriculture. It has induced a dynamic process of change on a higher and stabler growth path".

Resilience in the Face of Critical Situations

S.K. Ray's findings on the vulnerability of agriculture to weather conditions give a reassuring picture.

"Another heartening feature of the recent developments in Indian agriculture is that it has become progressively resilient to vagaries of weather. For most of the crops and crop aggregates, sensitivity of output to fluctuations in rainfall has declined. This positive development is all the more impressive as, contrary to the favourable impression given by the meteorologists, our computed crop specific rainfall indices indicate that Indian agriculture did not enjoy a prolonged run of exceptionally favourable weather. In seven out of the ten years ending in 1994-95, rainfall index for all crops production was below normal, four of which were low enough to cause a crisis situation in agriculture. And, yet, unlike earlier years, agricultural output did not record sharp declines".

Recent periods of severe drought provide convincing evidence of the ability of Indian agriculture to withstand the stress created by such critical situations which used to cause widespread devastation in the past (see table 1.3.1).

**Table 1.3.1 : Indices of Area, Production and Yield - All Crops
(Base: Triennium Ending 1981-82 = 100)**

Year	Area	Production	Yield
1964-65	91.7	76.4	88.3

1965-66*	90.7	63.7	73.2
1966-67*	90.6	63.0	73.6
1967-68	94.6	77.1	86.8
1971-72	95.8	85.2	91.6
1972-73*	92.5	78.2	86.0
1973-74	98.2	86.5	91.1
1986-87	100.3	115.2	112.4
1987-88*	96.0	115.3	114.4
1988-89	103.4	140.0	130.5

Source: Agricultural Statistics at a Glance, Government of India, New Delhi, 1998.

Note: Drought years are indicated by star. Other years in the table may be expected to be free of the effect of drought.

Two points need to be noted in table 1.3.1. All the three variables - area, production and yield which bear the brunt of the impact of drought show increase over the three drought episodes. It would be reasonable to interpret this increase as reflecting the improved capabilities of Indian agriculture to counter droughts. Second, in the 1987-88 drought, while there was some decrease in the cropped area, production and yield show no impact of drought at all as compared to the preceding year. As regards the succeeding year, it seems to have been a year of bumper production. However, it must be borne in mind that drought may still have large impact on particular crops and regions. India's war against droughts has to continue though the country would be in a far more comfortable position than before in tiding over the problems caused by droughts.

In view of the responses of the agricultural system noted above, it would be reasonable to conclude that the system has by now (late 1990s) made good progress towards becoming a self-regulating system in the sense of acquiring endogenous capabilities to move along a steady growth path, to gain in efficiency by adjusting to changing conditions and to manage crises like droughts by minimising their adverse effects. The government played an important role in the evolution of the agricultural system in the post-Independence decades. However, the interesting point about the 1980s is that there was a relative lull in the activities of the government. A recent study of capital formation in agriculture shows that in contrast to the continued decline in public sector real capital formation in agriculture during the 1980s, "private sector capital formation continued to rise throughout the decade more than compensating the fall in the public sector capital formation" (Mishra and Chand, 1995). The study also showed that "the marginal efficiency of capital increased from 0.15 to 0.28 and further to 0.41 during the time when public capital formation declined". The authors attribute the growth in the

private capital formation to the activities of "politically conscious, interest seeking, organised groups of farmers". Thus, the performance of the agricultural system during the 1980s provides a basis for expecting the system to move forward with its own dynamics in the coming years.

Looking ahead to the future evolution of the agricultural system, the role of the government would have to change from direct interventions to helping the system to gather further strength and thrust. The philosophy of liberalisation and globalisation requires that the agricultural system should operate in an environment of free domestic and world markets. The government could play a dual role in the emerging situation: (i) enabling the agricultural system to adjust to the new environment and to benefit from the advantages it confers, and (ii) to protect the agricultural system and the country when the markets become disorderly, get manipulated by a few dominant operators or other governments encroach on our markets and bars our entry to their markets.

The role that the government can play to help the agricultural system operate effectively in the market environment is by building up a planning system appropriate to the changing situation. The new system would have to be indicative in its approach providing a medium-to-long term perspective on the objectives like growth, diversification, new technologies and investment requirements. Indicative planning means presentation of a road map – and not a set of diktats to be obeyed – for guiding decision-making by the different operators in the agricultural system including the farmers. When these operators have only market signals to rely on, they have in effect to grope without any clear idea about where they are headed. In a sense, market signals at best offer clue to what the next few steps could be. Knowledge of indicative plan would make the task of responding to market signals more amenable to systematic decision-making by the operators in the agricultural system. Secondly, the new planning system has to be multi-level in structure so that the planning objectives at the national level get translated into desirable targets at the regional and micro levels and, in turn, decisions and perceptions at these levels flow up as feed back to the apex level. Thirdly, the new system has to be participatory in operation with farmers having a place in the process of formulation and implementation of development programmes.

Some progress has been made so far in assembling the basic building blocks for constructing a planning system with features described above. The building block at the bottom is the PRI institutions which have now a constitutional status and a mandate for undertaking a wide range of development functions including those relating to agriculture. Our concern here is not with the PRI as a whole but only with their responsibility to organise decentralised planning at the district and lower levels. The second building block is the Agro-climatic Regional Planning exercise undertaken by the Planning Commission since 1988 to construct a national level planning perspective for agriculture based on detailed regional studies to assess resource endowments, strategies for balanced development of the region, comparative advantages, choice of priority activities, infrastructure needs and investments. The regional level studies were done by teams of experts from agricultural universities and research institutions. The exercise began with delineation of 15 regions which were in the second step disaggregated into 73 sub regions. The team of experts, representative from the Planning Commission, representatives of the state governments and academics held periodic meetings to discuss the regional and sub-regional studies, improvements needed in the data bases, investment implications and phasing of programmes over time.

The ACRP documentation has now reached a point where operationalisation of the ACRP approach to agriculture-cum-regional planning could commence. It is only through operationalisation that the regional and sub-regional studies and the development design recommended by them could be field-tested and continually updated through feed back from the bottom and evaluations at the regional and national level. Two moves are in progress to operationalise ACRP approach. First, there has been a broad agreement among the states at the time of formulation of the Ninth Five Year Plan that the state plan and the district break downs would incorporate the ACRP strategies and preferred activities and make the necessary provisions for their implementation. Second, it was also the intention that the district planning committee and other bodies provided for in the PRI legislation would be brought into being to change over from sectoral programmes planned and implemented by the line departments headquartered in the state capital to area planning involving integration of sectoral plans.

The quotation below from a recent ACRP document (Guha, 1997) would give a flavour of the work done by the Zonal Planning Team.

"Zonal profiles include detailed descriptions (both quantitative and qualitative) of land and water resources, population, farming systems, support systems to agriculture and allied sectors. These were supplemented with historical information on development patterns, technological and socio-economic issues relevant to integrated development. These profiles were interfaced with perceived regional needs and priorities to work out broad strategies. The ZPTs then worked out specific action plans and programme outlines respective to the revised strategies giving their financial and organisational implications along with the physical targets. ... The zonal exercise was later translated into state-sub-regional agro-climatic plans. In the ACRP state-sub-regional plan, while the basic profiles and strategies were flowing directly out of the zonal exercise, the programmes were refined by state level priorities.... Sample of the output of Zonal Planning Teams is given in the Exhibit below which forms the basis of various activities at different levels".

Exhibit: Issues and Strategies in Different Zones under ACRP

No.	ZONE	Issues	Strategies
1	Western Himalayan	Steep Slopes, Soil Low Ground Water	Rational Land Use, Soils & Water Conservation
2	Eastern Himalayan	High runoff, Chaur lands, Shifting Cultivation	Soil and Water Conservation, Settled farming
3	Lower Gangetic Plains	Floods and Poor Drainage	Reduced Water Conservation in Low Land through Embankments, Gully Controls & Runoff Diversions
4	Middle Gangetic Plains	Water logging and Salinity	Water resource management, Conjunctive use of Canal and Ground Water, Soil Amendments
5	Upper Gangetic Plains	Saline-alkaline lands, Water logging in Canal Irrigated areas & Low Cropping Intensity	Land Reclamation through Soil Amendments, Water Scheduling, Introduction of Intensive Cropping Patterns
6	Transgangetic Plains	Saline Land and Saline Ground Water deteriorating Soil Health	Soil and Water Managements, Restriction of heavy duty crops
7	Eastern Plateau & Hills	Undulating Topography, Poor Ground Water Development, Degraded Tanks	Soil and Water Conservation, Ground Water Development and Renovation of Tanks
8	Central Plateau & Hills	Soil Erosion, Low	Soil and Water

		Irrigation Development	Conservation, Development of irrigation and Waste Land Development
9	Western Plateau & Hills	Shallow Soils, Low Irrigation potential and Drought prone areas	Conservation of Rain water in-situ and in farm ponds, Development of irrigation encouraging Dryland Horticulture
10	Southern Plateau & Hills	Waste Land, Saline Soils, Low Irrigation, Reduced Tank Potential	Waste Land Development, Encouraging Horticulture, Soil Correction, Restoration of Tanks
11	East Coast Plains & Hills	Soil Salinity, Low Ground Water, Poor Drainage	Treatment of Soils, Rescheduling Canal water, Irrigation development, Encouraging Brackish Water Fish development
12	West Coast Plains & Hills	High runoff & erosion, Large amount of waste lands, Low Ground Water development	Soil and Water Conservation, Horticulture Development, Ground Water Development
13	Gujarat Plains & Hills	Over Exploitation of Ground Water, Saline Soils, Drought prone areas	Rationalisation of Ground water, Soil Correction, Soil and Water Conservation
14	Western Dry Region	Irregular Rainfall, Shifting Sand Dunes	Rain Water Conservation, Stabilisation of Sand Dunes, Development of Agro-forestry
15	Islands	Undulating topography, High runoff, Low NSA	Soil and Water Conservation, Rain Water Harvesting

When the ACRP approach focussed on the spatial aspects of resources and their potentialities is combined with institutionalisation of the decentralised-cum-participatory planning at the district and lower levels, the agricultural system would not only gain in capacity for self-regulation but it would also have a much stronger thrust on development

of rural areas and people which has lagged so far behind the improvement in the physical parameters of agriculture. Smaller and inaccessible villages which have been neglected so far would get an opportunity to enter the mainstream society owing to improvements in infrastructures, accessibility and availability of services. Broad based rural growth and diversification of rural economic activities resulting from area planning would expand the economic space available to the rural poor. The programmes to improve the human development status of the poor would become more effective in terms of both costs and benefits. Updated information on weather and crop conditions, market prices and prospects and extension messages and advice would get communicated more quickly and widely. It would also be reasonable to assume that the handing over of the development tasks to the PRIs – and through them to the local people – would keep in check populist programmes, leakages and wastages characteristic of the present system and bring out the potential among the people for self-reliance, local initiative and leadership.

Unfortunately, ACRP is still lingering at the workshop-cum-seminar stage without any substantial progress towards operationalisation. The essence of the ACRP approach is a basic change in the mode of planning at the state level from the sector-based approach to the region-based approach. In the former, the line departments headquartered at the state capital operate in relative isolation from each other with their departmental perspectives and priorities. Region-based approach, on the other hand, needs perspectives and priorities focussed on areas and their resources. Centralised planning proceeding from the top downwards finds a natural ally in sector-based approach where orders originate at the top and are obeyed at the lower levels. On the other hand, the region-based approach begins at the bottom with an integrated look at an area and the plans get reconciled and readjusted as they move up to state and central levels. Since the planning at the PRI level is still at the experimental stage in a few selected districts, the full operationalisation of ACRP may need considerable time. There is the further barrier that the politicians and the administrators who have worked with the sector-based approach for long years would have to be reoriented for the region-based approach. The latest available ACRP document (ACRPU, March 1999) mentions that "ACRP has been recognised and accepted as the logical planning paradigm at the state, the substate levels. States like Assam, West Bengal, Orissa, Tamil Nadu and Karnataka have internalised ACRP into their planning process. Other states are also showing greater acceptance of the recommendations of ZPTs.... The Planning Commission has made a major contribution in the acceptance of the ACRP

approach through prescription and persuasion. This has to continue along with efforts for "acceptance without imposition" at different layers of "formal and informal systems". Simultaneously, preparation of district plan to test out ACRP approach has been undertaken during the VIII Plan as an "innovative experiment by the Planning Commission to combine resource based planning with decentralised planning" (Guha, 1997). A recent study based on the proceedings of a workshop held in Karnataka to discuss the work done in two selected districts in the state reports. "The broad consensus of the workshop was that the two district plans presented (at the workshop) provided ample evidence of the fact that planning from below is a possibility and needs to be pursued more rigorously. The workshop has provided certain guidelines for strengthening the institutionalisation process of the ACRP approach at the decentralised planning level" (Hanumappa, 1997). We identify the following two priority tasks relating to the ACRP approach:

- The constitution of the District Planning Committees (DPC) should be completed as soon as possible and the DPCs should commence the work allotted to them. Even in a state like Karnataka which has been keen to activate and support PRIs, DPCs have not been constituted so far.
- Once the DPCs become active, there will be pressure at the state level to make the necessary changes in the planning system. Meanwhile, internalisation of ACRP into state plans may be completed in all the remaining states.

Even the best of self-regulating agricultural systems could face crises beyond their capacity to manage. War and widespread famines are good illustrations but relatively rare occurrences. Events like sudden market turbulence or dumping of goods from abroad could be more frequent and seriously disruptive. Keeping an eye on the market would need a regularly operating institutional arrangement. Economic invasions from abroad would need continuing vigilance and readiness to respond. Let us first discuss the government role in containing market turbulence. Agricultural markets are notoriously unstable owing to the nature of production conditions, dispersal of agricultural activities over a wide area and long chain of inter linked markets from the producer to consumer/end user. The role of the government to help organised markets develop in an orderly manner is part of the promotion of self-regulating agricultural system already discussed above. Improvements in accessibility to market, improvements in market infrastructure, modernisation of facilities for communication and information flow, rules to ensure free, open and fair market transactions would be some of the important steps to be taken.

However, there would still be occasions requiring direct interventions by the government. We have now considerable experience in the strength and weaknesses of the market operations undertaken by the government. Commission for Agricultural Costs and Prices, now over three decades old, regularly monitors the production and marketing of over 20 crops and recommends to the government minimum support prices designed to protect the interests of the producers. Nodal agencies like Food Corporation of India carry out market operations to ensure that the market prices do not fall below the minimum support prices. There are also cases like groundnut and cotton where market operations have been more commercial in nature and have been relatively more effective in getting better returns to producers. The minimum support price operations for rice and wheat are linked with the important issue of food security and public distribution system. The experiences with the government interventions in this area are summarised below.

- CACP recommendations and the resulting operations have benefited primarily rice and wheat owing to their link up with public distribution system. Rice and wheat are supposed to be crops in which India has comparative advantage and, hence, should be India's preferred exports. In the emerging context, PDS operated by PRIs and based on a wider choice of foodgrains including coarse cereals could be a better alternative than the current PDS to ensure food security to the poor, particularly rural poor.
- The practice of announcing minimum support prices has led to politicisation of the price issue and pressures to raise MSP to unrealistic levels. Often MSPs are announced long after the beginning of the sowing season. In the case of poor man's crops like coarse cereals, MSPs are announced without any serious intention to give price support when prices decline below MSP level. This is also true of prices prevailing in backward areas like Eastern Uttar Pradesh. Further, as specifications with respect to quality of the crop purchased by the government agency are often relaxed, farmer become indifferent towards the imperative need to ensure that the output they market meets the quality norms. Quality consciousness is important for the development of orderly and self-regulating markets.
- Announcing minimum support prices may be a desirable practice from the point of view of farmers but it is an ineffective and costly way of intervening in the market. It weakens the capacity of the government agency to compete with the traders. When prices decline, traders would sell produce to government agency. On the other hand, when prices rise and government agency enters the market as seller to keep the prices in check, traders would purchase and sell later at a higher price. Compared to MSP operations, the market intervention operations of NDDDB and Cotton Corporation of India have been more effective.

Looking ahead, the experience gained by CACP and by the nodal agencies like FCI and NAFED is a valuable asset for the government in organising market intervention

operations. A clear distinction needs to be made between the objective of helping farmers when nature or market turns against them and the objective of evening out market fluctuations. Stabilising farmers income needs measures like diversification of activities on farm, cooperativisation of storage, processing and marketing where cooperatives would compete with private agencies and crop insurance. It would be futile – as the price policy has shown so far – to expect price support measures undertaken by the government to achieve an objective which needs a combination of a wide range of programmes. The second objective, on the other hand, would be relatively easy to achieve if market intervention operations are undertaken on a commercial basis and not as a bureaucratic response to political pressures. Market intervention operations on a commercial basis would have to be organised with much care and caution. The operations should at least be no-profit-no-loss in financial results if not profit-making. The operations should be undertaken by an autonomous body having sufficient market expertise and, also, freedom to organise its activities as market operators without interference from politicians and bureaucrats. This may seem an extremely difficult arrangement to make. It is not so. We have a number of nodal agencies who have the necessary expertise but not the autonomy for using the expertise. CACP has excellent credentials as a watch dog though much of its energy is now spent in preparing reports which remain largely neglected excepting for their ritualistic use by the government in fixing minimum support prices. If an autonomous organisation is formed bringing together the nodal agencies with CACP acting as a think tank and coordinator, we would be making a confident beginning in organising market intervention operations on a sound basis. This gives us the third priority task in our policy agenda.

