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Food Security in Karnataka: Paradoxes of Performance

Stacey May Comber
Marc-Andre Gauthier
Malini L Tantri
Zahabia Jivaji
Miral Kalyani

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FOOD SECURITY IN KARNATAKA : PARADOXES OF PERFORMANCE

Stacey May Comber, Marc-Andre Gauthier, Malini L Tantri,

Zahabia Jivaji and Miral Kalyani *

Abstract

The present research work aims to examine the trend of inconsistent human development patterns vis-a-vis economic growth rates in Karnataka, using food security indicators of availability, accessibility, and nutrition as analytical lens. Specifically, the points of intersections between food security and dimensions of human development are explored. The research findings of the study illustrate that, although Karnataka has shown sufficient production of agricultural commodities and promising economic growth, the cause of malnutrition and hunger remain, which greatly affects human development outcomes.

Introduction

Indian states have followed differing and unbalanced economic growth and human development patterns since independence, which is caused in part by the process of economic liberalized reform (Ganesh-Kumar and Panda 2009; Dev 2012) and part by a certain political and socio-cultural milieu (Mahendra Dev and Sharma 2010). The state of Karnataka, led by its acclaimed IT metropolis of Bangalore, is an interesting and unsettling example of an unbalanced growth and human development scenario. The state's economy has been in full bloom since the 1990s due to national liberalization policies, and has exhibited good growth parameters. The state's economy has seen a major shift towards the tertiary sector of services since liberalization (Planning Commission 2007). Contribution from agriculture and its related activities, which used to dominate the economy, has since become marginal. However, farmers and agricultural labourers remain to account for over half of Karnataka's workforce. However these growth parameters have not percolated at gross root levels. As a result, poverty, deprivation, and vulnerability in Karnataka remain comparable to other backward Indian states. Malnutrition in Karnataka has led to high levels of infant, child and maternal mortality, anemia and other micronutrient deficiencies. Using Mortality Rates data to measure the well-being of a population is one piece of a complex puzzle. The 1994 Human Development Report lists food security as one of the main threats to human security (UNDP 1994, 3). Food security must be examined through holistic means to identify the multidimensional processes that intersect with economics, social relations, health, political structures, and the environment, which operate over different spatial and temporal scales. Strengthening food security and improving human development is a cohesive process. In this backdrop, this research paper aims to examine the trend of inconsistent human development patterns vis-a-vis economic growth rates in Karnataka. The primary objective is to utilize food security as an analytical

* Stacey May Comber, Marc-Andre Gauthier, Zahabia Jivaji and Miral Kalyani are Research Associates; and Malini L Tantri is Assistant Professor, Institute for Social and Economic Change, Bangalore -560072, India. E-mail: malini@isec.ac.in.

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lens to explore the points of intersections with dimensions of human development. The research question presented is why, despite accelerating economic growth, has Karnataka exhibited stagnant human development? We hope to argue that, although Karnataka has shown sufficient production of agricultural commodities, malnutrition persists reasons for which can be traced to the skewed dimensions of food accessibility. The disparity in employment and poverty levels is a serious concern as it throttles purchasing power of the people to buy adequate nutritious food. Moreover, we hope to reshape the idea of how to attain human development by illustrating how food security is a crucial key to Karnataka's developmental path. This research paper is based on both qualitative and quantitative analysis of primary and secondary data. The timeframe of this research will extend from the 1990s to 2013 to incorporate a reference period of liberalized economic reform and allow for trend analysis.

This paper is divided into four sections. Section two provides the context of Karnataka's economic growth trends since economic liberalization in the 1990s and provides a profile of human development in Karnataka together with a critique through national and subnational comparative analysis of human development indicators. Section three provides the nutritional context of Karnataka through food security dimensions including availability, accessibility and nutrition. Last section summarises the findings of the study.

Economic and Development Profile of Karnataka

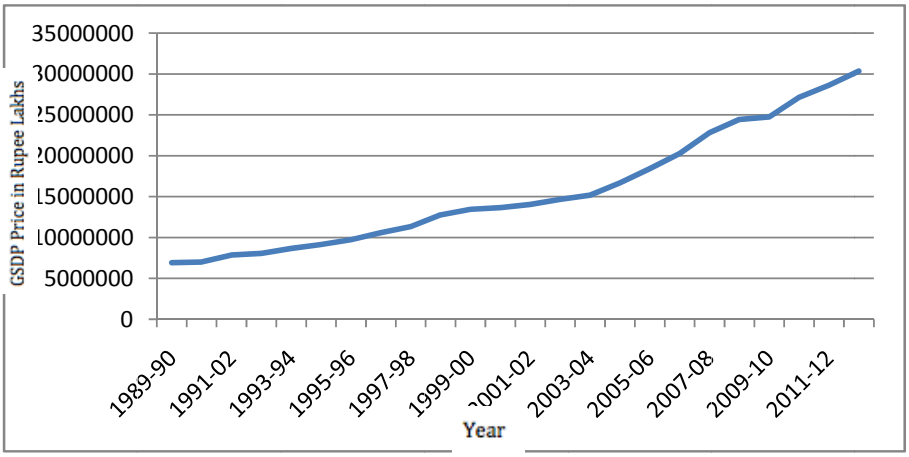
Karnataka is a middle-income state and has an economic apparatus that is characterized by three features: firstly, Karnataka is a division of Indian federation; secondly, it has a mixed economic system; and thirdly, it has liberalized economic policies to open its doors to trade in goods and services (Government of India 2007). Over the years, Karnataka has been recognized as the "Brain Bank of India" for accumulating a large infrastructure for human resources development such as universities, general education colleges, medical colleges, engineering colleges, polytechnics, industrial training centres, and premier research institutes (ibid). These driving factors have led to enormous growth of high-tech industries and inflow of domestic and foreign investment in the state, especially in information technology, electronics and communication (ibid). Since 1991, national and state-level economic reforms have placed Karnataka among the leading states to have attracted maximum Foreign Direct Investment (FDI) (Business Maps of India 2012). From January 2000 to October 2006, FDI in Karnataka accounted to approximately INR 8,485.38 crores (USD 1.876.1 million). Karnataka's Gross State Domestic Product (GSDP) in 2006-07 was INR 1,94,008 crore (at current prices) and India's GSDP was INR 37,18,000, which puts Karnataka's share at 5.2 percent of the country's overall GDP. As compared to other southern states, Karnataka has a higher economic growth in terms of select indicators, such as average growth of GSDP and per capita GSDP, per capita GSDP, the share of primary sector GSDP, share of secondary sector in GSDP, the share of tertiary sector GSDP (Goveibidrnment of India 2007, 45). The State's Real Income Growth, which struggled to rise beyond 4 percent till the early 1990s, has now reached nearly 6 percent.