- Change over from the MSP operations to market intervention operations undertaken by an autonomous organisation having the necessary market expertise and freedom to operate on commercial principles without political/administrative interference.

We now come to the role of the government in the context of opening up of Indian agriculture to global markets. The prevailing mood in the policy making circles seems to be coloured by “export-optimism”. The pendulum might have moved to the other extreme from the earlier “Export-pessimism” and the new mood may be resting on as fragile assumptions as the earlier mood. If exports perform well and globalisation acts as a tonic on Indian agriculture, the role of the government would remain limited to the three priority

tasks already identified above. This would be a realistic scenario to look forward to if the world markets are robustly competitive, governments of developed countries play by the rules of the game and international borders facilitate trade and not bar it. However, globalisation has another and not so pretty face where international trade becomes economic warfare between governments rather than gentlemanly game played in well-behaved markets. Engaging in economic warfare with other governments is a challenging task not amenable to easy and readymade solutions. The government would have to remain vigilant, make maximum use of opportunities to negotiate workable arrangements in WTO or in other fora and, if nothing else helps, take appropriate action to counter and pre-empt adverse moves by other governments. Given below are a few glimpses of globalisation as intensification of the economic warfare between the governments.

"We question the basic argument that (international) prices will rise due to reduction in subsidies by the developed world... Implementation of the AOA agreement is carried out in such a fashion that developed countries do not have to reduce their subsidies to any substantial degree.... (with only) a few (large) multinational firms and trading agencies involved in export operations of agricultural commodities, the export market structure is not perfectly competitive... (they) have a status of oligopsonist-cum-oligopolist in the export markets... in imperfectly competitive markets, it is unlikely that price rises will be passed on to the Indian farmer ... trade opportunities are asymmetric because lower international price leads to imports but higher international price does not lead to export due to quality problems. Such weaknesses may also encourage other countries/trade blocks to propose quality criteria, which are difficult to meet by developing countries" (Indian Institute of Management, 1999).

"Indian farm exporters... face rapidly increasing technical barriers to trade or TBT in their traditional export markets like the European Union. TBTs are amongst the most common non-tariff barriers that several countries use to keep imports out. Of late, TBTs are increasingly employed in farm products where instruments like agricultural practices and ecological labelling are being used to control the import of food products. The trend is especially visible in the European Union... The developing countries have long complained that they have had no role at all in setting of international standards which are almost entirely being decided by the developed world and their corporate giants ... most developing countries lack the resources and the technical know-how to participate in the process... The failure of the Seattle Conference means that the disputes between the developed and the developing world cannot be resolved in the near future" (European technical barriers to trade scare Indian farm exporters, Ranvir Nayar, Rediff on the Net, January 6, 2000).

"Free trade did not have a good year in 1999. There was conflict between rich and poor countries over trade measures... conflict also grew during the year between the world's two largest trading blocs, the United States and Europe –

replacing the traditional rivalry between the US and Japan. The EU and the US disagreed on whether there should be further liberalisation of agriculture, with a goal of ending all subsidies, which could threaten the EU's common agricultural policy... More serious were the conflicts over the health related issues. The EU refused to import US beef treated with growth hormones... despite a ruling against them in the World Trade Organisation. And there is another dispute looming over the import of genetically modified food, widely produced in the US but widely feared in Europe. Following the collapse of the trade talks, the EU has insisted that GM foods should not be treated as a trade matter but ... as an environmental hazard in the UN's eco-safety protocol negotiations. The growing protectionist pressures in the world were most keenly felt in the United States ... the failure of the world trade talks did nothing to help the credibility of the World Trade Organisation ... the idea that trade rules have the force of law is being challenged within countries who are concerned that the WTO can override their own laws on issues like competition and environmental protection (Body Blow for Free Trade, BBC Business Page, December 25, 1999).

The following priority tasks are identified for the government to help Indian agriculture adjust to globalisation.

- Promotion of exports would need improvements in infrastructure, modernisation of facilities, rationalisation of rules and procedures and a stable export policy rather than the stop-go type familiar in cases like cotton. We expect that these promotional measures would get implemented in the course of adoption of ACRP approach to stimulate agricultural growth.
- As regards conflicts and clashes of interest with other governments given rise to by arrangements like WTO, the government would have to remain vigilant, make maximum use of opportunities to negotiate for mutually beneficial terms and conditions for trade and take appropriate action to counter or pre-empt hostile moves by other governments or large market operators like multinationals.

1.4 Overcoming Limits to Growth

From the supply side, growth of agriculture depends on natural endowments (land and water), reproducible inputs, capital and technological change. A self-regulating agricultural system would be able to look after the reproducible elements and generation of new technologies through research and innovations. The experience over the post-Independence decades with fertiliser growth, mechanisation and new crop varieties developed by our laboratories and research stations reflect well the capabilities of the agricultural system. Owing to policy deficiencies, the system may not have made the optimum use of these capabilities but it would be reasonable to assume that agricultural growth would normally stimulate expansion and improvements in these capabilities and,

consequently, would not encounter any serious barrier along this dimension. But this is not true of natural endowments like land, water and environment. While new technologies help natural endowment to produce more and to carry the burden of a growing population, a point must come eventually beyond which the natural endowment would get exhausted and begin to deteriorate. In the case of India, serious deterioration is already evident in natural endowment much before this limiting point owing to absence of policies or wrong policies. A self-regulating agricultural system may find it extremely difficult to correct the cumulative errors of the past nor would it be able to deal with the crisis if population growth gets close to the carrying capacity of India's natural endowments. Hence, the government has to bear the responsibility for ensuring that the natural endowment remains in a healthy state and that population stabilises well before reaching the carrying capacity of these non-reproducible resources. The discussion in this paper is limited to land and water the principal critical items of natural endowments.

It is best to begin by noting that the prospects are pretty grim not so much because of limited availability of land and water as due to the shocking indifference shown by the policymaker in conserving and making judicious use of the natural resources. Professor Y.K.Alagh who has had a long association with agricultural policies as an analyst and policymaker has recently observed:

"Land scarcity will become an acute feature of the Indian agricultural and rural economy and judicious use of land and water will be central to the growth process; India (is) facing for the first time population densities of the East Asian type... It is reasonable to assume that the geographical area of the country or the extensive land frontier for exploitation has reached its limits. This is an important issue the implications of which are not being realised with the urgency they deserve... Organisations, communities, households and individuals will have to grasp this fact and live with it" (Alagh, 1999).

This is a daunting challenge but Alagh finds that policymaking for agriculture does not reflect the sense of urgency needed in responding to the challenge:

"East Asian societies have a concern for land scarcity which has come through decades. This is not happening in India. We are not understanding that the entire expansion of growth has to now come from productivity or increase in cropping intensity. Indian agriculture is facing a lot of problems and it needs priorities of a kind which have not been given" (Alagh, 1997).

Intensification of land use depends critically on availability of water. This is particularly true in India as intensification of land use is being achieved by changing over to "green revolution technology" which needs abundance of water and chemical inputs. The prospects for water appear to be even more scary than that for land. Lester Brown, who is a keen and careful observer of agricultural and food security situation in developing countries, has this assessment about the prospects for water in India.

"Unless India quickly devises an effective strategy to deal with fast spreading water scarcity, it may soon face a decline in life expectancy as reduced irrigation water supplies will badly hit food production... India is one of the main countries where population is outrunning water supply... the projected growth of world population from 6 billion at present to nearly 9 billion by 2050 will exacerbate nearly all environmental problems" (Hindustan Times, January 15, 2000 Note on Worldwatch Institute Annual Report for 2000).

A tell-tale clue to the attitude of the policymaker towards the land and water situation is the poor data base for these critical inputs for growth. It was reported in newspapers sometime back that the estimates made on the basis of remote sensing techniques show a much larger area under cultivation than the area shown by the official land statistics. It is a common experience of rural investigators that land brought under cultivation through encroachment does not figure in land records as "cultivated land" and this could explain the discrepancy revealed by the remote sensing techniques. More important, the land records miss the quality aspect. Areas categorised as "forests", "pastures" or "under tree crops" include areas which are in reality degraded lands not fit for any use. The rural investigators would also be familiar with the divergence between the distribution of ownership and operational holdings as shown by the records and the actual ground level situation. Land reforms, instead of achieving their objective, have had the opposite result of making it extremely difficult to get reliable data on land under tenancy and land held in excess of the level fixed as ceiling on ownership of land. It is indeed strange that the policymaker in a country with chronic land hunger should remain so indifferent to the need for reliable statistics on the present status and future potentialities of its land resources and the extent to which the different socio-economic groups have access to land.

A word about the data situation with respect to irrigation. The post-Independence decades have witnessed an increase in the area under irrigation from 23 million hectares to about 71 million hectares now. However, these are the figures on the land use statistics

compiled by the Ministry of Agriculture. According to the Ministry of Water Resources, out of the irrigation potential of 90 million hectares created so far, 80 million hectares have been utilised. Even the experts seem unable to reconcile the gap of 9 million hectares in the two different figures of utilisation of irrigation or explain the gap between the potential created and the extent of its utilisation. Even more strange are the figures being mentioned about the ultimate irrigation potential of the country. Though the figure taken by most of us is 113 million hectares, according to a study in progress in Institute of Economic Growth, the figure has apparently been revised upward recently to 140 million hectares. The study also mentions a still higher figure of 175 million hectares which is believed to include the potential that can be created by inter-basin transfer of water! However, not much is heard about the time frame and investment plans to realise the ultimate irrigation potential.

It may seem baffling that the policymaker does not have with him even minimal basic data on the inputs critical for sustained long term growth in agriculture. Among the developing countries, India has an enviable reputation for the technical capabilities to build up data bases and information systems. Population census and national sample surveys are good examples of these capabilities. There could be two reasons for the sad state of data on land and water resources. First, centralised planning needs aggregate data and has little occasion to make use of detailed ground level data by districts and villages. The latter tend to get neglected e.g. data on crop yields are not available by sub-district level spatial units like blocks and villages. Second, it could also be that the state of data on land and water resources reflects the lack of interest in and concern about agriculture in the policymaker's long term perspective on the Indian economy.

The government would have to play a leading role in improving the data bases and information systems to enable agriculture to cope with the requirements of modernisation. When PRIs become active at the district and lower levels, they would need updated and reliable data on numerous aspects including land and water resources. Since the PRIs, would be collecting these data for their own use, one may expect substantial improvement in the quality, accuracy and timeliness of the data. By the same argument, improvements may also be expected in the data compiled at regional, state and central levels. The multilevel system would also be in a position to make more frequent, extensive and

probing use of remote sensing and similar advanced technologies for collection of data and assessment of resources.

If the data base on land is in a poor state, it is only to be expected that the policies for conservation and optimum use of land resources would be handicapped. We present below a few indicators (see table 1.4.1).

Table 1.4.1: Land Use Pattern (Mill.Hectares)

	1950-51	1970-71	1990-91
Total Reported Area	284	304	302
Area Under Forests	40	64	68
Barren and Uncultivable	38	28	27
Under Non-Agricultural Use	9	16	20
Pastures	7	13	12
Under Tree Crops and Groves	20	4	4
Culturable Waste	23	18	14
Other Fallows	17	9	10
Current Fallows	11	11	14
Net Sown Area	119	141	142
Gross Cropped Area	132	166	185

The major trends in land use over the years 1950-51 to 1990-91 have been the following:

- Net sown area increased from 119 million hectares in 1950-51 to 141 million hectares in 1970-71 which, apparently, is the limit of the extensive margin of land.
- Over the period 1950-51 to 1990-91 gross cropped area increased from 132 million hectares to 185 million hectares. While between 1950-51 and 1970-71, the increase was 34 million hectares, between 1970-71 and 1990-91 — with net area sown remaining at 140 million hectares — gross cropped area increased by only 19 million hectares i.e., a little over half of the increment between 1950-51 to 1970-71.
- Area under forests increased from 40 million hectares to 68 million hectares but most of the increase occurred between 1950-51 and 1970-71. The increase from 1970-71 to 1990-91 was only 4 million hectares. More important, as a recent study notes that "more than 40 per cent of total forest lands have poor tree cover and can roughly be described as degraded forest lands" (Chadha, 1996).
- Area under non-agricultural use expanded from 9 million hectares to 20 million hectares while there was a steep decline in barren and uncultivable land, apparently due mainly to shift to non-agricultural use.

- The categories of land of particular interest are pastures, area under tree crops, culturable waste and fallows. Area under tree crops seem to have practically disappeared while pastures registered good increase between 1950-51 and 1970-71 but there was a slight decline - instead of an increase - between 1970-71 and 1990-91. Culturable waste decreased from 23 million hectares to 15 million hectares but there is no sign of the area having been added to any productive category like pastures, area under tree crops or net area sown. Fallows went down from 28 million hectares from 1950-51 to 20 million hectares in 1970-71 but increased to 24 million hectares in 1990-91 of which nearly two-thirds were current fallows indicative of growing land exhaustion. In 1990-91 nearly 40 million hectares with some potential to contribute to production - almost a third as much as the net area sown - remained out of the production sphere in a country with chronic land hunger!

Policy analyses relating land use reveal a number of weaknesses:

- "much needs to be done to plug in policy deficiencies, implementation weaknesses and for raising the consciousness of the people at large. To put it bluntly, some hard thinking and some unconventional doing are needed.... The question of waste land development technologies has attracted only peripheral attention". (Chadha, 1996)
- Lamenting the absence of any decisive policy intervention, Nadkarni points out that soil conservation is not being adopted even where it is economically profitable for the farmer to do so (Nadkarni, 1995). These lands are "Nobody's Child" - neglected by the government as well as farmers owing to absence of arrangement to ensure that the benefits of investments mad by the farmer accrue to him.
- As regards forests, Pasha observes "Even after independence, the Government of India largely adopted the policies... of the British. But of late, the continued depletion and degradation of forest resources and the importance of forests to the rural communities forced the Indian policy makers to adopt National Forest Policy Resolution in 1988 which commits itself to the sound management and projection of forests as well as to protect and support the livelihood and farming systems of the local communities" (Pasha, 1999).

When programmes like soil conservation, wasteland reclamation and consolidation of holdings fail to achieve results, it is usual to blame the implementation agency and/or the intended beneficiary of the programme. It is important to realise that land use is influenced by a host of factors like comparative advantage in alternative uses, policy regime for agriculture and farmer's perceptions and attitudes. Hence, when considering improvements in land use, it is not enough to look only at deficiencies of the implementation agencies or lack of interest or motivation on the part of the intended beneficiary.

This point can be illustrated by taking a look at the two major situations in India accounting for a substantial part of the problems in land use viz., the green revolution areas and the semi arid drought prone regions. As regards the green revolution areas, consider the following findings from a study in Haryana on ground water over-exploitation and the consequential land degradation.

"fresh ground water areas witnessed comparatively high rate of ground water exploitation. The over exploitation of ground water in the State has largely been the consequence of more intensive cultivation of land, large scale shift in cropping pattern towards rice-wheat and installation of large number of private tube wells.... The consequences are (i) fall in water table forcing the farmers either to deepen the well or abandon it depending upon the accessibility of financial resources, (ii) adverse effects on equity issue and (iii) abandoning agriculture itself and becoming agricultural and non-agricultural labourers.... The adverse consequences of land degradation due to salinity and water-logging are decline in farm production and income, unemployment and migration, disparities and ecological imbalance..... for sustainable use of ground water based farming systems, we have to conserve the ground water resources and simultaneously explore ways and means for enhancing ground water recharge". (Sharma, 1995).

It may seem from the description above that if only the excessive use of ground water is checked, the situation in the area would return to normalcy. This is not true. The situation is an outcome of an historical process which began in the late sixties in response to the critical food situation faced by the country. The policy maker, very rightly in the circumstances prevailing then, decided to overcome the crisis by an ambitious strategy to secure a breakthrough in the production of rice and wheat to increase the domestic supplies of foodgrains. The strategy relied on supporting the farmer up to the hilt-abundant supplies of water and electricity, subsidised inputs, remunerative prices for the produce, dependable availability of services like credit, research and extension, modernisation of rural infrastructures. In less than a decade the food grain supplies increased enabling the country to eliminate imports and to build up a public distribution system with a country wide spread. The seeds of the present problems in Haryana were sown when the strategy devised to deal with a crisis was not suitably modified when the crisis abated. The situation can now be dealt with only if thoroughgoing reforms are implemented to benefit from the export potential of rice and wheat and to price power, water, and credit to reflect their economic cost and to rationalise public distribution system and the related procurement, storage and distribution of foodgrains. If the reforms are implemented, the problems given rise to by overexploitation of groundwater would be eliminated at the

roots. If the reforms are not implemented, the problems would persist irrespective of the attempts made to regulate water use and to treat degraded land.