Table 1: Economic and Developmental Indicators across Southern States and All India 2008

Indian States	Per Capital Income (PCI)	HDI Ranking	Hunger Index	Income Ratio	IMR
Karnataka	**3269.76**	**10**	**11**	**0.84**	**45**
Kerala	5262.89	1	2	0.84	12
Tamil Nadu	3835.05	6	6	0.83	31
Maharashtra	3913.14	4	10	0.81	33
Andra Pradesh	3398.76	11	3	0.85	52
ALL INDIA	3337.33	N/A	N/A	0.84	53

As against these, Karnataka's economic growth has shown increasing trends from 1990s (figure 1). The distribution of GSDP across primary, secondary and tertiary sectors shows a major shift from the primary sector towards the tertiary sector (see Figure 2). This shift from primary to tertiary sector is also evident at the national level as well as in other southern states. The economic growth trajectory in Karnataka's sectors is largely facilitated by the service industry. The Industry Sector, which has the potential to provide mass employment, has been neglected in policy priority. Karnataka's economic growth trends reflect that the market shift from Agricultural & Allied Sector to the Service Sector has largely overlooked the Industry Sector. The Service Sector offers minimal employment opportunities, and is exclusive to skilled and educated workers. Arguably, this oversight has influenced the high unemployment rates and widened the disparity between skilled and unskilled workers in Karnataka. Subramanya (2012) argues that lower farm incomes caused by insufficient productivity growth and decreasing prices for farm output drives farmers into deeper debt and exacerbates the quality of life in farming communities. The deceleration in Agriculture & Allied Sectors can be considered the root cause for rural distress found in Karnataka.

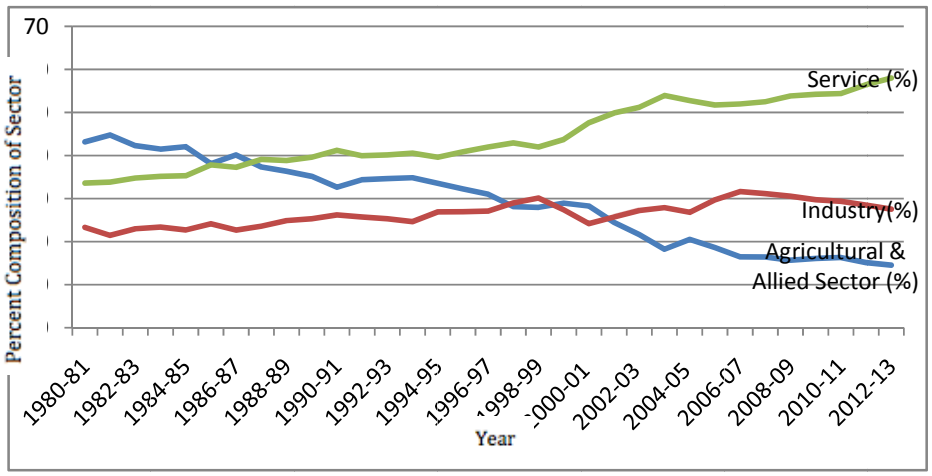
Figure 1: Trends in Karnataka's GSDP



Note: *All prices are in rupee Lakh

Source: *Figures derive from Central Statistics Office (CSO)

Figure 2: Sectoral Composition of Karnataka's GSDP



Source: Based on data collected from Central Statistics Office (CSO)

The Human Development Index (HDI) assesses the disparity between economic and development parameters. The human development approach concentrates on entitlements and capabilities (UNDP 2012). The general demographic and health data of Karnataka are provided in Table 2. The table shows an improvement in health and development by the basic development indicators in the last three decades. The rank of Karnataka in the HDI (among 15 major states) has remained in 7th place from 1991 to 2001. This suggests that the state's progress in human development has stagnated and further efforts are essential to improving the state's competitive performance in development at the national level. However, this could also be due to the fact that other states are performing better (refer to Table 3).

Table 2: Demographic & Health Data of Karnataka

Indicators	1990-91	2000-01	2009-10
Population (in 000s)	37136	44977	52851
Sex Ratio (females per thousand males)	963	960	965
Literacy Rate (%)	46.21	56.04	66.60
Birth Rate	22.2	19.5	19.2
Death Rate	7.6	7.2	7.1
Infant Mortality Rate	80	58	38
Hospitals in Numbers	297	383	382
Dispensaries	847	659	659

Source: Karnataka at a Glance: 2011-2012.

Table 3: Human Demographic Index across Indian States 2007-2008

Indian States	HDI Values
Andhra Pradesh	0.473
Assam	0.444
Bihar	0.367
Gujarat	0.527
Haryana	0.552
Karnataka	**0.519**
Kerala	0.79
Madhya Pradesh	0.375
Maharashtra	0.572
Orissa	0.362
Punjab	0.605
Rajasthan	0.434
Tamil Nadu	0.57
Uttar Pradesh	0.38
West Bengal	0.492

Source: ISID. 2012. Regional Disparities in Growth and Human Development in India.

In addition to this, HDI are also found varying between districts in Karnataka (Table 4). For example, Raichur has an HDI of 0.547, being the lowest region, and Bangalore has an HDI of 0.753 being the highest (Roy 2012). Bangalore Urban has the highest HDI among districts, based on its high education index, whereas Raichur has the lowest HDI among districts and also the lowest income for women (Karnataka Human Development Report 2005). This regional disparity could arguably be related to geographical and economic circumstance. For example, Raichur is a drought prone area that has not witnessed growth neither in manufacturing nor within the service sector, thereby indicating a larger informal sector, where the majority of the population works with lower wages and insecurity of employment. In contrast, Bangalore city is a top ranking district and acclaimed as the “Silicon Valley of India”. Lower HDI values are commonly related to lower incomes (Karnataka State Planning Board 2008). These regional disparities in human development are a major concern for the state.