The second major problem situation we describe is agriculture in the semi-arid drought-prone regions which account for over a half of Indian agriculture. These regions are deteriorating into hardcore poverty areas with low crop yields, stagnant technology, meagre investments and continuing degradation of land base owing to erosion, loss of tree cover and indifference towards conservation of scarce water resources. Governments show little interest in these areas, farmers remain too weak to counter the oppressive poverty and rural communities subsist on periphery cut off from many dimensions of modernisation. Technologies for overcoming degradation of land and loss of water resources are known. This is also true of technologies waiting in laboratories which could substantially raise crop yields. There are instances - regrettably few - of village communities achieving remarkable growth and modernisation through local leadership, self-help and participation by using the programmes and resources made available by the government (Rao and Hanumappa, 1999). NGOs have also some successful cases to their credit. Barring these exceptions, villages remain bypassed with a bewildering variety of schemes being implemented leaving behind nothing more than some dubious records and statistics.

The strategy recommended for improving agriculture in drought prone area is Watershed Development which takes a comprehensive and integrated view of land and water resources in watersheds which are the appropriate units to plan and implement programmes for upgrading and conserving these resources. National Watershed Development Project for Rainfed Agriculture (NWDPR) taken up in the mid-eighties (GOI, 1985) appears to have been the first major step taken in India to operationalise watershed development strategy. Deshpande and Thimmaiah have recently reviewed the field assessments of the project (Deshpande and Thimmaiah, 1999). They find some impact on yield, employment and shifting towards high value crops. The impact has not been quantified. They note that "the consultation (with the people) during planning stage was totally absent. The plans were prepared without involving them". They do not sound confident about the long-term sustainability of the programme and its eventual takeover by the people belonging to the project area. Hanumappa's findings also are rather disturbing on this score (Hanumappa, 1999). He observes "experience shows that even those

watersheds which were initially managed most efficiently have slowly degenerated due to lack of involvement of the participants. One of the reasons for this is the extra care taken by the implementing agencies (mainly government agencies which provided all the required technical and engineering help along with subsidies) and managing the projects from above. In the process participants became mere onlookers than stake holders... Even the efforts to form collective associations and operationalise them have met with poor response". Hanumappa also mentions that NWDRA is targeted to cover only 3 million hectares by the end of the Eighth Plan. It is important to note that even in this experimental phase there is no clear evidence of acceptability of the underlying strategy to the farmers.

Here, again, the influence of the larger agricultural system needs to be borne in mind when looking for reasons for the cumulative neglect of land and water resources in the drought-prone areas. The market environment marked by low and unstable prices add to the woes of farmers facing droughts and scarcities. The policy regime instead of providing a corrective makes the situation worse by neglecting infrastructure, investments and institutions. This is evident in the case of oilseeds which were the source of a remarkable breakthrough in agricultural production in the drought-prone areas during the 1980s. A World Bank report points out the "fragmented structure whose inefficiencies are borne by growers who receive lower than international prices at one end of the production chain and consumers who pay higher than international prices at the other" (World Bank, 1997). A recent study by Gulati and Kelley observes "that farmers are responsive to profits and prices suggests that improvement in crop yield, input and output markets and other infrastructure can bring about efficiencies in agriculture in the SAT (semi arid tropics), notwithstanding some degree of subsistence behaviour... There are several constraints at the micro-level that may not allow farmers to go for the most efficient crop even when price incentives are given. These constraints may range from limited irrigation to lack of marketing or processing facilities, or even lack of farmer's knowledge about the crop.... Government policy formulation would do well to focus on non-price factors ranging from seeds to irrigation for farmers and on dereservation of oilseed processing from small sector for the processors." According to Alagh policymaking should also focus on biotechnology to promote sustainable agricultural growth in future "biotechnology has emerged as one of the most innovative and powerful tools to increase the agricultural productivity on a sustainable basis... (it) can make important contributions to crop,

livestock, forestry and fishery development. It holds promise for increasing the productivity, quality, efficient processing and utilisation of products and at the same time reduce reliance on agro-chemicals and other external inputs" (Alagh, 1999).

In the light of the discussion in this section, we identify the following priority tasks in relation to conservation and optimum use of our land and water resources.

- i) Building up and maintaining an updated data base on the extent of land and water resources, their location, present status, potentialities, ownership, use, regulation and control. PRIs should be given the primary responsibility for collecting, recording and verifying data. Remote sensing and other advanced technologies should be used to explore the potentialities of the resources and to complement the collection of data at the ground level.
- (ii) Preparing a detailed perspective plan to extend irrigation as quickly as possible to make full use of the ultimate potential.
- iii) Ensuring that the market, institutional and policy environment, are conducive to conservation-oriented and judicious use of land and water resources. Economic sanity should be restored to administered pricing, user charges and government operations like procurement, storage and distribution of foodgrains. Micro-level decision-makers like producers and consumers should get signals consistent with the social objective of conservation and economic use of valuable but scarce resources like land and water.
- iv) It is hoped that, given the right environment, schemes for improving degraded lands in green revolution areas and the watershed development strategy in the drought-prone areas would be able to take rapid strides provided the problems of institutional arrangements, procedures and personnel are tackled in right earnest.
- v) As we approach the limits of land and water resources, search for a technology appropriate to the emerging situation should be intensified. Experts suggest that biotechnology would be a promising field to explore. Attention must also be paid to technologies available in research stations but not reaching farms.

1.5 Promoting Human Development*

The strategy for human development needs to be economy-wide in its scope. Generating productive employment for the growing labour force should be an objective pursued by all sectors. Similarly, eliminating extremes of inequality in the society would only be possible if peaks of wealth and accumulation wherever they occur in the society

are taken note of for distributive policies. The approach in this respect has been quite hypocritical. Agricultural and rural sectors were expected to absorb the residual labour while leaving the other sectors free to adopt capital-intensive technologies with meagre labour absorption or permit entry only to the highly skilled. Again, inequality in distribution of land and the economic gap between the haves and have-nots within agriculture and rural area attract considerable policy attention but not the pomp and vulgar show of affluence in the urban enclaves of rich proud of their western lifestyles. Inevitably, agriculture became a “parking lot” of the poor and the marginalised. The purpose of this section is to argue that the marginalisation process in agriculture has now reached a critical stage. While agriculture has a substantial contribution to make to human development, it is important to take note of its growing and oppressive burden which needs to be shifted to other sectors.

We begin by taking note of selected major trends suggesting marginalisation of people in agriculture. Table 1.5.1 is of help in taking a comparative look at the growth in population and in agriculture in the decades since Independence. The population growth rate shown in Table 1.5.1 relates to the decade preceding the year against which it appears. The rate increased steadily from 1.25% per annum in 1941-51 to 2.22% per annum in 1971-81 and came down to 2.11% per annum in 1981-91. There is an expectation of a sharp reduction in the rate to 1.09 per cent per annum in 1991-2000. While this could be an optimistic estimate, one can at least have a fair measure of assurance that the population growth rate which decreased by a modest margin in 1981-91 would continue its downward trend in the years to come. As regards the agricultural growth, a word needs to be said about the periodisation of the post-Independence decades. The period 1949-50 to 1964-65 could be identified as one of agricultural growth through area expansion; as can be seen from table 1.5.1, the growth rate in area was higher than that in yield during this period. The next period - 1967-68 to 1980-81 is usually reckoned as the green revolution period though it may be appropriate to regard it as the first round of the green revolution. The period is marked by sharp reduction in area expansion and a perceptible upward shift in yields. The first round of the green revolution was confined to only a few crops - rice and wheat being the major beneficiaries - and selected areas like Punjab and Haryana. In the first round, the yield improvement across all the crops was too modest to compensate for the decrease in the rate of area expansion and, as a result, growth rate of

* This section is based on Rao V.M. and Hanumappa H.G. (1999).

production came down from 3.13% per annum during 1949-50 to 1964-65 to 2.38% per annum during 1967-68 to 1980-81. The second round of the green revolution - 1980-81 to 1991-92 - had a more creditable record with the almost entire growth rate of 3.21% coming from improvement in yields. The main point to be noted here is that over the post-Independence decades the agricultural growth rate - and in the last decade even the rate of yield increases - have remained ahead of the population growth rate. Thus, the marginalisation process in agriculture cannot be explained in terms of the Malthusian model alone though population growth would certainly need to be carefully monitored in the years ahead to devise effective brakes on it.

Table 1.5.1 - Population Growth Vs Agricultural Growth

Year	Population Growth		Period	Agricultural Growth (Annual Compound Growth Rate)		
	Total Population	Annual Compound Growth Rate (%)		All Crops		
				Area	Yield	Production
1951	361.1	1.25	1949-50 to 1964-65	1.61	1.50	3.13
1961	439.2	1.96				
1971	548.2	2.20	1967-68 to 1980-81	0.54	1.83	2.38
1981	685.2	2.22	1980-81 to 1991-92	0.05	3.16	3.21
1991	844.3	2.11				
2000*	987.3	1.09	1949-50 to 1991-92	0.64	2.05	2.70

* : Estimated population as on March 1, 2000.

Note : While calculating agricultural growth, years 1965-66 and 1966-67 have been excluded as they were years of serious scarcity.

Source: Agricultural Statistics at a Glance, Government of India, New Delhi, 1993.

Table 1.5.2 below provides two pointers to the marginalisation of workers deriving their livelihood in agriculture. First, over the period 1951-1991, the work force in agriculture almost doubled from 97 million to 185 million; the proportion of rural workers in agriculture to total rural workers declined only marginally from 69 per cent in 1951 to 65 per cent in 1991. More alarming, there was a nearly three-fold increase in the number of agricultural labourers from 27 million in 1951 to 75 million in 1991 and, as a consequence, the proportion of labourers in agricultural workforce increased from 28 per cent in 1951 to 40 per cent in 1991.

This fast pace of casualisation of workforce in agriculture is a very suggestive clue to the marginalisation of those deriving their livelihood in agriculture. Second, the share of agriculture in the national GDP decreased sharply over the period 1951 to 1991 from around 50 per cent to about 25 per cent irrespective of whether a broader or a narrower concept of agriculture is adopted for calculating its GDP share. The implication is that the gap between the per worker GDP in agriculture and that in non-agriculture widened markedly over the post-Independence decades. The widening gap, considered in the context of casualisation of workforce in agriculture mentioned above, appears to provide a clear indication of the marginalisation process operating in agriculture.

Table 1.5.2: Indicators of Marginalisation of Workers in Agriculture

Year	Population and Workforce (Millions)						
	Total	Rural	Rural Workers			Total Workers	Rural
			Cultivators	Agricultural Labourers	Others		
1951	361.1	298.6 (82.7)	69.9 (49.9)	27.3 (19.5)	42.8 (30.6)	140.0 (100.0)	
1991	844.3	627.1 (74.3)	110.6 (38.8)	74.6 (26.1)	100.2 (35.1)	285.4 (100.0)	

Source: 1) Population and Workers data from Agricultural Statistics at a Glance, Govt. of India, New Delhi, 1993.

2) Agriculture Share in GDP from National Account Statistics of India 1950-51 to 1996-97, EPW, Research Foundation, Mumbai, 1998.

Share of Agriculture GDP in Total GDP (at 1980-81 Prices) Per cent of Total GDP

Year	Agriculture, Forestry and Fisheries	Agriculture
1950-51	55.4	48.7
1996-97	26.1	24.4

Source: 1) Population and Workers data from Agricultural Statistics at a Glance, Government of India, New Delhi, 1993. (2) Agriculture Share in GDP from National Account Statistics of India 1950-51 to 1996-97, EPW, Research Foundation, Mumbai, 1998.

The changing structure of landholdings permits a closer observation of the marginalisation process as it operates over time. In a land-based economy, like the Indian rural economy, access to land and to economic opportunities linked to land-based activities would be a good indicator of the economic status of a household. In such an economy, it would be reasonable to infer marginalisation of cultivators if the structure of land holding has a strong trend towards proliferation of small and marginal farmers who are usually viewed as the principal target groups, along with landless labourers, for the anti-poverty programmes. Even so, the inferences given below based on the National Sample Survey data on land holdings from the different rounds are best viewed as indicative rather than

definitive. Table 1.5.3 shows the percentage of rural households which were "landless" (owning less than 0.002 ha) and "near landless" (owning between 0.002 ha and 0.200 ha).

Table 1.5.3 – Rural Landless Households

Year	Landless (Households owning less than 0.002 ha)	Near Landless (Households owning between 0.002 ha and 0.200 ha)	Total
1960-61	11.68	26.22	37.90
1970-71	9.64	27.78	37.42
1981-82	11.33	28.60	39.93
1991-92	11.25	31.15	42.40

Source: NSS 17th, 26th, 37th and 48th rounds

It is significant to note that the liberalisation era began in India with over 40 per cent of rural households being landless or near landless. The proportion of the latter category shows a modest but steady increase since the beginning of the green revolution in the early seventies. It would be easy to appreciate the significance of this trend when it is considered along with the trend in the distribution of ownership holdings (See table 1.5.4).

Table 1.5.4: Distribution of Owned Holdings

(% of total holdings and total area)

	Marginal (< 1 ha)		Small (1 to 2 ha)		Semi Medium (2 to 4 ha)		Medium (4 to 10 ha)		Large (10 ha & above)	
	Hold- ing	Area	Hold- ing	Area	Hold- ing	Area	Hold- ing	Area	Hold- ing	Area
1960-61	60.06	7.59	15.16	12.4	12.86	20.54	9.07	31.23	2.85	28.24
1970-71	62.62	9.76	15.49	14.68	11.4	21.92	7.83	30.75	2.12	22.91
1981-82	66.64	12.22	14.70	16.49	10.78	23.38	6.45	29.83	1.42	18.07
1991-92	69.38	16.93	21.75	33.97	5.06	17.63	2.84	17.64	0.95	13.83

Source: Same as for Table 1.5.3.

It is worth noting that by the early nineties, over 96% of owned holdings belonged to the size-groups marginal, small and semi-medium i.e., owners ranging between vulnerable to those likely to have only modest potential for viability. More important, over two-thirds of owned land was with the lower three groups with the medium and large owners accounting for less than a third of total land. Around the mid-fifties Professor Dantwala had drawn attention to the feature of the Indian agriculture that while the small and marginal holdings predominated in numbers, large part of land was in the hands of medium and large owners. Thus, apparently, the marginalisation process has brought

about a major change in the production structure in agriculture. Much more than before, the small and marginal owners would have to shoulder in future the responsibility for the tasks necessitated by agricultural growth and modernisation.

Would the small and marginal owners have strong enough shoulders to bear this burden? Table 1.5.4 offers little room for optimism. A disturbing point to note is that the decade of 1981-82 to 1991-92 seems to have witnessed a marked intensification of the marginalisation process - the percentage of small owners increased from 14.70 per cent to 21.75 per cent. Further, the small owners emerged as the size-group with the largest share in total land. The group accounted in 1991-92 for over a third of total land with its share more than doubling over the decade 1981-82 to 1991-92. In contrast, the medium owners who had the largest share in total land at the three earlier time points covered by table 1.5.2 suffered a drastic reduction both in numbers and in the share in total land.

As regards the large owners, they were less than one per cent of the total owners in 1991-92 but owned nearly 14 per cent of total land. An interesting, but frankly speculative, inference would be that the changing position of the large owners represents the other side of the marginalisation process i.e., the presence, and possibly growing strength, of a small but dominant and influential group in agriculture. It must be borne in mind that the diminishing proportion of the large owners and reduction in their land share could in part be due to their moving out of agriculture to more lucrative opportunities in other sectors and, also, preference for investment in non-land capital rather than only further addition to size of holding. It may be recalled that the newer opportunities in agriculture depend critically on investments in modern inputs and technologies and not merely on larger and growing size of holding.

Put together, the clues provided by tables 1.5.3 and 1.5.4 yield the following scenario of the marginalisation process in agriculture since the beginning of the planning era in India. The era began with substantial landlessness in rural areas. The process instead of being reversed - or even arrested - has continued to operate over the post-Independence decades with landlessness reaching the extent of over 40 per cent in 1991-92. What should cause particular concern is the apparent intensification of the process during the eighties with a noticeable impact on the production structure in which small and marginal owners now account for a half of the total land. At the same time, there is

also an indication of the large owners diminishing in proportion but, possibly, gaining in status and dominance through modernising their farming activities. Our political system is already under a severe strain owing to its inability to accommodate the rising expectations of the lower strata in the society, particularly those in the rural areas. Unchecked marginalisation of the poor in agriculture could prove to be the last straw on the back of the camel.

What might explain the paradox of marginalisation of large parts of rural people despite fairly sustained agricultural growth since Independence? It is important to seek an explanation as the sustained potentialities for agricultural growth now being visualised for the coming decades may not by themselves arrest the marginalisation process. We have three promising clues which could help in resolving the paradox. First, urban India and large industries have received far more policy attention during the planning era than rural environs, resources and people. This has been an unfavourable policy context for agriculture. An influential group of economists, including Dr. Manmohan Singh, the former Finance Minister, believe that the overall effect of the policy context has been to disprotect agriculture in India. Second, agricultural growth strategy and policies have benefited limited regions, crops and farmer groups giving rise to a growing dualism in rural India. Disaggregated studies bring out the parlous state in which rainfed regions in India accounting for 70 per cent of area under crops find themselves half-a-century after Independence. Biased agricultural growth spawns persistent and growing regional inequities pushing masses of cultivators to the brink of economic collapse. Third, the unfavourable policy context for the rural people have had the result of creating an institutional vacuum at the ground level making it difficult for the development agencies to reach rural people and to mobilise them for developmental activities. The institutional vacuum at the ground level has also the effect of inhibiting capacities of the rural people to take development initiatives, provide local leadership and build up organisations for collective action to protect their interests. With docile and passive rural communities dispersed over a vast area, the policy making elites have little reason to look beyond their own interests while choosing development strategies and priorities.