Table 4: HDI across Karnataka's Districts in 2005

Districts		Indicators						HDI	
		Health		Education		Income			
		Index	Ratio	Index	Ratio	Index	Ratio	Value	Rank
1	Balglkot	0.597	27	0.636	22	0.539	12	0.591	22
2	Bangalore Rural	0.692	6	0.662	20	0.605	4	0.653	6
3	Bangalore Urban	0.705	5	0.887	1	0.666	1	0.754	1
4	Belgaum	0.712	2	0.699	15	0.532	13	0.648	8
5	Bellary	0.685	7	0.618	23	0.549	9	0.617	18
6	Bidar	0.638	17	0.689	17	0.470	26	0.599	21
7	Bijapur	0.627	24	0.642	21	0.499	2	0.589	23
8	Chamarajnagar	0.642	15	0.570	26	0.518	17	0.576	25
9	Chikmaglur	0.637	19	0.742	9	0.563	6	0.647	9
10	Chitradurga	0.660	12	0.704	14	0.517	18	0.627	16
11	Dkshina Kannada	0.707	3	0.823	4	0.636	2	0.722	2
12	Davangere	0.680	8	0.711	13	0.515	19	0.635	12
13	Dharwad	0.615	26	0.758	7	0.553	8	0.642	10
14	Gadag	0.628	23	0.750	8	0.525	15	0.634	13
15	Gulbarga	0.632	20	0.572	25	0.490	25	0.564	26
16	Hassan	0.670	10	0.729	10	0.519	16	0.639	11
17	Haveri	0.620	25	0.699	16	0.491	24	0.603	22
18	Kodagu	0.638	18	0.833	3	0.621	3	0.697	4
19	Kolar	0.653	13	0.713	12	0.508	21	0.625	17
20	Koppal	0.642	16	0.576	24	0.529	14	0.582	24
21	Mandy	0.632	21	0.682	18	0.513	20	0.609	19
22	Mysore	0.663	11	0.669	19	0.561	7	0.631	14
23	Raichur	0.648	14	0.524	27	0.469	27	0.547	27
24	Shimoga	0.707	4	0.766	6	0.547	10	0.673	5
25	Tumkur	0.672	9	0.714	11	0.505	22	0.630	15
26	Udupi	0.713	1	0.842	2	0.588	5	0.714	3
27	Uttara Kannada	0.632	22	0.781	5	0.546	11	0.653	7
Karnataka		**0.680**		**0.712**		**0.559**		**0.650**	

Source: Karnataka Human Development Report. 2005.

Context of Food Security in Karnataka

Theoretically, food security and human development are codependent, with nutrition outcomes at their intersecting point. This joint relationship is founded on the availability of and access to food, which is critical for achieving food security. Malnutrition is the result when these prerequisites for food security are flawed, which in turn impedes human development. This section will examine Karnataka's food security scenario through the following indicators: food availability, food accessibility, and nutrition. Food availability can be measured according to area, yield, and production (AYP) to examine overall growth trends in the state. Food accessibility will be measured by income and unemployment rates and

an analysis of the Public Distribution System (PDS). Nutrition will be measured by malnutrition rates, anemia, and health data.

Food Availability: Agriculture Performance at the Aggregate Level

Karnataka has vast potential in agriculture growth with 64.60 percent of land being cultivable. (Government of Karnataka 2006). Moreover, Karnataka is one of the top ten states producing food grains in India; it has ten agro-climatic zones suitable for growing a variety of food grains round the year. Agriculture in Karnataka has been viewed in two contexts (Subramanya 2012): First as a system to provide food security by increasing the production of agriculture commodities; second as a contribution to the vast majority of Karnataka's population working in agriculture and consequently, contributing to agriculture will positively affect the farming community's quality of life. The agricultural sector in Karnataka is distinctive for its hugely varying phases of growth and stagnation.

The trends in agriculture production in Karnataka have been ever-changing. Till the 1990s, performance of the agricultural sector was relatively stable (Subramanya 2012). From 1980 to 1985, Karnataka agriculture grew at an average rate of 4.4 percent; however, from 1985-1990, the growth decelerated sharply (ibid). The state picked up marginally from 1985 to 1990's but the sector was far from being the vibrant sector it has the potential to be. From 2000 onwards, the agriculture production has varied enormously on account of drought (refer to Figure 3 and Figure 4 for the above trends). Karnataka achieved an all-time high of food grain production in the year 2010-11. A total of 139.86 lakh tons was produced, 124.21 lakh tons being cereals and 12.65 lakh tons pulses (Karnataka Economic Survey 2010-2011). In fact, Karnataka achieved the highest production of coarse cereals in India, thus being awarded the "Krishi Krman Award" by the Honorable Prime minister of India in 2011. Table 5 provides an overview of the area, production, and yield performance in Karnataka agriculture commodities from 1970 to 2009.

Table 5: Area, Production and Yield of Agricultural Commodities in Karnataka's

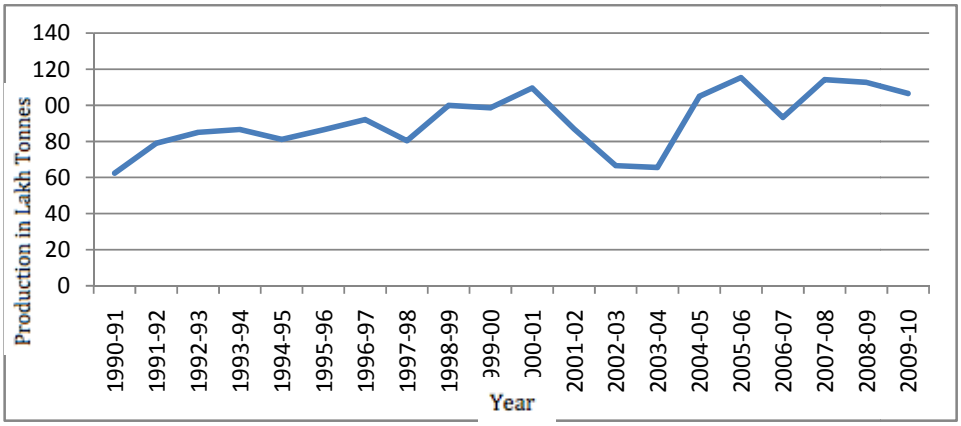
Year	Area	Production	Yield
1990-91	100.8	158.5	118.2
1991-92	105.5	192.7	135.4
1992-93	105.3	210.7	155.1
1993-94	101.3	209.3	150.7
1994-95	98.9	147.3	119.9
1995-96	97.1	142.9	123.7
1996-97	102.9	156.5	123.2
1997-98	103.1	141.9	112.4
1998-99	102.5	171.6	125.1
1999-00	103.8	171.8	121.5
2000-01	105.2	189.9	127.8
2001-02	98.3	160.7	112.3
2002-03	94.2	130.4	100.5
2003-04	89.7	112.0	96.1
2004-05	100.6	157.3	117.1
2005-06	1101.3	170.9	116.9
2006-07	96.8	167.6	111.8
2007-08	103.6	181.8	119.8
2008-09	98.5	182.4	116.9

Base: Triennium Ending:1981- 82= 100

Source: Economic Survey 2009-10 A.2.1

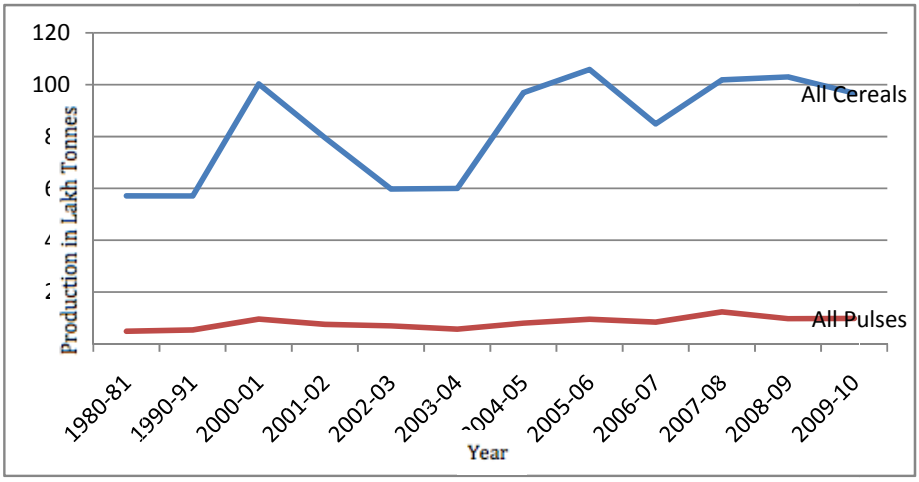
Variation in agricultural production across years, as plotted in figures 3 and 4, reflects how production volatility in agriculture is largely dependent on rainfall. After Rajasthan, Karnataka is the second most drought-prone state due to its given geographical characteristics. The state witnessed major droughts for three consecutive years (2001-02, 2002-03 and 2003-04) which resulted in lower crop yields (Kavitha, *et al* 2010). Throughout these periods, there was 23 percent deficit in rainfall. The reduced precipitation created three major disparities that affected availability of food and Karnataka's economy. First, the agricultural production had a major decline to 64 lakh tonnes, against the target of 104.05 lakh tonnes (ibid). Second, there has been a 3.5 percent decline of state GDP since 2001-02 (ibid). Lastly, the annual income of the farming households declined to half in the drought years, thus leading to an increase in poverty levels in the affected regions. Furthermore, the quality of the food grain has also been below par according to the Karnataka State Development investigation Report. Several other studies have also indicated that Karnataka has a negative balance in soil nutrients due to droughts (Government of Karnataka 2006). In response, the state has implemented an Integrated Nutrient Management (INM) approach that aims at the efficient and judicious use of all the major plant nutrients in an integrated manner. This is to optimize the economic yield without deleterious effect on physical-chemical and biological properties of the soil (ibid). Therefore, introduction of appropriate irrigation technology is essential for building up drought resistance in Karnataka agriculture and inducing sustainable production outcomes.

Figure 3: Trend in Food Grain production in Karnataka



Source: Karnataka Economic Survey 2009-2010 A-22

Figure 4: Trend in Total Cereal and Pulses Production in Karnataka



Note: All Cereals and All Pulses (Lakh Tonnes)

Source: Karnataka Economic Survey 2009-2010 A-22

Kavitha *et al* (2010) conducted a study focused on Karnataka's agriculture trends in cultivable land (area). Herein, the transformation found in the cultivable area is analysed in 3 distinct phases:: the green revolution period during 1966 - 1976, the post-green revolution period during 1976-1991, and the liberalization period 1991-2003. The study found that, new sown area showed an increasing trend in the first 2 periods, while it consistently decreased in the 3rd period. Furthermore, figures of the area irrigated also illustrate the same trend. Today, the total cultivable area in Karnataka is 123.85 lakh hectares, i.e. approximately 65 percent of the states' geographical area (Karnataka Economic Survey 2010-2011). Table 6 illustrates that in the last couple of years, there has been no expansion in the cultivable acreage within Karnataka.

Table 6: Trend in Land Use Categories

Land Use Categories	1966-68	1976-78	1986-88	1996-98	2001-2003
Gross Irrigated Area	1297.32	-	2383.33	2970.22	2950.57
Net Sown Area	10067.23	9939.87	10621.50	10401.23	9907.74
Non-Agricultural Land Use	876.33	1036.47	1172.37	1288.60	1330.95

Note: Area in '000 hectares

Source: Puroshothaman and Kashyap, 2008.

In addition to this, it is argued that the future demand for land for non-agriculture purposes is on the incline (Puroshothaman and Kashyap 2008). The land used/earmarked for non-agricultural purposes would be mainly in the urban areas for infrastructure projects, dams and irrigation systems, mines and quarries, and special economic zones (ibid). Table 6 also reveals as for the irrigated areas, there was a rising trend in the first two periods and s a more volatile increase in the third period. Currently, between to 30 percent of the net sown area is irrigated. A large part of this could be attributed to the increase in government investment on irrigation in the last few years (Refer to Table 7).

Table 7: Trend in Public Investment in Irrigation in Karnataka (Rs. Crore)

Year	Major and Medium Project*	Minor Irrigation Works**	Total
1993- 94	655.68	61.75	717.43
1994-95	684.63	70.25	754.88
1995-96	920.13	61.76	981.89
1996-97	1361.12	71.57	1432.68
1997-98	1604.52	67.89	1672.41
1998-99	1719.80	89.17	1808.97
1999-00	2027.27	107.92	1235.19
2000-01	2595.09	121.18	2716.27
2001-02	2547.17	103.16	2650.33
2002-03	2689.97	110.55	2800.54
2003-04	2308.08	129.88	2437.96
2004-05	3531.24	203.96	3735.20
2005-06	3579.39	194.19	3773.58
2006-07	5951.75	354.70	4306.45
2007-08	2058.41	359.50	2417.91