The prevailing policy context along with the shift towards liberalisation and globalisation has frightening implications for human development in India. Studies using the Head Count Ratio of poverty (HCR) - reflecting the minimal concept of poverty based

on food deprivation - show that poverty diminishes with growth, particularly agricultural growth. There is a near consensus among the academics that liberalisation through its linkage with growth would be a powerful anti-poverty strategy. However, it is not clear that the type of growth that has taken place in India and which is likely to continue in the coming decades would reduce poverty reckoned in terms of multiple deprivation criteria besides food. In fact, the marginalisation process in operation in agriculture is very likely to have an extremely adverse impact on poverty measured in terms of low/diminishing human development.

The priority tasks identified in the preceding two sections would be of some help to the government in focussing the policy regime as a whole on the marginalised people. It is also necessary to repeat the point made at the beginning of this section that promoting human development would need an economy-wide strategy to generate productive employment for the poor and the marginalised and to level down the extremes of inequality. Keeping this overall policy context in mind, one can suggest the following priority tasks to counter the marginalisation process operating in agriculture.

- i. Broad based agricultural growth and diversification would stimulate value-adding activities like processing and preparing specialist items with large demand. There would be growth in productive employment opportunities but the workers in agriculture would have to be trained for the new skills and occupations. In the light of the experience gained so far in programmes like TRYSEM run by the government and similar activities of NGOs, attempt should be made to look ahead to identify the promising opportunities in different areas and to anticipate in advance the training and other assistance which could help the workers in agriculture to benefit from these emerging employment opportunities.
- ii. Rise in rural incomes and the formation of a relatively better off middle strata in the rural communities would generate wide ranging demands for goods and services. The consequential rise in employment opportunities needs to be kept in mind while planning the training and other assistance to be given to the workers in agriculture.
- iii. There is a trend towards the rural-urban continuum becoming more connected with quicker and smoother flow of people and goods. This trend needs to be supported so that village economies remaining relatively isolated from the mainstream get more firmly linked with it. Ideally, rural communities should have bustling commuting zone around them for employment, for marketing their products and for purchasing inputs. This would check the flow of migrants to urban slums and flight of talent from villages. It would also help in obtaining a more even and balanced spatial spread of economic and other social activities.

1.6 Getting Oriented to Modernisation: The Prospects Ahead

Modernisation is a society-wide process working through many channels interacting with each other and with the global environment. It is a powerful process bringing about systemic changes—particularly in the traditional and poor societies like India—which individual countries and governments find increasingly difficult to counter. Modernisation brings many benefits but could also cause widespread disruptions and distress. It would be futile for a developing country to try to insulate itself from the process of modernisation. It is an essential ingredient of development and a successful development strategy could very appropriately be defined as the one which adjusts to modernisation maximizing its benefits and minimizing the costs. This is the reason our search for priority tasks has been focused on modernisation of agriculture as the goal of development.

It is evident from the preceding sections that, despite its many achievements in the post-Independence decades, Indian agriculture fails to meet the criterion of modernisation. Human development indices and the indicators of marginalisation of vast numbers in agriculture presented in this paper serve to underline this failure as also the urgent need to orient policy-making towards modernisation. It is our conviction that this cannot be done by only reviewing the existing policies to improve them. The economic reforms being implemented since the beginning of the nineties do recognise the need for a new paradigm for policymaking for development though, as in the past, agriculture tends to remain on sidelines until a crisis knocks on the door. Abundant funds are promised for agriculture but there is no matching readiness on the part of the government to take up tasks which are crucial for modernisation of agriculture but have been grossly neglected so far. A common characteristic of the priority tasks identified in this paper is that they have tons of writings adorning them but the action taken by the government has to be measured in ounces! In social science analysis, it is important to look at government as one constituent in the total society. This is of help in understanding how social milieu helps/ inhibits capacity of governments to undertake tasks relating to goals like modernisation of traditional societies.

Let us begin by taking a look at our experiences in building up Panchayati Raj Institutions (PRIs). PRIs form the foundation of representative and participatory institutions which is of crucial importance in making agriculture self-regulating, overcoming limits to growth and promoting human development. The development functions to be handled by them and the responsibility for area-based planning assigned to them make them a key change agent in the process of modernisation. PRIs occupy a prominent place in Gandhian ideology. The first major report on PRIs was prepared in the fifties followed by many others. However, concrete steps towards empowering PRIs were taken only in the Eighties and they acquired the constitutional status almost a decade later. The long interval between the official recognition of the need to have PRIs (various reports) and concrete action (constitutional amendments in 1993) could be explained by the fact that in the intervening period rural growth and spread of political awareness among rural masses had prepared the ground for a much larger role than before for rural people in policymaking for development. The process of rural areas and people joining the mainstream is still far from complete. The progress of PRIs is bound to help this process which, in turn, would add thrust to activation of PRIs. If the task of building up PRIs gets the priority it deserves, one may expect rapid progress in the next decade or so with a noticeable impact on policymaking for agriculture and rural areas.

Once PRIs become active at the grassroots, a necessary outcome would be the coming into being of a multilevel system linking the plans and decisions of PRIs with those at the top. The ACRP literature referred to in section 3 has done some groundwork in this direction but its operationalisation as a multilevel system would become feasible only when the institutional change at the grassroots begins to exert pressure on the centre and the states for substantial devolution of resources and autonomy in their use. In the process, the present division of functions—policy making at the centre and implementation by the governments at the lower tiers—would be replaced by dispersal of policymaking function across tiers of the government from the centre to PRIs. Currently, policy formulation is identified with impressive documents prepared at the top in language elastic enough to reconcile ambitious objectives with modest achievement. In a multilevel system, policies would be shaped by aggregation and adjustments across the different tiers of the government with only broad goals, norms and parameters being formulated at the top reflecting the consensus emerging from hard bargaining across the tiers of the government. The present policy documents

prepared at the top could undergo many and substantial changes difficult to foresee now. It is for this reason that we have focused this paper on priority tasks rather than on the policy agenda.

A self-regulating agricultural system would still need selective government interventions to keep it moving towards modernisation. As we have indicated in the preceding sections, interventions would be needed to preserve economic stability, to conserve and make judicious use of critical endowments like land and water and to reach human development to substantial sections of population trapped in poverty. It is unnecessary to repeat the scope and importance of these priority tasks. What is important to note is that the government would be able to focus attention on these tasks only after it gets disentangled from its present numerous interventions of wrong kind motivated by populism, need to appease powerful lobbies and a strong urge to retain—and, if possible, further extend and strengthen—its control over the economy. These wrong kind of interventions are rapidly becoming unsustainable owing to rising economic costs, disenchantment of intended beneficiaries with populism and lobbies getting too numerous and large to be appeased. Simultaneously, pressures would also grow from large constituencies like farmers for the right kind of interventions indicated above. Thus, the emerging context promises some improvement in the government's role as an intervener.

Would the movement towards modernisation of agriculture induced by changing social milieu and different kinds of pressures working on the government be fast and balanced enough to bring about development? It is difficult to be very optimistic on this score. India appears to be on the verge of passing through a succession of crises. It would have to face them relying on very inadequate equipment: weak governance; poor work culture and professional ethics among elites and organised groups; gathering impatience among the lower strata with the social system and its inequities. These features would have to change for the society as a whole to move towards modernisation. The future, indeed, looks grim. But it is not necessarily without hope. Crises often help societies to get rid of accumulated toxicities and regain health and vigour. India could benefit much from such crises!

PART – II

A REVIEW OF CRITICAL POLICY ISSUES

2.1 Introduction

As we have explained in the preface and in Part I of this paper, the purpose of Part II is not to open up for review the entire policy agenda. If it is accepted that the government has to be less interventionist in future, it would follow that the government should choose to take up only the policies consistent with its new role towards agriculture. This raises the tricky question of disengagement from the present policy commitments and transition to the new role. The process of disengagement and transition is likely to be protracted with frequent interruptions occasioned by political wranglings. For the purpose of this paper, we have selected only a few policy areas in which, in our view, the government would have to play an active role for a long time to come.

It is useful while looking at these policy areas to keep in mind certain persistent features of policy regimes for agriculture as they have operated so far in India. First, there are abundant findings to show that India shares with many developing countries a strong preference for the development path seeking to promote modern industries at the cost of discriminating against agriculture. Researchers have argued that the policy regime in India from Independence right up to about the early nineties has had the effect of lowering the prices received by the farmers for their output while raising the prices paid by them for inputs purchased from industries [Gulati (1993), Singh (1995), Economic Survey (GOI), 1996-97, Parikh (1999)]. A world Bank study covering 18 developing countries over the period 1960- 85 found that there has been an enormous transfer of income out of agriculture estimated at 46 per cent of the gross domestic product originating from agriculture per year over the period of quarter of a century (Schiff and Valdes, 1995). It is easy to imagine the impact of such large income transfer from agriculture on farmer's incentives and capacity to invest and take risks. Second, between the better-off and the poor in agriculture, the policy regime has favoured the former neglecting the development potential waiting to be tapped in the

poorer parts of agriculture. As a result, a dualistic structure has emerged in agriculture with a small but dynamic part aligned with the mainstream economy and polity and a large part languishing with inadequate access to the policymaker and to mainstream opportunities. Third, the policymaker remains far too preoccupied with the problems of the moment and the fire-fighting operations to deal with them; the long term issues like sustainable development and inter-regional and inter temporal equity get neglected. Underlying these features of the policy regime is the development perspective still lingering in Indian policymaking that agriculture is inherently traditional and that modernisation and development come from growth in other sectors. With this view of agriculture, the natural next step is to regard farmers—and rural society in general – as people unwilling to change from the attitudes, perceptions and lifestyle established over generations in the past. Hence, it is the position today that half-a-century after Independence few city dwellers –and the affluent in rural society—would want to live in villages.

Agricultural policies in India have to manoeuvre within the constraints imposed by the features of the policy regime described above. It is not unusual to come across corrective measures in policies recommended over and over again by succession of committees but remaining unimplemented. Unfulfilled targets cause little embarrassment as alibis would be readily available in the past reports. The ingenious invention of measuring programme achievements by expenditures incurred helps progress reports to look impressive and provides basis for demanding increased funds for the next year. This is not to ridicule implementation of policies or the programme personnel. Our intention is only to point out that such weaknesses in implementation are inevitable given the prevailing policy regime. The policy regime affects policies at two levels. Policies formulated at the top without a sense of commitment to the goals which they are expected to achieve tend to be ritualistic. The parameters relating to time-frame, phasing, release of funds and monitoring and evaluation are disregarded with impunity. Delays, lack of coordination and indifference towards mounting costs become rampant. Corruption and leakages spread widely. At the ground level, the personnel finds that their conscientiousness, performance and rapport with the target groups bring neither any appreciation nor rewards. The target groups, in turn, remain cynical and passive. It is, thus, that the policy regime becomes ineffective from the top downwards. Trying to improve the system by looking at only the lower and junior levels may yield

some marginal improvements but no major breakthroughs. It is the reforming of the regime described in Part I which would make it possible for more thoroughgoing changes to occur partly through planned improvements and partly as a consequence of pressures from outside. It would be legitimate to expect substantive improvements to occur in the coming years in the policies considered in the sections which follow. The priority tasks identified for these policies could be of help in guiding this process along the right direction.

2.2 Capital Formation

The pace and pattern of agricultural development are largely conditioned by the growth of infrastructural facilities of irrigation, road, market, power, cold storage, etc. Infrastructure plays a critical role on both input and output sides. While on the input front, it helps ensure timely and adequate delivery to farmers, on the output front, it helps integrate local markets with national and international markets. Therefore, an adequate and efficient infrastructure system is essential for realising the potential of the sector. In this context, the experience of China shows that high rate of investment in agriculture can ensure big spurt in agricultural output over a long period (Rao and Gulati, 1994).

However, one of the most disquieting developments in the agricultural sector during the last two decades has been the neglect of capital formation, particularly in the public sector. Gross Capital Formation (GCF) in agriculture as per cent of total gross capital formation in the economy, after rising during the 70's, declined during the eighties and nineties. In 1998-99 it was just 5.5 per cent as against 16.3 per cent in 1980-81. Further, GCF in agriculture as per cent of GDP in agriculture also declined during the last two decades from 10.9 per cent in 1980-81 to 6.2 per cent in 1998-99 (Table 2.2.1 and Chart 2.2.1).

Table 2.2.1: Gross Capital Formation in Agriculture

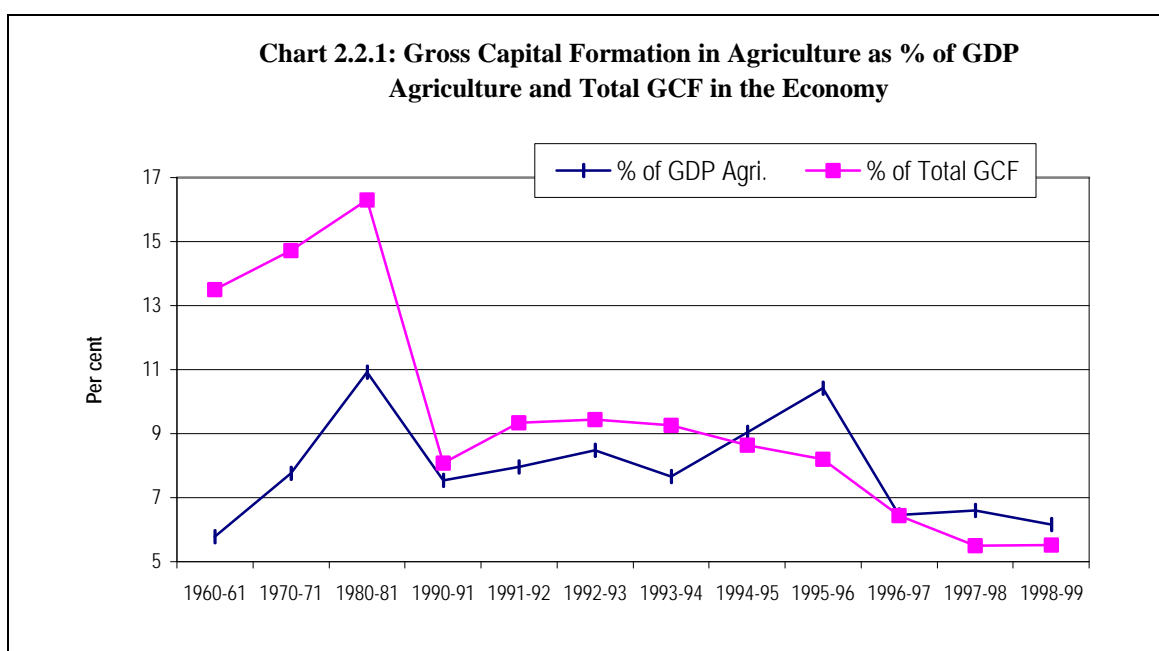
Year	GCF in Agriculture			GCF as % of GDP in Agriculture	GCF as % of Total GCF in Economy@
	Public	Private	Total		
	At 1980-81 Prices				
1960-61	589	1079	1668	5.8	13.5
1970-71	789	1996	2785	7.8	14.7
1980-81	1796	2840	4636	10.9	16.3
1990-91	1154	3440	4594	7.5	8.1
1991-92	1002	3727	4729	8.0	9.3

1992-93	1061	4311	5372	8.5	9.4
1993-94	1153	3878	5031	7.7	9.3
1994-95	1316	4940	6256	9.0	8.6
1995-96	1268	5693	6961	10.4	8.2
At 1993-94 Prices					
1996-97	4689	11921	16610	6.5	6.4
1997-98	4240	12140	16380	6.6	5.5
1998-99p	3876	12581	16457	6.2	5.5
Annual Average Growth (%)					
1971-79	10.0	7.2	7.9		
1980-89	-4.0	-0.1	-1.5		
1990-98	-1.9	8.1	5.6		

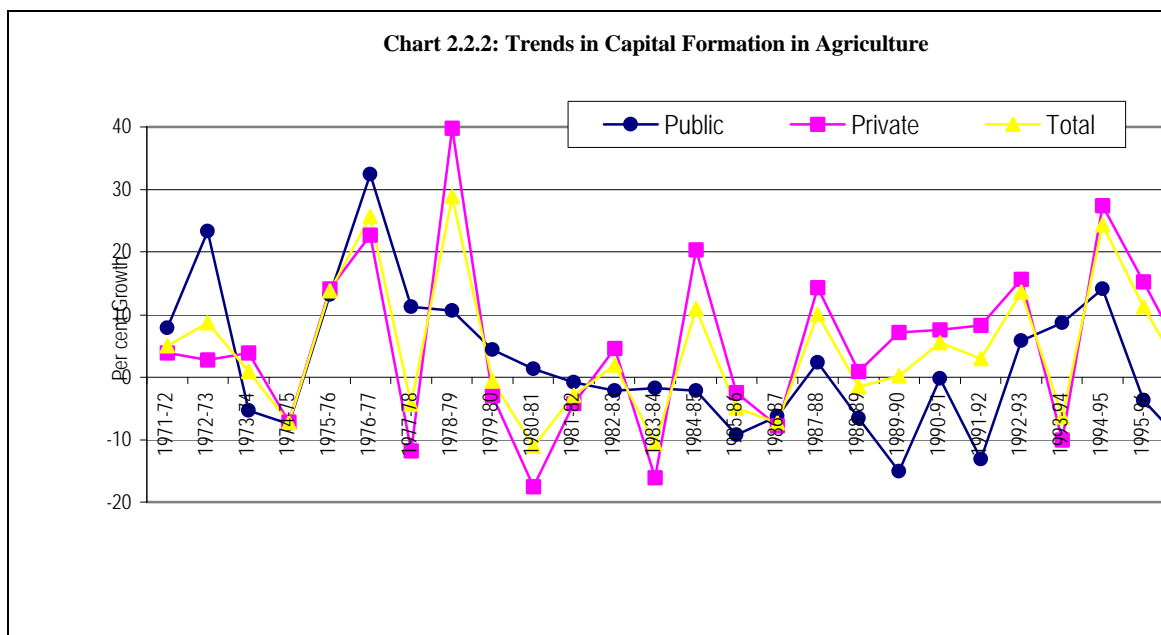
Note: P : Provisional. @ : Gross Capital Formation adjusted for errors and omissions

Source : 1. National Accounts Statistics, various issues, CSO, Government of India.