*Outlay on Irrigation products pending approval

** Surface water only

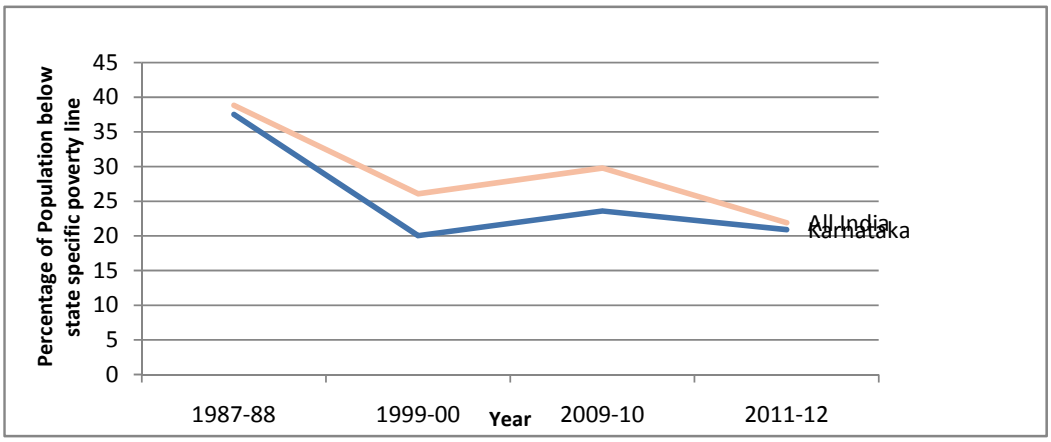
Source: Karnataka Economic Survey 2009-2010, Appendix 4.1: A49

Table 7 displays two significant trends in public investment in irrigation. First, there was a considerable increase in public investment in the period 2003 - 2006, which is remembered as severest drought period in Karnataka. Secondly, public investment was reduced almost by 50% in 2007 (Economic Survey 2009-2010).

Food Accessibility

Improving accessibility to food on a state level is sought to be achieved in two ways: first by creating productive jobs that provide remunerative work to the poor, which will enhance their purchasing power, and the second by increasing incomes and subsidizing food (Oxfam, 2008). The accessibility indicator of food insecurity is commonly determined by incidence of poverty and unemployment in a region). Other significant micro-level factors that influence food accessibility include social disparities or gender inequality. This section examines poverty rates, unemployment rates, and Karnataka's Targeted Public Distribution System (TPDS) of subsidized food grains to assess the degree of food accessibility in the state. Karnataka's performance in its poverty reduction programme is highly criticized. Since 2000-2004 the Monthly Per Capita Consumer Expenditure (MPCE) has fallen from a high 6th place to a low13th place in terms of rural MPCE in comparison to the other states. This suggests that the number of persons in the bottom 4 MPCE classes is estimated to have actually increased from 1.97 crore in 1994 to 2.61 in 2006. The share of rural population in Karnataka has declined over time, i.e. from 69 percent in 1991 to 66 percent in 2001. In contrast, the share of urban population in state's total increased from 31 percent in 1991 to 34 percent in 2001. The trend of relocation of rural population to urban can be explained in part by the income disparity between rural and urban population. In 2010, the Household Income in rural Karnataka was INR 18900 p.a. against INR 54000 p.a. in urban Karnataka. The difference is a yawning INR 25600 p.a. (Roy, 2012). Moreover, the per capita income in 2010 in rural Karnataka was INR 4333 against INR 12000 in urban Karnataka, the difference being INR 5964 (ibid). Infant Mortality Rate (IMR) in Karnataka was 80 in 1991, 58 in 2000, and declined to 38 in 2010 according to the Sample Registration System (SRS) (ISID, 2012). Further, rate of literacy in the state improved in the years from 1991 to 2001, and was higher than the corresponding national level figures. The poverty Head Count Ratio (HCR) in rural Karnataka in 2004-05 was 20.8 percent against 32.6 percent in urban Karnataka (Karnataka State Planning Board, 2008). In comparison the HCR in the urban areas of Karnataka is higher than that in its neighbouring states. Figure 5 provides a comparison of trends in poverty rate between Karnataka and the all India average. Furthermore, the severity of extreme poverty in both rural and urban areas of the state revealed by the figures of the Monthly Per capita Consumer Expenditure (MPCE) (ibid). This reveals the high number of rural households with less that Rs. 365 expenditure in Karnataka, which is higher than in other comparable states as well as the national average. This indicates that over 30 percent of the rural population, i.e. about 1 crore population, lives on less than Rs. 12 per person per day. Spending levels are low across all MPCE classes for Karnataka as well as 5.7 percent of households with MPCE above Rs 890 in comparable States. As for urban Karnataka, the situation is not much better as the state has the highest share of households with MPCE less than Rs. 335. This indicates that 30 percent of urban population, about 60 lakh people, live on less that Rs. 19/person/day.

Figure 5: Trends in Poverty Rates, Karnataka vs. All India Average



*Poverty figures for 1987-88 and 1999-00 have been taken from Planning Commission and NSSO 61st Round data. Poverty Figures for 2009-2010 have been taken from the NSS 66th round; however due to severe drought 2009-10 was declared an abnormal year prompting the NSSO to repeat a large scale survey in 2011-12 (68th round). The results from the 68th survey have also been included to demonstrate the variation in poverty rates between years affected by drought and year considered 'normal'.

Employment and Unemployment across Social Groups and Genders in Karnataka

One of the fundamental parameters of the labour force participation is the unemployment rate. According to the statistics collected by the NSSO, solving unemployment by increasing employment opportunities in urban and rural areas is a primary goal of economic planning in India. The country must improve the quality and coverage of employment in the states to ensure food accessibility for all (Pandey). Table 8 and 9 provide details of unemployment and labour force participation in Karnataka, other Southern States and all India.

Table 8: Unemployment Rate (per 1000) for persons of age 15 years & above according to usual principal status approach (ps) for Southern States

State/All India	Rural			Urban			Rural and Urban		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
Karnataka	**24**	**21**	**23**	**27**	**35**	**29**	**25**	**24**	**25**
Kerala	32	214	82	40	375	145	34	262	99
Tamil Nadu	19	24	21	19	41	25	19	29	22
Maharashtra	19	26	21	23	107	42	20	47	28
Andhra Pradesh	21	24	22	46	111	61	27	35	30
ALL INDIA	27	56	34	34	125	50	29	69	38

Source: Report on Employment & Unemployment Survey 2011-12 (Page 10).