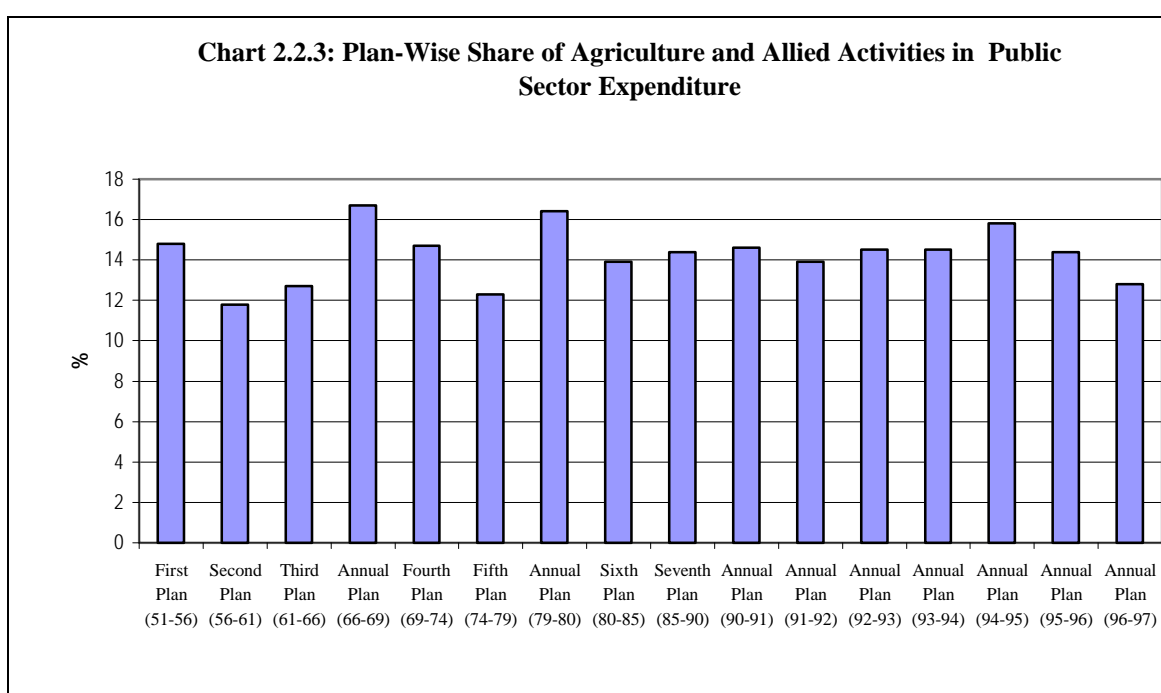
2. Agricultural Statistics at a Glance, Various Issues, Government of India.



What is more disturbing is the fact that GCF in the agricultural sector by the public sector declined at an annual average rate of 4.0 per cent and 1.9 per cent during the 1980s and the 1990s, respectively. As a result, the share of public sector in total capital formation in the sector declined to around 23.0 per cent during the nineties as against 32.0 per cent during the seventies. However, in the private sector, the decline was only marginal during eighties (-0.1 per cent) and it picked up at a moderate of 8.1 per cent in the nineties (Table 2.2.1 and Chart 2.2.2).



Under the various Plans, the share of agriculture and allied activities in public sector expenditure was only around 14.0 per cent (Chart 2.2.3). During the Ninth Plan (1997-2002), investment requirement in the agricultural sector is estimated at 1,54,900 crore, of which around 82,200 crore or 42 per cent is expected to come from the public sector (Centre and States) (Planning Commission, 1998). Given the current trends in public sector capital formation, it is doubtful whether the target will be achieved at the end of the Plan period.



There is a view among the agricultural economists that the lagged effect of decline of capital formation during the eighties has been one of the major reasons for the decelerated growth of the sector during the nineties (Mahendra Dev, 1998). Therefore, the subdued level of capital formation during the nineties can have an impact on agriculture production in the coming years. Apart from the sluggishness in capital formation at the national level, there are large inter-regional variations in public investment on rural infrastructure, which probably accounts for differential growth of agriculture in various regions. Bhatia (1999) found that the index of rural infrastructure was the highest in Punjab followed by Kerala, Tamil Nadu and Haryana. However, in case of Rajasthan, Bihar, Madhya Pradesh, Orissa, Uttar Pradesh, West Bengal and Assam it was very low. Further, the study found a strong relationship between rural infrastructural development and level of per hectare yield of foodgrains as also value of output from agriculture. It is, therefore, recommended that development of infrastructure should be given top most priority by national, state and local self-governments. Ideally, we need to evolve a core investment programme for the country and economic criteria should guide in its implementation.

In the literature there is a lively debate on complementarity between public and private sector capital formation in agricultural sector. While Studies by Shetty (1990), Rao (1994), Dhawan and Yadav (1995), Dhawan (1996a), Dhawan (1996b), Alagh (1997) and Rao (1998) postulate or establish the complementarity between the public and private investment in agriculture, studies of Mishra and Chand (1995), Mishra and Hazell (1996), and Mishra (1998) refuted the existence of complementarity. On this issue, Rao (1998) opined that there is severe underestimate of public investment in agriculture, especially in case of rural electrification, rural roads, etc., which may be responsible for the empirical findings of non-existence of complementarity. Agriculture is basically a private activity in India and, hence, public investment has a crucial role to play in creating infrastructure in terms of irrigation, roads, markets, storage facilities, rural electrification and technology development, besides education and health (Thamarajakshi, 1999). Another view gaining ground in recent times is that the decline of capital formation in the public sector has been compensated by the private sector. Logically, the argument looks sound but its fallacy comes out when one examines the composition of private capital formation. Private sector capital formation is essentially taking place for short-term asset building and it is mainly in the areas of

mechanisation, ground levelling, private irrigation, etc. However, public sector capital formation is mainly in the form of construction of dams, roads, marketing yards, rural electrification, etc, where private sector capital formation is hard to come in. Therefore, public sector capital formation needed to be augmented with a definite content and targeted focus, especially in case of rainfed areas, which lack not only in irrigation facilities, but also in other infrastructural facilities.

Here it may be mentioned that public spending in agriculture is a common feature in both the developed and developing countries. In a World Bank study, Blarcom, *et al*, (1993) found that in case of 40 developing countries, an average of 7.5 per cent (including subsidies) of total central government expenditure was allocated to agriculture during the period 1972 to 1988. And it formed around 10 per cent of net value of agricultural production. In case of a group of 15 developed countries, the share of government expenditure was around 3 per cent of total expenditure. However, it formed around 20 per cent of their net value of agricultural production.

Some studies suggests that the decline in the Incremental Capital Output Ratio (ICOR) and the concomitant increase in Marginal Efficiency of Capital (MEC) during the eighties has compensated the decline in capital formation during that decade (Mishra and Chand 1995, Alagh, 1997, Purohit and Reddy, 1999). However, this argument has been questioned by some other studies on the ground that why MEC, which improved during the eighties, deteriorated during the nineties (due to the decelerated growth of agricultural production and accelerated growth of capital formation during the nineties) (Mallik, 1997 and Pulapare, 2000). As the estimation of ICOR and MEC are not very reliable, it is imprudent to conclude that the decline of capital formation has been compensated by improvement in efficiency of use of capital.

Rising subsidies on food, fertilisers, credit, etc., is said to be the factors limiting the growth of public sector investment. In general, subsidies distort resource allocation and hence, it need to be kept at the minimum. Well targeted subsidies for programmes like adoption of improved seeds, mechanisation, irrigation, etc., can play a valuable role in promoting agriculture growth. However, they need to be removed once their original purpose has been met. With the move towards reduction in subsidies on food and fertiliser in the recent Union Budget, Government can redirect the money for capital

formation purpose. In fact what is need is prioritisation of the requirement of capital formation in different areas like watershed development, rural electrification, extension services, flood control, etc., where private sector investment is hard to come.

One major step taken for improving capital formation in the public sector is the creation of Rural Infrastructural Development Fund (RIDF) in 1995-96 in NABARD with a corpus of Rs.2000 crore, with the objective of providing funds to State Governments and State owned corporations to enable them to complete various types of rural infrastructure projects. Since 1995-96, the scheme continued in each succeeding years with enhancement of the volume of the fund; the last one being RIDF-VI announced in the Union Budget 2000-01 with a corpus of Rs.4,500 crores. The resources for the fund is contributed by the scheduled commercial banks to the extent of the shortfall the bank may post for meeting the priority sector lending targets. Of course, the creation of RIDF will improve the infrastructural facilities in various states. However, we would like to flag some issues associated with RIDF. First, RIDF is not an additional resource to the agriculture sector. Rather, it is a mechanism through which private sector resources (deposit) are diverted to the public sector. Had the banks met the stipulated target of priority sector lending, the resource flow would have been much more in the sector, especially at the private hands. In other words, RIDF basically involves the transfer of resources from the private sector to the public sector. Therefore, the efficiency in the utilisation of funds by the states may be lower than the efficiency in case of utilisation by the private sector (mainly farmers), had the banks met their priority sector targets. Second, though the NABARD sanctioned the fund to various State Governments, its disbursement is not impressive; only around 37.0 per cent of the sanctioned amount at the end of March 1999. Third, it provided the commercial banks a golden opportunity for parking their funds with ensured return without risk and that made the banks less interested in expanding their priority sector lending.

Based on the above discussion on capital formation, we identify the following priority tasks:

- ❖ *Capital formation in the public sector should be augmented. Money saved from the reduction in subsidy for agricultural inputs should be utilised for this purpose.*

- ❖ *In view of the resource constraints, capital formation requirements need to be prioritised. As ACRP gets operationalised, it would be possible to do prioritisation in a rational manner.*
- ❖ *Inter-state variations in capital formation need to be reduced by stepping up investments in backward regions.*
- ❖ *Delays in disbursement of funds under RIDF should be eliminated.*

2.3 Agricultural Credit

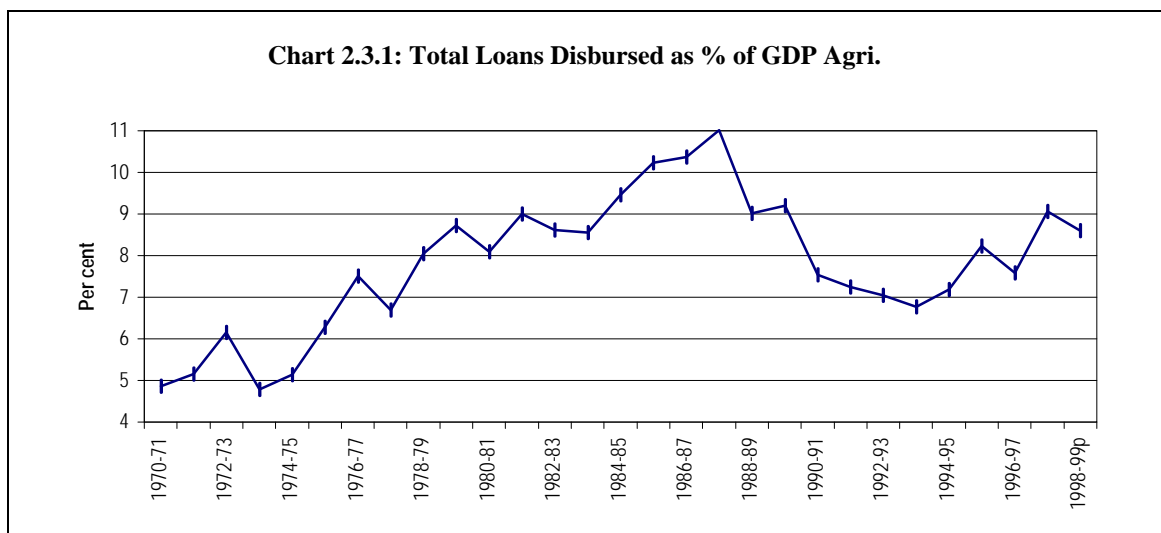
Credit is one of the important supply side factors which contributes to agricultural production. An efficient and effective rural credit delivery system is imperative for providing timely, adequate and equitable access to credit for raising agricultural productivity and incomes. Equitable access to institutional credit is important in the context of relative scarcity of credit and the high cost of informal credit. In India, the emphasis on agricultural credit has continued through progressive institutionalisation for providing timely and adequate credit to farmers at reasonable rates of interest. Broadly, over the years, India has followed three pronged strategy for developing rural credit, viz, i) promotion of institutional structure, ii) directed lending, and iii) concessional or subsidised credit (Rangarajan, 1996).

Table 2.3.1: Agricultural Credit: Growth, Per cent of GDP Agriculture and Per cent of Private Capital Formation

Period	Loans issued (Per cent per annum)	GDP Agri.* (Per cent per annum)	Loans as % of GDP Agri.	Term Loans as % of Private GCF
1970-71 to 1979-80	16.1	9.2	6.1	42.0
1980-81 to 1989-90	14.0	13.4	9.4	79.9
1990-91 to 1998-99	15.2	15.9	7.7	54.7
1971-72 to 1998-99	14.9	12.6	7.9	60.9

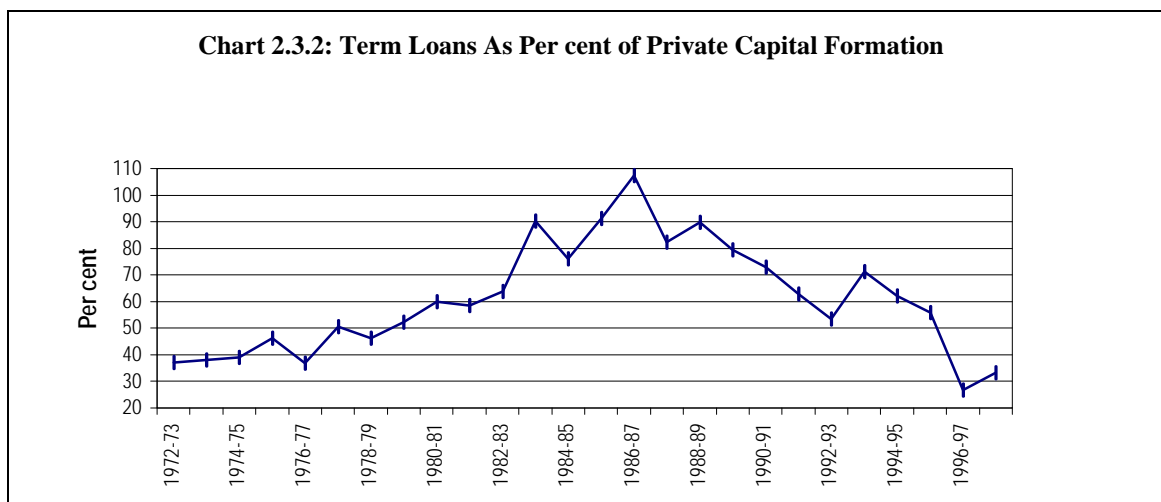
*: At Current prices.

GCF: Gross Capital formation.



There has been considerable progress in above three strategies, especially, we could develop a large institutional network, at different layers, for rural credit. The aggregate loan disbursements for agriculture and allied activities by the co-operatives, commercial banks and Regional Rural Banks (RRBs) together rose by 14.9 per cent per annum during the last three decades (from 1970-71 to 1998-99). However, during the eighties and nineties, the rate of growth slowed down as compared to the seventies (Table 2.3.1). As a result, per cent of total loans to GDP in agriculture declined during the nineties to 7.7 from 9.4 in the eighties (Chart 2.3.1). Lower expansion of credit in relation to the requirements for private sector capital formation is also evident. The share of term loans in private sector capital formation declined during the nineties to 54.7 per cent from 79.9 per cent in the eighties (Table 2.3.1 and Chart 2.3.2).

Over the years, rural credit system has been suffering from a number of weaknesses like, limited outreach, skewness in the availability of credit in different regions, sectors and sections of the farming community, lower recovery of loans and growing non-performing assets, loss making institutions, etc. In this context, Mujumdar (1999) observed that "It is an irony of economic history that India which was a pioneer in evolving its own brand of institutional framework for rural credit today finds its entire rural credit system in a moribund state" (pp.1577).



Poor recovery of loans and the consequent rise in non-performing assets (NPA) is a matter of grave concern. There is a general perception that higher NPA of the banking system is mainly on account of the priority sector advances. This is not entirely true as the data show that the share of gross NPAs in the priority sector in the total gross NPAs of the commercial banks is only around 46.4 per cent in 1998 and it in fact declined from the level of 48.3 per cent in 1996. As the priority sector accounts for around 30-32 per cent of net bank credit of the commercial banks, the above share need not be taken as extremely high. In fact, in recent times, NPAs are increasingly occurring on borrowal accounts of industrial sector. The proportion of gross NPA to priority sector advances of the public sector banks was around 23.0 per cent in 1998, which is higher than around 13.0 per cent in case of non-priority advances (Reserve Bank of India, 1999b). Hence, the focus of commercial banks is on recovery of advances. Reports from various parts of the country indicate that forceful recovery of loans by banks is putting undue hardship on the poor and they are even forming associations to fight against the recovery operations of the banks. They argue that when the big industrialists are left free from the repayment of loans, why the poor people are being targeted and harassed. After the write-off of loans under the Agricultural and Rural Debt Relief Scheme, 1990, people are still under the impression that they need not pay back the loans taken from the financial institutions. Therefore, it is essential that people are to be educated about the need to recover loans for recycling the loans.

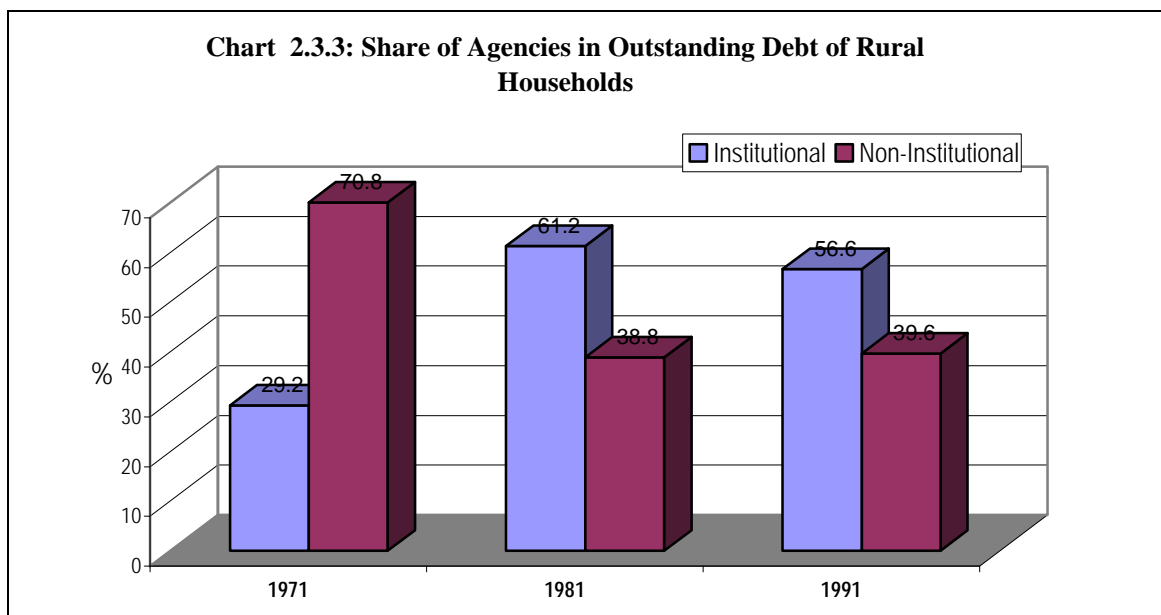
Despite having a wide network of rural branches in the country and implementation of many schemes and programmes for expansion of credit (targeted

lending) for agriculture and rural development, a large number of the very poor people continue to remain outside the fold of the formal banking system. The All India Debt and Investment Survey 1991-92 shows that during the eighties there was a decline in the share of institutional agencies in cash dues of rural households by 4.6 percentage points to 56.6 per cent as against a rise of 32 percentage points to 61.2 per cent during the seventies. Thus, the rural households still seem to depend on money lenders, landlords and relatives for a significant part of their credit. In case of non-cultivators, the share of institutional agencies was only 49.9 per cent in 1991. The decline in the institutional outreach during the eighties is mainly on account of decline in the share of co-operatives from 28.6 per cent in 1981 to 18.6 per cent in 1991. Correspondingly, the shares of traders and professional money lenders have increased (Table 2.3.2 and Chart 2.3.3). What is more revealing is the fact that the share of institutional agencies declined at a time when the proportion of rural households reported debt in 1991 increased to 32 per cent from 19.4 per cent in 1981. It is hard to believe that the outreach could have increased substantially during the nineties given the non-expansion of branch network and cautious attitude followed by the banks on account of financial sector reforms, which focussed on profitability of operations.

Table 2.3.2: Distribution of Cash Dues Outstanding by Credit Agencies to Rural Households (as on end June)

Credit Agency	1971	1981	1991
	(Per cent)		
I. Institutional – Total	29.2	61.2	56.6
1. Commercial Banks	2.2	28.0	29.0
2. Co-operatives	20.1	28.6	18.6
3. Government	6.7	4.0	5.7
4. Insurance	0.1	0.3	0.5
5. Provident Fund	0.1	0.3	0.9
6. Others	-	-	1.9
II. Non-Institutional – Total	70.8	38.8	39.6
1. Professional Moneylender	13.8	8.3	9.4
2. Agricultural Moneylender	23.1	8.6	6.3
3. Relatives/Friends	13.8	9.0	6.7
4. Landlords	8.6	4.0	4.0
5. Traders	8.7	3.4	7.1
6. Doctors, Lawyers, etc.	-	-	1.2
7. Other Sources	2.8	4.9	4.9
III. Sources not specified	-	0.6	3.8

Source: All India Debt and Investment Survey, 1991-92, Indebtedness of Rural Households as on 30.6.1991, Report 2 (Part-1), NSS forty-eighth Round, NSSO, GOI, 1977, reported in Reserve Bank of India Bulletin, February 2000.



In this context, a World Bank study carried out in a district in Eastern Rajasthan reveals that the share of institutional agencies in the availment of credit was just 16 per cent among the surveyed people below the poverty line (World Bank, 1995). Further, during the nineties, public sector banks could not meet their agricultural credit target of 18 per cent of net bank credit. Their achievement was only 15.7 per cent during the nineties. The Report of the High-Level Committee on Agricultural Credit Through Commercial Banks (1997) (Chairman: Shri. R.V. Gupta) also found that there is a substantial unfulfilled demand for crop loans, which is being met either by the money lenders or leading to the usage of lower inputs. However, the Committee recommended for non stipulation of credit targets. Once the recommendation is accepted it will make agricultural credit on equal par with credit to other sectors. Given the inherent weakness of the agricultural sector (susceptible to the vagaries of monsoon, operation of the law of diminishing returns and the general policy bias against the sector), it may not be appropriate to treat the sector on equal par with other sectors where returns are much higher than agriculture. Further, if this recommendation is accepted, the Government and the Reserve Bank will be left with no policy instrument for increasing the flow of credit to the agriculture. As informal credit is very costly as compared to the institutional sources and the existing set-up largely serves well-off farmers, the reach of the institution needs to be further improved especially to small and marginal farmers. Credit targeting can ensure the availability of credit to those sections of the society.

Along with credit targeting, concessionality in interest rates has been an instrument for increasing the flow of credit to the agricultural credit. There is a valid

reason for following such a policy: “principal justification for charging lower interest rates to certain category of borrowers was that the farm based investment activity in the short-run does not always yield a return which enables regular servicing of loans and at the same time meet the minimum consumption requirements” (Reserve Bank of India (1971). However, the Report of the Committee on the Financial System (1991) suggested that it is timely and adequacy of the credit that is more important than the cost of credit. Subsequently, following the financial sector reforms and de-regulation of interest rates in the economy, the concessional element in agricultural credit has been gradually wiped out. This is done by giving freedom to commercial banks, RRBs and co-operatives to fix their own interest rates on loans of amount. The only stipulation now is in respect of commercial banks that the rate of interest on loans below Rs.2 Lakhs should not exceed the Prime Lending Rate (PLR) of the respective banks. As PLR of banks are decided purely in terms of commercial considerations, the above stipulation does not provide any concessionality in lending.

With the rising rural income and agricultural exports, agricultural output mix is likely to undergo radical changes in the coming years which would substantially increase the demands for rural credit. The investment needs for the production of highly income elastic agricultural products such as dairying and livestock, horticulture, farm-forestry and agro forestry, which are more land saving and capital intensive, would rise much faster than before. Similarly, with the liberalisation of agricultural exports, the agricultural sector will be more commercialised and capital intensive, particularly in area like horticulture, floriculture, aquaculture, agro-industries, etc. Since many of the emerging activities are land saving in character, the income earning prospects for small and marginal farmers can be improved by providing requisite credit and technical expertise. Owing to these factors rural credit has to expand at a rate faster than in the recent past.

In this context, the role of micro credit comes into picture. Major reasons for the lack of interest of formal financial institutions in extending rural credit are high transaction cost involved in small loan accounts and poor recovery of loans. As a solution, a new mode of delivery of credit through Self-help Groups (SHGs) and Voluntary Organisations has been emphasised in recent times. In fact, micro credit is considered as the last hope for rural India. The early results of linking SHGs with banks, which launched by NABARD during 1992-93, is very encouraging . By the end of March 1999, 32,995 SHGs have been linked

with banks, with bank credit of the order of Rs. 57 crores. However, the linkage programme was highly skewed in respect of regions and institutions. Region-wise, Southern Region accounted for about 65 per cent of the SHGs financed by the NABARD, primarily because of the strong presence of NGOs in that region. In case of northern region, the share was just 1 per cent. Further, 60 per cent of the financing is done through commercial banks and another 35 per cent through RRBs. The share of co-operatives, which has the largest network of branches, was just 4 per cent (NABARD, 1999a). NABARD envisages to cover at least one-third of the rural poor population by the year 2008 through one million SHGs (NABARD, 1999b). Measures are being taken now to bring micro-credit as an integral part of banks' corporate credit plan (Reserve Bank of India, 2000a). Further, in their report, Micro Credit Special Cell in the Reserve Bank, inter alia, suggested that 5 per cent of fresh net bank credit (50 per cent of fresh weaker section lending) should be made through micro credit lending procedure in a gradual manner (Reserve Bank of India, 2000b).

From the above discussion on rural credit, the following priority tasks are identified:

- ❖ *Increase the outreach of the formal financial institutions, especially to the small and marginal farmers.*
- ❖ *Continuation of credit targeting for ensuring adequacy of credit in the agricultural sector*
- ❖ *Progressively link SHGs with formal credit institutions for reducing transaction cost and high recovery*

2.4 Agricultural Insurance

In the context of increasing commercialisation and globalisation, the scope and relevance of agricultural insurance are not widely understood in India. Crop insurance, which is generally restricted to field crops, is generally considered synonymous with agricultural insurance. However, agricultural insurance covers a wide spectrum of activities like horticulture, plantations, livestock, poultry, aquaculture, sericulture, etc. Further, it extends to the entire production process including post-harvest storage, processing and transportation of produce to the final markets.

Agricultural insurance has many advantages. First, as the agricultural sector is not well organised on institutional lines, it can help agriculture to develop through institutionalised channels and assist in speeding up the process of commercialisation of the sector. Second, agricultural insurance can play a distinct role in securing credit from institutional sources as it provides security to the lending institutions. Third, it provides strength to farmers for a better deal in respect of interest rates in a liberalised interest rate regime. Fourth, it can ensure better recovery of loans as the credit agency would receive the payment from the insurance company in the event of production risk. Fifth, crop insurance has relevance for improving agricultural technology as with the security of insurance, farmers might be more willing to experiment with new technology. Sixth, agricultural insurance is an efficient instrument and an institutionalised mechanism for dealing with problems of natural calamities like drought, flood, etc., rather than providing *ad hoc* aid or relief measures (UNCATD, 1994).

In a country like India, where agricultural production has been subjected to vagaries of weather and large-scale damages due to attack of pests and diseases, agricultural insurance has to assume the role of a very vital institution for the stable growth of the sector. However, the country has failed miserably in this area as, till recently, the Government did not pay much attention on developing a well-designed agricultural insurance scheme. Suicidal deaths of many farmers in recent years in different parts of the country (especially in Andhra Pradesh and Maharashtra) could have been avoided had there been a well-designed crop insurance scheme. It is true that there had been a crop insurance scheme in India by name 'Comprehensive Crop Insurance Scheme', which started in 1985. However, it was not comprehensive as its name suggests as its coverage was very limited in terms of crops, areas and sum insured. Table 2.4.1 shows that the area covered by the scheme is less than one per cent of gross cropped area. However, on account of fixation of premium at unrealistically low levels, the loss ratio was over 300 per cent (average during 1995-96 to 1997-98) in India (higher claims than the premium collected), which is very high in comparison with other developing countries (UNCTAD, 1994).

Table 2.4.1: Coverage of Comprehensive Crop Insurance Scheme

Season	No.of Farmers Covered (Lakhs)	Area Covered (Lakh hectare)	Sum Insured (Rs. Crore)	Total Insurance Charges (Rs.Crore)	Claims Paid (Rs. Crore)	Loss Ratio* (per cent)
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Rabi 1995-96	8.8	12.8	379.7	6.9	16.6	240.6
Kharif 1996	48.5	80.7	1973.4	30.4	151.3	497.7
Rabi 1996-97	10.0	14.0	493.2	8.9	20.7	232.6
Kharif 1997	51.4	83.5	2229.6	34.3	173.0	504.4
Rabi 1997-98	8.7	13.5	400.3	7.2	13.9	193.1
Kharif 1998	52.9	82.1	2444.2	38.3	-	-

*: Loss ratio is claims paid as ratio of total insurance charges (premium).

Source: Report on Currency and Finance, various issues, Reserve Bank of India.

Recently, government introduced a new Scheme titled 'National Agricultural Insurance Scheme' from Rabi 1999-2000. The scheme envisages coverage of all the food crops (cereals and pulses), oilseeds and annual horticultural/commercial crops. The premium rates vary from 1.5 per cent to 3.5 per cent (of sum insured) for food crops and cereals. Small and marginal farmers will be entitled to subsidy of 50 per cent of the premium. However, the government propose to phase out the premium subsidy over a period of 5 years. The Government has also decided to set up an exclusive organisation for implementation of the new scheme in due course.

Fixation of insurance premium at realistic level is essential for the commercial viability of any programme of agricultural insurance. However, in view of the poor financial position of small and marginal cultivators, most of the developing countries are providing subsidy on the premium to be paid by them. Depending upon the fiscal situation, government can give some amount of subsidy for small and marginal farmers. But it needs to be paid directly to the insurance agency so that the agency can work on commercial basis. The subsidy element can be gradually removed once the insurance programme becomes successful. Ideally, along with the privatisation of the insurance sector, private participation in crop insurance has to be encouraged so that it would not create a burden on the government. In countries like Mexico and Venezuela private insurance companies have been successful in crop insurance. While privatising, to ensure fairness, government can fix the premium and other related conditions without discouraging the interest of the agency. The advantage of private insurance is their operational flexibility to deal with the needs of the sector and to evolve or modify product design to meet the demands of the farmers. The experience of various countries in agricultural insurance reveals that delivery and servicing costs are high and it in turn inhibiting its expansion. Therefore, it is essential to evolve strategies to minimise the cost. One of the ways to reduce the administrative costs could be to establish links with

other agencies such as credit institutions, trade associations and marketing boards so that their infrastructural facilities could be used for servicing the insurance provided.

Here it may be noted that crop insurance is not a panacea for the problems of the agricultural sector. It can not increase productivity and is not a substitute for effective network of extension services, supply of inputs, provision of storage and marketing facilities (UNCTAD, 1994). Crop insurance need to be considered as only one among the various alternatives available for reducing the difficulties of the farming community. A long-term solution for the instabilities in farm income has to be found in diversification of cropping pattern, development of non-farm sector, which is integrated with the farm sector, and provision of adequate extension services to tackle calamities at the earliest without much damage to the crops. In this context, farm co-operatives can take care of some of the adversities and, hence, they need to be promoted. Here it may be mentioned that Crop insurance covers only production risk and not market risk arising out of fluctuations in prices and unremunerative prices. Therefore, direct government intervention is needed to tackle the problem of price fluctuations. Development of futures market also can impart some element of stability to market prices (UNCTAD, 1994).

On crop insurance, the following priority tasks are identified:

- ❖ *Enhance the coverage of agricultural insurance scheme to the entire production process including post-harvest storage and processing.*
- ❖ *Integration of agricultural insurance with credit institutions.*
- ❖ *Encourage private participation in crop insurance*

2.5 Globalisation

We now come to the role of the government in the context of opening up of Indian agriculture to global markets. At the theoretical level, globalisation of a sector of an economy means its total integration with the rest of the world without any controls/restrictions. Globalisation encompasses both free imports and exports (total outward orientation) and the convergence of domestic prices with the international prices. The objectives of globalisation are to improve the allocative efficiency of resources and orient production based on the comparative advantage of the country. In Indian context, globalisation involves reduction of import duties on the highly protected manufacturing sector and freeing agricultural exports and imports. It is argued that this

process will turn the terms of trade in favour of agriculture and improve the relative incentive environment for agriculture and thereby inviting higher private investments (Gulati, 1998).