Table 9: Labour Force Participation Rate (per 1000) for persons of age 15 years & above according to usual principal status approach (ps) for Southern States

State/All India	Rural			Urban			Rural and Urban		
	Male	Female	Person	Male	Female	Person	Male	Female	Person
Karnataka	**796**	**385**	**599**	**768**	**250**	**521**	**788**	**346**	**577**
Kerala	720	252	478	710	287	486	717	262	480
Tamil Nadu	800	483	644	772	276	528	789	397	596
Maharashtra	782	418	613	723	239	500	759	348	569
Andhra Pradesh	802	580	692	727	237	492	782	494	641
ALL INDIA	788	280	548	733	179	472	774	254	529

Source: Report on Employment & Unemployment Survey 2011-12 (Page 8).

In 2005, 63 percent of Karnataka's total population was in the working age group of 15-59 years, which is higher than the all-India average of 59 percent. The organized sector has a share of 8 percent in total employment reflecting that the unorganized sector is the major provider of livelihood in the state (Karnataka State Planning Board 2008). In Karnataka, employment in agriculture has witnessed minimal changes over time, i.e. from 65 percent in 1993 to 61 percent in 2005; however, the Gross State Domestic Product contribution from agriculture halved from 36 percent in 1993 to 18 percent in 2005 (ibid). This indicates that the share of agriculture in the state's economy has been declining, although the same numbers of people are engaged in agricultural activities. Further, the declining output of the sector indicates a widening disparity between agricultural workers and workers in other sectors. Industry and Services provide employment to around 17.4 and 22 percent of the workers respectively. Output per worker in agriculture (Rs. 15,000 at 1999-00 prices) in the state is the lowest compared to other sectors and across comparable Indian-states (ibid). The rapidly declining share of agriculture in the economy and its poor growth prospects indicate its inability to absorb the growing workforce and provide productive opportunities or higher incomes. This means that the already high disparity between workers in agriculture and other sectors may increase further, leaving rural population and small-farmers vulnerable to poverty, debt, and ultimately food insecurity. This trend contributes, in part, to the rise in farmer suicides predominantly seen in Karnataka (Arora and Deshpande 2013). Further, the analysis of employment figure across gender and social groups indicate that the increase in male employment is faster than female employment in both rural and urban across all social groups. Moreover, the employment growth rate is higher in urban rather than rural areas.

Table 10: Rural Employment in Karnataka

Year	Social Groups							
	ST		SC		OBC		Other	
	Male	Female	Male	Female	Male	Female	Male	Female
1993-94	606	315	550	383	-	-	591	319
1999-00	637	422	569	408	608	342	589	321
2004-05	603	526	604	500	625	440	641	435
2010-11	630	478	602	419	615	382	659	276

Note: Number of Employed Workers per 1000 according to the usual Principal Status of Karnataka.

Table 11: Urban Employment

Year	Social Groups							
	ST		SC		OBC		Other	
	Male	Female	Male	Female	Male	Female	Male	Female
1993-94	361	165	516	214	-	-	531	132
1999-00	529	237	534	233	561	176	540	142
2004-05	642	296	556	234	596	190	561	151
2009-10	500	232	582	220	589	157	569	162

Note: Number of Employed Workers per 1000 according to the usual Principal Status of Karnataka.

Table 12: Rural Unemployment

Year	Social Groups							
	ST		SC		OBC		Other	
	Male	Female	Male	Female	Male	Female	Male	Female
1993-94	7	2	8	1	-	-	8	2
1999-00	0	2	17	1	1	1	4	2
2004-05	0	0	9	2	5	3	3	6
2009-10	0	0	2	1	2	3	8	0

Note: Number of Employed Workers per 1000 according to the usual Principal Status of Karnataka.

Table 13: Urban Unemployment

Year	Social Groups							
	ST		SC		OBC		Other	
	Male	Female	Male	Female	Male	Female	Male	Female
1993-94	35	14	16	12	-	-	18	11
1999-00	12	11	19	6	23	4	16	9
2004-05	0	7	20	6	8	11	11	13
2009-10	0	1	19	11	15	5	14	9

Note: Number of Employed Workers per 1000 according to the usual Principal Status of Karnataka.

Public Distribution System in Karnataka

The Indian PDS is the largest food distribution network in the world. It was introduced in 1939 to address food security concerns in the face of food scarcity during the Second World War (Sahoo and VaskarMutum 2012). The primary mission was to maintain price stability and check dishonest practices in the private trade. The PDS has now been evolved in economic policy as part of the Food Security Bill to combat malnutrition. Before 1991, the central government provided food subsidies to all. However, after 1997, the government divided the population into Above the Poverty line (ABL) and Below the Poverty line (BPL) which reformed the PDS to the Targeted Public Distribution System (TPDS). The BPL categories receives food grains at highly subsidized prices while APL receives food grains at open market rates.

The government of Karnataka works with the Karnataka Food and Civil Supplies Corporation Limited (KFCSC) to procure lift and distribute food grains under PDS Act. On the bases of allotment orders from the KFSCS, food grains and sugar are lifted from factories, tested for quality assurance and

then sent to fair price shops situated in rural areas (Sahoo and VaskarMutum 2012). The KFSCS's broader objectives are procurement of essential commodities like rice, wheat sugar etc., and distribution of the same to consumers through PDS. The KFSCS aims to provide a network of wholesale and retail outlet to ensure smooth functioning of the PDS (ibid). Table 12 provides the TPDS data for 2010-11 of targeted families in Karnataka.

Table 14: Monthly Quantities of Foodgrains Allocated to Karnataka TPDS families 2010-11

Commodity	AAY	BPL	APL	Total
Rice	34709	55820	57663	148192
Wheat	7282	11712	5417	24411
TOTAL	41991	67532	63080	172603

Source: Ministry of Consumer Affairs and Public Distribution. 2010. 1-1/2010. BP.III(13)

Karnataka's PDS and reformed TPDS have been subject to serious criticism. The main criticism of the TPDS in Karnataka is the exclusion/ inclusion criteria of actual BPL families from the theoretic BPL category. In Karnataka, the current BPL is inaccurate, thus, permits leakages through corruption, illegal sales, creation of false cards and the use of facilities by better-off households. There has been a high prevalence of existing but unverifiable cards which has led to an undue increase in the number of BPL cards. Karnataka is one of the states in India that have issued more BPL cards than number of people listed under BPL. While the number of actual BPL families in Karnataka is 1.4 crore, the government has issued over 1.6 crore BPL cards till date. This has resulted in 40 lakh ghost card holders drawing subsidised articles like rice, wheat,sugar, kerosene, etc.

The second inclusion and exclusion error in the PDS has crept in while identifying the poor. In the 2008-2009 parliamentary elections, the Government of Karnataka mandated that any family could be called BPL if they provided a self-declared affidavit that said they are poor. The PDS became a political tool to gain votes from the poor. This lead to 96 lakh families claiming they were BPL, when an investigation found that there are actually 44 lakh of BPL families in Karnataka. The government unknowingly provided grains and sugar for families wrongly included in the BPL category, thus, resulting in over-allotment loss. The burden of this mistake was a monthly loss of Rs. 144.8 Crore. Moreover, there is a major leakage problem in Karnataka; the card distribution has led to a leakage of grains due to the over-ration of grains. Leakage also happens during the distribution. The allotted grains are diverted when it is transported to the Fair Price Shops, and leakage continues even when being sold. These criticisms of the TPDS in Karnataka illustrates a major flaw in the system of distributing subsidized food grains to impoverished population, which frustrates the object of providing food accessibility, and leaves households vulnerable to malnutrition and hunger.

Nutritional Scenario in Karnataka

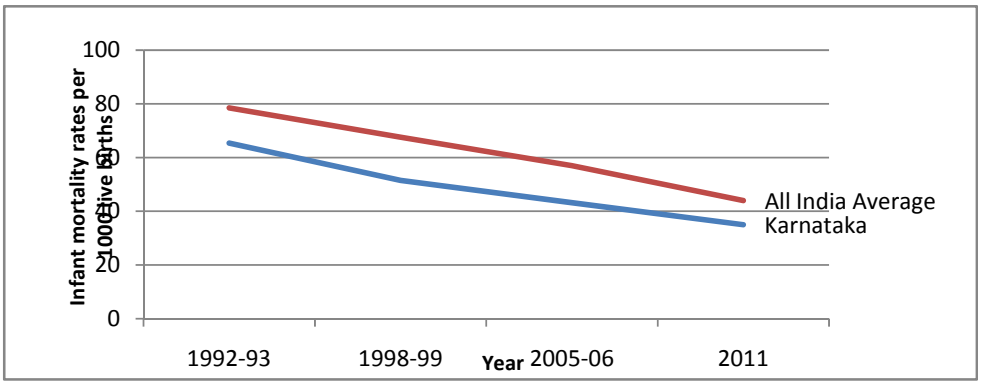
Karnataka is an agriculture state, where most of the population resides in rural areas. This section consists of a detailed analysis of the nutrition situation in the state and an outline of Karnataka's policy initiatives to combat malnutrition. In order to gain insights into the nutrition situation analysis of

Karnataka, we look at women and children in rural areas. Women and children have been focused on because their protein energy malnutrition, vitamin A deficiency, and B-complex deficiencies are high in Karnataka. Further, malnutrition is a major concern for pre-school children, and anaemia remains a major health problem in women in Karnataka (D'Rozario 2001, 5). Data on food consumption patterns of women and children, revels that cereals and millets are the main food items consumed, and foods that are rich in proteins, vitamins and minerals are consumed in lesser quantities (Sheela 2002). Interestingly, when compared with the Indian average recommended dietary intakes, the intake of energy and protein is higher in adults in Karnataka and Karnataka consumes 50% less than the recommended dietary intake for vitamins. (ibid). Also, the incidence of growth retardation has been increasing alarmingly among children in Karnataka. Specifically vitamin deficiencies and anemia as an indicator of poor nutrition caused by micronutrient deficiencies, and stunting, wasting and other physical indicators as an indicator for protein-energy malnutrition (D'Rozario 2001, 8).

According to the Family Health Survey (NFHS-3) 42.5 percent of children under five years are underweight, 48 percent are stunted reflecting chronic malnutrition, and 19.8 percent are wasted reflecting acute malnutrition. In Karnataka, 70 percent of children between the ages of 6 and 59 months are anemic according to NFHS-3 (D'Rozario 2001). This includes 29 percent who are mildly anemic, 39 percent moderately anemic, and 3 percent suffering from severe anemia. Children of anemic mothers are more likely to be anemic. More than half of women in Karnataka (52 percent) are anemic, which include 34 percent with mild anemia, 15 percent with moderate anemia, and 2 percent with severe anemia. Further, 63 percent of pregnant women are anemic; anemia is much more widespread among children of age 6-35 months now than it was seven years ago, at the time of NFHS-2 (D'Rozario 2001). Nutrition is a key factor for human development, health, and quality of life. Malnutrition leads to permanent physical and psychological consequences and generates a cyclical and inter-generational pattern. Moreover, malnutrition and hunger limits work capacity and productivity among adults, and increases infant and child mortality rates (D'Rozario 2001). A comparison of Karnataka with the other Southern states in India reveals distressing facts. While Infant Mortality Rate in Karnataka is quite high at 43, it is 30.4 and 15.3 in Tamil Nadu and Kerala respectively. Further, while the under5- year age Mortality rate in Karnataka quite high at 54.7, it is 35.5 and 16.3 in Tamil Nadu and Kerala respectively. The under-three year age stunted children in Karnataka is 42.4% which is higher than the national average of 38.4% and also higher than that of Andhra Pradesh, Kerala, and Tamil Nadu which are 36.4, 26.5 and 31.1 respectively (KCNM Concept Paper). The percent of under-weight children under three years in Karnataka is 33.3 percent, which is higher than that of any of the other Southern States. Moreover, 70.4 percent of children under six in Karnataka are anaemic (KCNM Concept Paper). The above overview of Karnataka's human development scenario reflects encouraging parameters indeed; however; when compared to the IMR and Maternal Mortality Rate (MMR) indicators at national and state-levels, Karnataka's standing is far from impressive. The Figures below (Refer to Figure 6-9) illustrate the limitations of measuring human development strictly through the above indicators, i.e. by comparing Karnataka's seemingly promising development with other Indian States. Figure 6 illustrates that, overall, IMR has decreased in Karnataka as compared to the national level; however; the trend is not indicative of the disparity in changes in IMR at the rural/urban level. According to the Planning

Commission Report of 2012, the percentage change in average IMR between 1998-00 and 2008-10 reveals a decrease of 28.4 percent in Karnataka. However, the average IMR *increased* by 26.3 percent in urban Karnataka while it decreased by 32.3 percent in rural Karnataka. Karnataka is the only state in India, with the exception of Assam, that shows an increase in IMR at the urban level.