From a historical perspective, it can be observed that till the late eighties agricultural sector in India was relatively closed as the export orientation was confined to only some commercial crops like spices, tea, coffee, etc. and imports were largely restricted. However, during the period since then the degree of export orientation increased considerably with the removal of some of the restrictions/controls on export of commodities. Till recently, imports of agricultural commodities have been largely restricted with quantitative restrictions and high level of tariffs. As on April 1, 2000, import of around 700 items belonging to the agricultural sector were subjected to quantitative restrictions. However, a significant step has been taken for the liberalisation of imports in the Export-Import Policy of 2000-01 with the removal of QRs on 228 agricultural items. The important items on which the QRs have been removed are dairy products, flours of cereals, coffee, tea and tobacco. Here it may be noted that even after the removal of QRs, India can restrict the import of agricultural commodities by fixing higher import duties, as tariff commitment on most of these agricultural items, which India has submitted to the WTO, are very high, except in case of some items like rice, skimmed milk powder, etc. (Mehta, 2000, NCAER, 2000).

Table 2.5.1: Share of Agricultural Exports in GDP in India

(Rs.crore at current prices)

	1970-71	1980-81	1990-91	1995-96	1998-99
1. GDP (Total)	39708	122427	477814	1006286	1612383
2. GDP in Agriculture*	16821	42466	135162	255613	428680
3. GDP-Rest of the Economy@	22887	79961	342652	750673	1183703
4. Total Exports	1535	6711	32558	106353	141604
5. Agricultural Exports	487	2057	6019	20344	25225
6. Exports-Rest of the Economy@@	1048	4654	26539	86009	116379
Per cent Share					
a) % of Agri.Exports in GDP (Total)	1.2	1.7	1.3	2.0	1.6
b) % of Agri.Exports in GDP Agri.	2.9	4.8	4.5	8.0	5.9
c) % of Total Exports in GDP (Total)	3.9	5.5	6.8	10.6	8.8
d) % of Exports from the rest of Economy in GDP Agriculture	4.6	5.8	7.7	11.5	9.8

Note:

* : GDP originated in agriculture, forestry and fishery

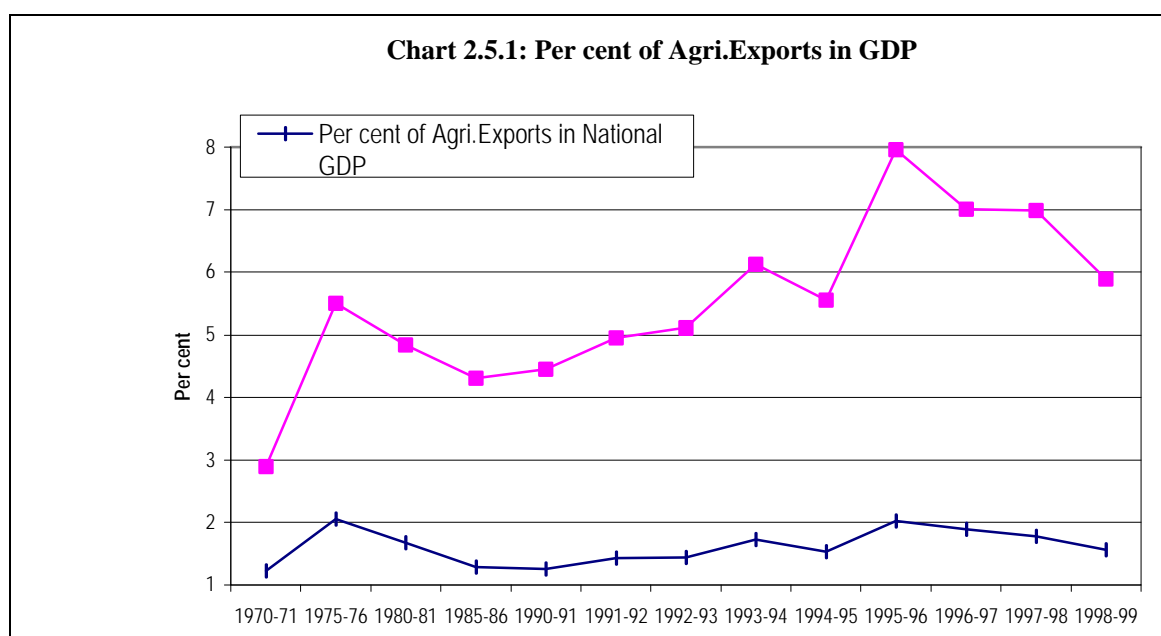
@ : Total GDP minus the GDP originated in agriculture.

@@ : Total Exports minus the export of agricultural products.

Source: 1. National Accounts Statistics, various issues, CSO, New Delhi.

2. Economic Survey, various issues, Government of India, New Delhi.

The share of agricultural exports in GDP (both in total GDP and GDP originated in agriculture) would indicate three major aspects, namely, i) the degree of openness or outward-orientation of the agricultural sector in regard to the export activity; ii) the nature of agricultural trade strategies adopted in the country; and iii) supply capacity of the agricultural sector as regards exports. An analysis of these aspects is carried out based on Table 2.5.1. It can be noted from the Table that after a marginal rise in the shares of agricultural exports in total GDP and in GDP originated through the agricultural sector during the seventies, the shares were on the decline in the eighties. However, since the beginning of the nineties there is a perceptible rise in the shares: the share in total GDP rose from 1.3 per cent in 1990-91 to 2.0 per cent in 1995-96 but since then it declined to 1.6 per cent in 1998-99. In case of the share of agricultural exports in GDP originated from the agricultural sector, the rise was from 4.5 per cent to 8.0 per cent and then decelerated to 5.9 per cent, during the above period. From the above observations, it can be inferred that the degree of openness or outward orientation of the agricultural sector, with regard to exports, has increased in recent times, albeit a marginal decline occurred since 1995-96. It reflects the effects of the liberalisation of agricultural exports and improvement in the supply capacity of the economy in recent times (Chart 2.5.1). Table 2.5.1 further reveals that agricultural sector is less outward-oriented than the economy as a whole. This is evident from the share of total exports from India in GDP (total). The share was 8.8 per cent in 1998-99, which is higher than the share of agricultural exports in GDP originated from the agricultural sector at 5.9 per cent.



From a phase of gradual export orientation, the agricultural sector in India is likely to enter into a new phase of globalisation with the implementation of the various provisions of WTO (as and when they are made applicable to India). Here it is worthwhile to note that there is no country in the world which has globalised its agricultural sector in the true sense of the term. Even in the advanced market economy countries, agricultural sector is relatively protected. However, with the implementation of the various provisions of WTO agreement, especially the provisions relating to removal of quantitative restrictions, it is expected that a beginning will be made in this direction.

What will be the implication of globalisation of agriculture sector? To find an answer to the above question, here we offer the findings from empirical studies on the subject: A study by Subramanian (1993) revealed that with the liberalisation of trade the movement of terms of trade against agricultural can be moderated. Trade liberalisation will lead to higher price transmission elasticities for all unprocessed commodities except coarse cereals. The author, however, cautioned against extending trade liberalisation to commodities such as edible oils, sugar and processed food as they are highly protected and in cases of those commodities whose per capita availability is low. Parikh, *et al.*, (1995) revealed the following: i) trade liberalisation in the medium run increases allocative efficiency within the agriculture sector and between agricultural and non-agricultural sectors, ii) agricultural liberalisation increases output of all agricultural commodities except coarse grains and other foods, iii) liberalisation leads to higher volume of exports of all agricultural goods, except coarse grains and iv) prices of several agricultural commodities, which were disprotected, would rise with trade liberalisation. Gulati and Sharma (1997), in terms of resource use efficiency (RUE), found that area and production of rice, wheat, maize, sorghum, chickpea and cotton are likely to expand when the international trade in agriculture is completely liberalised. On the other hand, groundnut, rapeseed-mustard and sunflower may have to face deceleration in their future expansion if trade is opened up (there may even be a contraction). Chand (1998) found that imports to India would not be attractive in case of rice, tea, sunflower oil and cotton. There was a strong possibility of rise in imports of sugar and edible oils after the removal of QRs. The study observed that dismantling the trade barriers on imports would increase volatility of Indian prices and farm incomes. On the positive side, the removal of QRs

would promote competition in the domestic market, which in turn would be beneficial to the consumers. Gulati (1998) found that globalisation of the economy, including agriculture, offers an opportunity to correct the anti-agriculture bias in Indian trade policies that have been in existence since 1950s. The study further revealed that agriculture could move on to a higher growth trajectory if supply side bottlenecks are freed, and a protective cover is accorded to the poor. Bharadwaj, *et al*, (1998) found that opening up of the economy was likely to benefit the agriculture and agro-based industries.

In the light of the findings of the above studies, we identify the following issues to be addressed in the context of globalisation of the agricultural sector. They are: i) self-sufficiency in production, ii) price stability, iii) cropping pattern iv) adverse effects on weaker sections and v) WTO commitments. These issues are examined below.

Theoretically, if a country globalises its agricultural sector, it cannot achieve the objective of self-sufficiency in production. This is because of the fact that with globalisation, countries will be forced to concentrate on production of those commodities in which they have comparative advantage in production. For countries like India, with large population and lower purchasing power, the impact of globalisation on availability of food at relatively lower prices is of concern both politically and ethically. Hence, food self-sufficiency at the national level, not necessarily 100 per cent, is desirable so that the reliance on trade can be kept within limits (Parikh, 1999). Undue concentration on production of some agricultural commodities in the long-term may create serious consequences for the quality of land, ecological balance and employment opportunities. The experience of Punjab and Haryana on account of undue specialisation in the production of rice and wheat is an example in this respect. In view of the likely consequences, it may not be desirable to globalise the sector entirely. Rather, we need to judiciously globalise the sector so as to avoid the undesirable outcomes.

Another issue related to globalisation is the likely price instability in the domestic market due to the convergence of domestic prices with the international prices. Literature indicates that given the high level of instability of commodity prices in the international market, mainly due to variations in crop production and speculative nature of the market, it is quite likely that prices of commodities in the domestic market will be highly unstable which will adversely affect both the producers and the consumers.

Hence, dismantling of trade barriers is likely to increase volatility of domestic prices and farm incomes (Nayyar and Sen, 1994). Further, domestic prices will be more volatile when there is an incidence of dumping by countries having bumper harvest (Chand, 1998). Therefore, due precaution has to be taken in case of large-scale import of agricultural commodities.

Freeing trade in agricultural commodities is likely to change the cropping pattern in the country depending upon the level of comparative advantage in the production of commodities. As India has comparative advantage in production of commodities like rice, wheat, maize, sorghum, chickpea and cotton (Gulati, et al, 1994), trade liberalisation will increase their exports, which in turn may lead to expansion of area under these crops. At present, these crops are disprotected or indirectly taxed due to the restriction on exports. However, with liberalisation of trade these commodities will be able to get higher prices and that may promote larger cultivation. However, in case of oilseeds there may be a deceleration in their future expansion as they are not having comparative advantage and they have been getting much higher level of incentives than what they are likely to get under a free-trade scenario (Gulati and Sharma, 1997). With liberalisation of agricultural trade the country can import oilseeds at lower price than the domestic price. Hence, achieving self-sufficiency in oilseeds production may not be desirable given the huge cost involved in it.

Globalisation of the sector may have its adverse effects on certain areas, some crops and some group of people. It has been indicated in the literature that with export promotion and globalisation, the benefits will be accrued to only some areas which are well endowed in terms of resources, some crops which are having comparative advantage in production and some sections of the population who are producing the exporting commodities. Other areas, crops and people are unlikely to be benefited from the globalisation process. In other words, the benefits of globalisation process may not be neutral to areas, crops and people. Further, as globalisation may raise the prices of some of the essential commodities, it will have adverse welfare consequences for the people who are not engaged in the agricultural sector.

The country's commitment to WTO, which in a way may facilitate the process of globalisation, is likely to have some consequences for the sector. Currently, the commitment for reduction of subsidy may not affect the quantum of subsidy given to

the farmers. However, once the exemptions provided to the developing countries are withdrawn, there can be some pressure for reduction of subsidy, especially the subsidy for food procurement and its distribution through the PDS. The commitments for removal of QRs and reducing the import duty and also for increasing the quantum of imports are likely to increase imports and depress the domestic prices, especially of those commodities in which India does not enjoy comparative advantage.

Despite some of the trade liberalisation measure, foodgrains sector still remains largely controlled and insulated from the global markets, in view of the food security objective. In case of cash crops, exports are allowed when there is enough surplus and are imported when there is a net deficit. Hence, there is a view that agricultural trade is still taking place as a 'residual' between domestic demand and supply rather than as a policy instrument to integrate domestic agriculture with the world agriculture (Gulati, 1998). Ideally, agricultural export and import policies should move in tandem so as to avoid any distortions in domestic prices. However, during the last few years while the agricultural exports have been liberalised, restriction/controls on imports have remained more or less unchanged (Jeromi, 1999). While the liberalisation of exports resulted in rise in domestic prices of some of the commodities (example, onion and potato), the restriction on imports denied access to commodities from abroad. This miss-match in agricultural export-import policy was on account of the undue obsession to remain self-sufficient in all agricultural commodities. However, given the fact that no country in the world can have comparative advantage in production of all the commodities required by it, the restrictions on imports in the face of liberalisation of exports will not be beneficial in a liberalised economic environment (Chand, 1988). Hence, there is a need to continue with the liberalisation of trade in agricultural commodities so as to provide a level playing field for the agricultural sector with the industrial sector. The removal of QRs on some of the agricultural commodities announced in the Export-Import Policy 2000-01 would greatly reduce the miss-match in the policies.

The following priority tasks are identified for the government to help Indian agriculture adjust to globalisation:

- ❖ *Food self-sufficiency at the national level is desirable so that the reliance on trade can be kept within limits.*

- ❖ *Safetynets are needed to protect the interests of crops, people and regions which are likely to be affected by globalisation.*
- ❖ *Precautions on imports in view of the removal of quantitative restrictions.*
- ❖ *Agricultural export policies need to be synchronised with the import policies to avoid price fluctuations. There is a need for sequencing of measures. In view of the removal of quantitative restriction in the coming days, tariffication process needs to be done judiciously.*

2.6 Watershed Development

According to Planning Commission (1997b) about 9.6 million hectares of arable land and 6.9 million hectares of non-arable land have been treated under various watershed programmes. There are still about 60 million hectares of arable land and 15 million hectares of non-arable land which remain to be covered. Studies reveals that watershed development programmes undertaken thus far, have a mixed story of success and failure. The impact assessment shows a great degree of variation in achievement from project to project, depending on location, level and nature of community participation, caste and class structure, land tenure, nature of technology propagated, institutional arrangements, infrastructure, research, as well as extension and training support, etc. Several watershed projects have helped improve soil moisture, cropping intensity, crop yields and employment. [Nagaraja (1996), Deshpande and Reddy (1991)].

The experience of some successful watershed projects in India and abroad shows that people's effective participation in the planning, execution, monitoring and maintenance of project is essential for success. The government should create a proper legal and political environment for people's effective participation, including those of women and the landless. But it should be basically a people's programme, the role of government being limited to providing only technical guidance, basic infrastructure and limited finance, if necessary. Women have an important role in maintaining the household livelihood system. In poor families, they are largely responsible for collection of food, fuel & fodder. Therefore, involvement of women in Watershed Development Programme would be crucial. Further, NGOs are generally considered better than bureaucracies for enlisting people's participation in watershed development. Their role is to organise training for self-help groups and also to create awareness among the people for watershed management for sustainable development. Ralegaon Siddhi, MYRADA and several other

voluntary organisations have effectively demonstrated the positive role of NGO's in watershed development. Panchayat Raj Institutions can play a vital role in watershed development. However, Panchayat Acts of various states do not specifically assign any role to the panchayats for implementation of watershed projects. There is need for an effective devolution of responsibilities, finances and administrative powers to panchayats for the purpose. Particularly, the assets and infrastructure created in watersheds must be maintained by Panchayats (Planning Commission, 1997b).

At present watershed development and soil conservation have been treated as a sectoral activity of erosion control. This need to be changed and follow a holistic approach, encompassing land, water, animal and human resources to meet the water and bio-mass needs of the people on sustainable basis. The emphasis should change from mere soil conservation to land husbandry. The potentials of all farm and non-farm activities for the creation of adequate livelihood, income and employment opportunities in each watershed should be explored and utilised. Besides, the watershed development programmes would gradually shift from Centre to State or even local bodies and ultimately the people themselves should plan, execute and maintain them (Planning Commission, 1997b).

Planning Commission (1997b) estimates show that the area available for treatment in the next 25 years would be 60 million hectares of arable land and 15 million hectares of non-arable land. Hence, to cover the entire treatable area of 75 million hectares in about 25 years in a phased manner, about 12 million hectares of arable land and 3 million hectares of non-arable land to be treated in each Five Year Plan. This would require the Government to spend at least Rs. 7,780 crore and another Rs.13,070 crore by the people at constant prices (Table 2.6.1).

Table 2.6.1:Physical and Financial Targets of Perspective Plan for Watershed Development

Plan Period	Area to be covered by (Million hectare)		Cost Per Hectare (Rs.)	Total Cost at 1994-95 Prices (Rs.Crore)		
	Govt.	People's initiative		Govt.	People	Total
9 th Plan	10	5	3000	3000	1500	4500
10 th Plan	7	8	3000	2100	2400	4500
11 th Plan	5	10	2800	1400	2800	4200
12 th Plan	3	12	2600	780	3120	3900
13 th Plan	2	13	2500	500	3250	3750
Total	27	48	--	7780	13070	20850

Source: Planning Commission (1997b).

It is necessary to point out here that although the short term objectives of different watershed programmes vary widely, the overall long-term objective of all such programmes is to improve the livelihood system of rural people in rainfed areas through i) improvement in environment/ecology by conserving and developing natural resources namely, land, water, perennial vegetation etc., ii) improvement in production and productivity of crops, animals, trees etc. and iii) improvement in income and employment opportunities for the people, particularly the landless poor and women.

In case of watershed development, the following aspects need to be considered:

- ❖ *Development and diffusion of appropriate location specific technologies and infrastructure, with people's participation in various rainfed areas.*
- ❖ *Watershed programmes should be more people oriented and panchayats should be actively encouraged with financial and administrative powers.*

2.7 Research and Development

Besides land and water resources, one of the major issues relating to overcoming limits to growth is the low productivity of Indian agriculture. There is a view that productivity levels in India have reached a plateau, especially in the green revolution areas (Rao and Gulati, 1994). To an extent this is evident from the deceleration in the growth rates of yields of most of the crops during the nineties. This has serious implications for the future growth of agricultural production, especially in view of the almost stagnation in area under cultivation and the resultant deceleration in production growth during the nineties (Table 2.7.1).

Table 2.7.1: Trend Growth Rate of Area, Production and Yield of Important Crops*

(Per cent per annum)

Crops	Area		Production		Yield	
	80's	90's	80's	90's	80's	90's
I. All Crops	0.1	0.4	3.2	2.2	2.6	1.4
II. Foodgrains	-0.2	-0.1	2.9	1.8	2.7	1.4
III. Non-Foodgrains	1.1	1.5	3.8	3.3	2.3	1.4
i. Rice	0.3	0.5	3.6	1.9	3.2	1.3
ii. Wheat	0.5	1.7	3.6	3.1	3.1	1.6
lii. Coarse Cereals	-1.4	-1.8	0.4	0.2	1.7	2.0

Iv. Pulses	-0.1	-0.2	1.5	1.0	1.6	1.7
v. Oilseeds	2.4	0.8	5.5	3.4	2.9	2.6
Vi. Sugarcane	1.5	1.8	2.7	2.5	1.2	0.7
Vii. Cotton	-1.3	3.3	2.8	1.7	4.1	-2.0

*: Estimated based on semi-log regression equation.

#: 80's cover the period 1980-81 to 1989-90.

\$. In case of production, 90s cover 1990-91 to 1999-2000. In case of area and yield 90's cover the period 1990-91 to 1998-99.

Though India is one among the major producers of agricultural commodities in the world, the yield levels, here, for a number of commodities like paddy, wheat, groundnut, cotton, jute, etc., are far lower than the yield levels in major producing countries and in case of some crops it is even lower than the world average (Table 2.7.2).

Table 2.7.2: Yield of Important Crops in Major Producing Countries in 1997

(Kg./ha.)

Paddy		Wheat		Groundnut		Sugarcane		Cotton		Jute	
Country	Yield	Country	Yield	Country	Yield	Country	Yield	Country	Yield	Country	Yield
China	6331	China	4087	China	2574	Brazil	69021	China	943	Banga.	1577
Indonesia	4561	France	6530	Nigeria	1124	China	75982	USA	769	China	2517
Pakistan	2827	USA	2673	USA	2828	Thailand	55878	Pakistan	552	Thailand	3548
Philippi.	2933	Australia	1712	Indonesia	1519	Mexico	72734	Turkey	1065	Myanmar	939
Thailand	2143	Canada	2128	Sudan	762	Australia	97337	Argentina	368	Brazil	1714
India	2915	India	2654	India	988	India	69737	India	321	India	1830
World	3827	World	2686	World	1273	World	63324	World	584	World	1734
India % Of World	76.2		98.8		77.6		110.1		55.0		105.5

Source: Production Yearbook, Food and Agricultural Organisation, 1997.

Since there is hardly any scope for further expansion of area under cultivation, the future production prospects depends largely on the improvements in the yield levels. Here what we need is to break the yield barrier and bridge the gap between the potential and actual yield through research and development (R&D) efforts. ICAR studies reveals that there is vast unexplored technological potential for improvement in the yield of crops. In this context, Swaminathan (1999) noted that the “low yield phenomena” in India should be considered as a “yield reservoir” and it should be treated as an asset for future development of the sector. Exploiting the “yield reservoir”, *inter alia*, require substantial investment and development and deployment of high yielding seed varieties. So far the emphasis has been on the use of HYV seeds, but it loses its vigour with time.

Therefore, new varieties need to be developed periodically to expand production possibilities. However, agricultural research establishment could not come up with improved varieties of seeds, which are suited to different regions of the country, especially in drought prone areas. Therefore, the country has to built up a vital research system which is responsive to the changing needs and circumstances (Parikh, 1999). Compared to other countries, India's efforts in this direction, in terms of provision of resources, is insufficient. India is investing only around 0.3 per cent of GDP in agriculture for agricultural research, as against 0.7 per cent in the developing countries and 2-3 per cent in case of developed countries (Evenson, *et al*, 1999). Expenditure on agricultural research and education accelerated during the post-green revolution period of the 1970s, but slowed down since the mid-80s and it hovered around 0.49 per cent of agricultural GDP in the early 1990s, which was lower than the requirement of 1.0 per cent projected by the ICAR. Further, the level of research expenditure was sub-optimal or significantly lower than desired in states like Bihar, Orissa, Madhya Pradesh, Uttar Pradesh and West Bengal where productivity is low. Crop-wise, research expenditure was low in case of rice, certain coarse cereals, pulses and oilseeds (Pal, *et al*, 1997).

In India research support for the agricultural sector is provided by i) governmental agencies, ii) international agricultural research centres, iii) imported technology and iv) private Indian research. India is considered as having the largest public agricultural research establishments in the world (Evenson, *et al*, 1999). Indian Council of Agricultural Research (ICAR) and agricultural universities constitute the main part of governmental agencies. However, they suffer from several weaknesses like i) uneven progress of varietal improvement across crops and regions, ii) neglect of crop systems research, iii) unimpressive results of local adaptive research, iv) inadequacy of collaborative multi-disciplinary research, v) weak interaction between researchers, extension workers and farmers; vi) excessive centralisation of planning and monitoring, vii) lack of accountability for performance, etc. (Vaidyanathan, 2000). Studies show that public research and extension have been the major sources of increase in the total factor productivity in Indian agriculture during the post-green revolution period. Estimates indicate a very high return to investment in public research (Rao and Gulati, 1994, and Evenson, *et al*, 1999). Therefore, for achieving greater gains, public investment in research and extension needs to be increased.

Along with public sector, private sector also engages in extensive research and development. It has been reported that expenditures on agricultural research and development in the private sector are approximately half of those expenditures in the public sector. Crop management (mainly in plantations) and processing technology has been the areas on which the private sector research concentrated (Evenson, *et al*, 1999). Along with public sector, private sector needs to be encouraged to take up R and D activities in the frontier areas like biotechnology. However, the associated issues like threat to sustainable agriculture, access and sharing of genetic resources, and the larger issue of importance of agriculture for eradication of poverty by providing nutritional security are to be addressed while encouraging private participation (Sharma, 2000). Two major areas on which R&D efforts needed are i) genetic resource management and biotechnology, and ii) natural resource management and agro-ecology. World over the focus is on biotechnology. On the need for bio-technology, Rao and Gulati (1994) observed that the tool of bio-technology, including genetic engineering and tissue culture offer possibilities for breaking the yield barriers, especially in the unfavourable agro-climatic regions.

In the light of the discussion in this section, we identify the following priority tasks for R and D:

- ❖ *Greater public investment in R&D.*

- ❖ *Encourage private sector participation in frontier areas like natural resource management and biotechnology.*

2.8 Development of Non-Farm Sector

Till seventies, the significance of Non-Farm Sector (NFS) in generating employment and income to the rural households did not receive adequate attention in India. This is mainly due to the excessive focus on the growth of formal sectors and relegated the informal sector to the background. In the seventies, however, it was realised that the development of formal sectors could not take care of the increasing rural unemployment and underemployment and development economists and policy makers started looking for solutions inside the rural areas themselves. As a result, development of NFS received the attention of policy makers as an alternative strategy for rural development (Chadha, 1993).

It is being pointed out that the future impetus for development of the rural economy has to come from an expanding rural non-farm activities (Mahajan, 1993). Therefore, NFS need to be developed for creation of employment opportunities and earnings for the rural households, especially the weaker sections. According to the agriculture-led -growth theories, another role of NFS is to stimulate agricultural growth through inter-sectoral linkages. A vibrant modern agricultural sector is based on strong forward and backward linkages with the industry and the NFS (Mellor, 1976). Besides, rural non-farm activities can also play an important role in containing large-scale rural-urban migration (Chadha, 1993).

Recent expansion of the non-farm sector in India is influenced by the rising commercialisation in the rural economy. This is evident from the changing proportion of non-farm employment more and more in favour of wage-paid labourers indicating shift in production/service activities from the households to non-household ventures. It has been found that landless labourers and sub-marginal cultivating households, which account for 55 per cent of total rural households, are the prominent job seekers in the NFS due to their assetlessness or near assetlessness (Chadha 1993). The proportion of male workers in non-agriculture is more than females in all the states except in Punjab where the participation of females in non-farm activities is much more than that of males (Balasubramanian, et al, 1994). It may be noted that besides the above three broad category of factors, the growth of NFS in India is also contributed by the various government programmes like IRDP, Nehru Rozgar Yojana, etc. for employment generation and poverty alleviation.

Strong backward linkages with the agricultural sector and forward linkages with the modern manufacturing sector are imperative for the growth and prosperity of the non-farm sector. Literature on Indian experience reveals that there exist weak production inter- linkages, the reason being the surplus labour in the economy (Vaidyanathan, 1986). The reasons for the weak production linkages can be found in (a) production of most of the modern inputs except perhaps repair services are in the urban areas and (b) agro-processing units may not be operating in the rural areas, even if they are working they may not provide much employment due to high capital intensity.

Credit is one of the most important inputs required for the activities in the NFS but its availability both for fixed and working capital has been a problem area both in terms of cost and availability. Within the overall scenario of rural credit, credit needs of the NFS received some attention in recent years. Nevertheless, because of the limited reach of the formal financial institutions especially to interior villages and small producers, private channels of credit continue to play an important role in spite of high cost (Eapen, 1996). Therefore, increasing attention needs to be given by bankers to the requirements of the NFS (Vyasulu and Kumar 1994). Experiences of other countries have shown that rural financial institutions are shifting their focus to non-farm activities as they are found to be more viable. SHGs can be a feasible intermediaries to finance non-farm activities.

Given the development of agriculture and allied activities, infrastructure availability, institutional set up and availability of credit, NFS in India has the promise of becoming the most dynamic part of the economy, which can take care of the ill effects of marginalisation process in the sector. To develop this sector on a sustainable basis appropriate policies need to be formulated, institutions needs to be revamped, credit needs to be met and marketing and technological skills upgraded.

From the above discussion, we suggest the following priority tasks for a policy agenda for agriculture to counter the marginalisation process operating in agriculture.

- ❖ *Development of a sound and enduring non-farm sector for creation of employment in the rural sector.*
- ❖ *Credit requirements of NFS need to be met by financial institutions. SHGs can be feasible intermediaries to finance non-farm activities.*

Modernisation of Agriculture: The Priorities at a Glance

Towards Self-regulation

- ❖ The constitution of the District Planning Committees (DPC) should be completed as soon as possible and the DPCs should commence the work allotted to them. Even in a state like Karnataka which has been keen to activate and support PRIs, DPCs have not been constituted so far.
- ❖ Once the DPCs become active, there will be pressure at the state level to make the necessary changes in the planning system. Meanwhile, internalisation of ACRP into state plans may be completed in all the remaining states.
- ❖ Change over from the MSP operations to market intervention operations undertaken by an autonomous organisation having the necessary market expertise and freedom to operate on commercial principles without political/administrative interference.
- ❖ Promotion of exports would need improvements in infrastructure, modernisation of facilities, rationalisation of rules and procedures and a stable export policy rather than the stop-go type familiar in cases like cotton. We expect that these promotional measures would get implemented in the course of adoption of ACRP approach to stimulate agricultural growth.
- ❖ As regards conflicts and clashes of interest with other governments given rise to by arrangements like WTO, the government would have to remain vigilant, make maximum use of opportunities to negotiate for mutually beneficial terms and conditions for trade and take appropriate action to counter or pre-empt hostile moves by other governments or large market operators like multinationals.

Overcoming Limits to Growth

- ❖ Building up and maintaining an updated data base on the extent of land and water resources, their location, present status, potentialities, ownership, use, regulation and control. PRIs should be given the primary responsibility for collecting, recording and verifying data. Remote sensing and other advanced technologies should be used to explore the potentialities of the resources and to complement the collection of data at the ground level.
- ❖ Preparing a detailed perspective plan to extend irrigation as quickly as possible to make full use of the ultimate potential.

- ❖ Ensuring that the market, institutional and policy environment, are conducive to conservation-oriented and judicious use of land and water resources. Economic sanity should be restored to administered pricing, user charges and government operations like procurement, storage and distribution of foodgrains. Micro-level decision-makers like producers and consumers should get signals consistent with the social objective of conservation and economic use of valuable but scarce resources like land and water.

- ❖ It is hoped that, given the right environment, schemes for improving degraded lands in green revolution areas and the watershed development strategy in the drought-prone areas would be able to take rapid strides provided the problems of institutional arrangements, procedures and personnel are tackled in right earnest.

- ❖ As we approach the limits of land and water resources, search for a technology appropriate to the emerging situation should be intensified. Experts suggest that biotechnology would be a promising field to explore. Attention must also be paid to technologies available in research stations but not reaching farms.

Promoting Human Development

- ❖ Broad based agricultural growth and diversification would stimulate value-adding activities like processing and preparing specialist items with large demand. There would be growth in productive employment opportunities but the workers in agriculture would have to be trained for the new skills and occupations. In the light of the experience gained so far in programmes like TRYSEM run by the government and similar activities of NGOs, attempt should be made to look ahead to identify the promising opportunities in different areas and to anticipate in advance the training and other assistance which could help the workers in agriculture to benefit from these emerging employment opportunities.

- ❖ Rise in rural incomes and the formation of a relatively better off middle strata in the rural communities would generate wide ranging demands for goods and services. The consequential rise in employment opportunities needs to be kept in mind while planning the training and other assistance to be given to the workers in agriculture.

- ❖ There is a trend towards the rural-urban continuum becoming more connected with quicker and smoother flow of people and goods. This trend needs to be supported so that village economies remaining relatively isolated from the mainstream get more firmly linked with it. Ideally, rural communities should have bustling commuting zone around them for employment, for marketing their products and for purchasing inputs. This would check the flow of migrants to urban slums and flight of talent from villages. It would also help in obtaining a more even and balanced spatial spread of economic and other social activities.

Critical Policies:

Capital Formation

- ❖ Capital formation in the public sector should be augmented. Money saved from the reduction in subsidy for agricultural inputs should be utilised for this purpose.
- ❖ In view of the resource constraints, capital formation requirements need to be prioritised. As ACRP gets operationalised, it would be possible to do prioritisation in a rational manner.
- ❖ Inter-state variations in capital formation need to be reduced.
- ❖ Delays in disbursement of funds under RIDF should be eliminated.

Agricultural Credit

- ❖ Increase the outreach of the formal financial institutions, especially to the small and marginal farmers.
- ❖ Continuation of credit targeting for ensuring adequacy of credit in the agricultural sector.
- ❖ Progressively link SHGs with formal credit institutions for reducing transaction cost and high recovery.

Agricultural Insurance

- ❖ Enhance the coverage of agricultural insurance scheme to the entire production process including post-harvest storage and processing.
- ❖ Integration of agricultural insurance with credit institutions.
- ❖ Encourage private participation in crop insurance

Globalisation

- ❖ Food self-sufficiency at the national level is desirable so that the reliance on trade can be kept within limits.

- ❖ Safetynets are needed to protect the interests of crops, people and regions which are likely to be affected by globalisation.
- ❖ Precautions on imports in view of the removal of quantitative restrictions.
- ❖ Agricultural export policies need to be synchronised with the import policies to avoid price fluctuations. There is a need for sequencing of measures. In view of the removal of quantitative restriction in the coming days, tariffication process needs to be done judiciously.

Watershed Development

- ❖ Watershed programmes should be more people oriented and panchayats should be actively encouraged with financial and administrative powers.
- ❖ Development and diffusion of appropriate location specific technologies and infrastructure, with people's participation in various rainfed areas.

Research Development

- ❖ Greater public investment in research and development.
- ❖ Encourage private sector participation in frontier areas like natural resource management and biotechnology.

Non-Farm Sector

- ❖ Development of a sound and enduring non-farm sector for creation of employment in the rural sector.
- ❖ Credit requirements of NFS need to be met by financial institutions. SHGs can be feasible intermediaries to finance non-farm activities.

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