Figure 6: Trend in Infant Mortality Rates, Karnataka vs. All India Average



Karnataka's IMR indicator generally mirrors all India trend of a decrease in infant mortality rate. However, a regional comparison shows that among the southern states, Karnataka has the second highest IMR rate after Andhra Pradesh (see Figure 7). A similar trend can be discerned when we look at Maternal Mortality Rates (MMR), another key human development indicator. While the MMR rate has consistently declined in Karnataka (see Figure 9), a state level comparison between Andhra Pradesh, Kerala and Tamil Nadu demonstrates that Karnataka had the highest MMR among southern states in the period between 1997-2009 (see Figure 9). when analysed in isolation, growth in Karnataka's human development indices are found indeed impressive, but when contrasted with corresponding indices of other south Indian states as also the national average, the state's performance is less impressive.

Figure 7: Trend in Infant Mortality Rate, Karnataka vs. Southern States

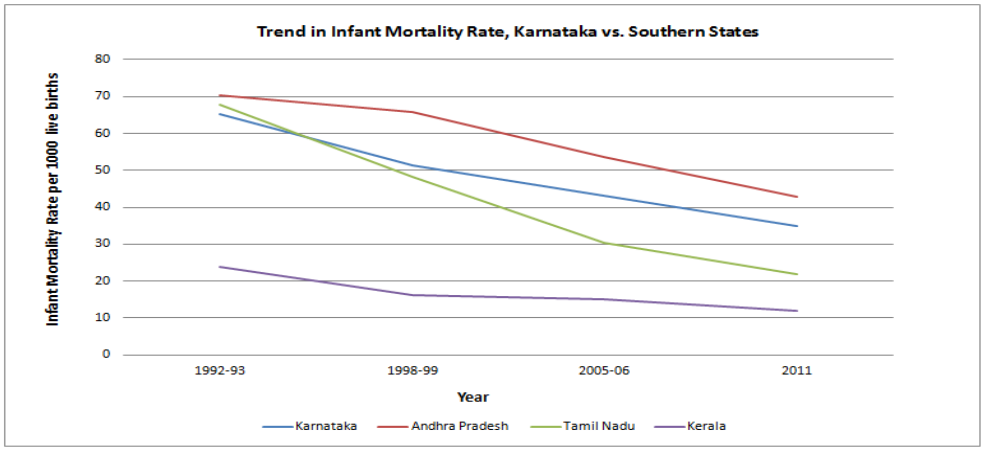


Figure 8: Trend in Maternal Mortality Rates, Karnataka vs. All India Average

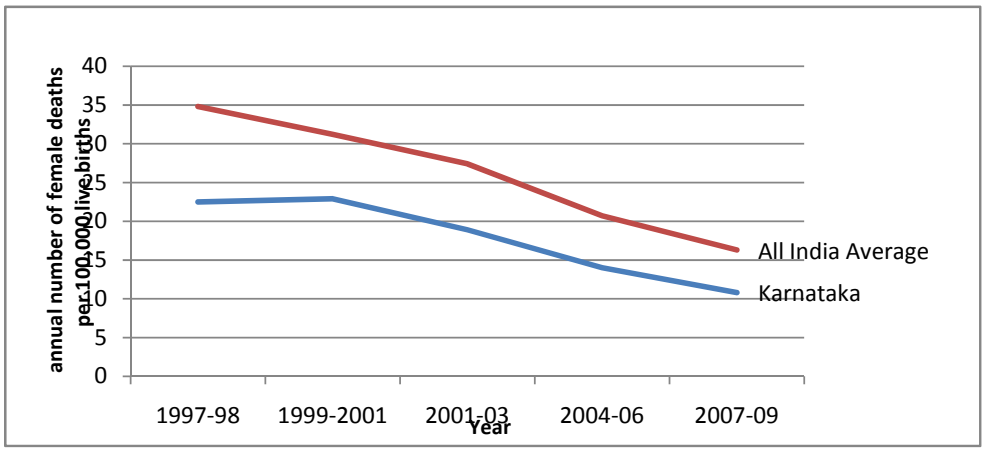
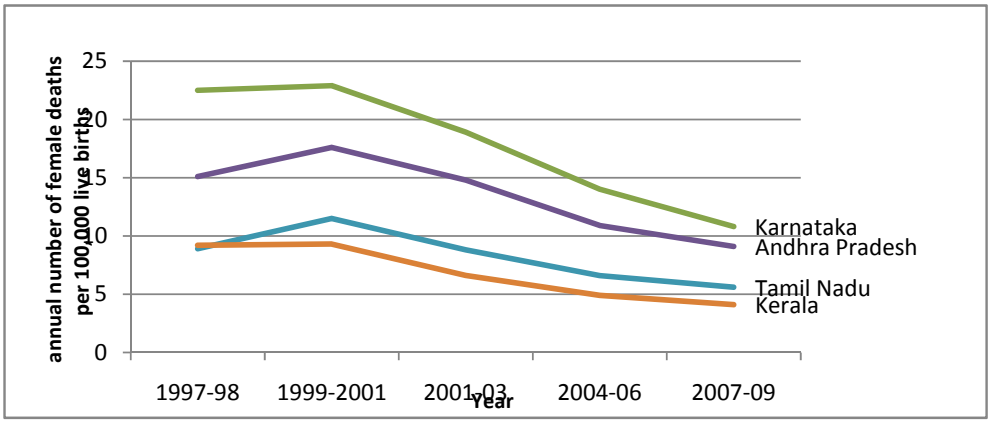


Figure 9: Trend in Maternal Mortality Rates, Karnataka vs. Southern States



Realising the need for government intervention to address issues pertaining to nutritional security of the state, the Government of Karnataka has initiated and executed several development schemes with the objective of ensuring food and nutrition security to its population. The three main pillars of these programs are the Targeted Public Distribution System (TPDS), the Antyodaya Anna Yojana (AAY), the Mid-Day Meal scheme and the Karnataka Comprehensive Nutrition Mission. All these schemes target different populations and provide food-based assistance to the adversely endowed population. In an attempt to make TPDS more focused and targeted towards poorest of the poor, the AAY was created in December 2000. The AAY is similar to the PDS in that each household is entitled to a certain amount of cereals. AAY card holders receive 35 kilogram wheat or rice or combination of both every month at the pegged price of Rs. 2/- per kilogram of wheat and Rs. 3/- per kilogram of rice (Sahoo and VaskarMutum 2012). A FPS - designated local ration shop - dispenses aforementioned quota of ration items. Belonging of the BPL is not the sole criterion for getting Antyodaya Card. The AAY scheme admittedly carries the same discrepancies as the PDS. In fact, nearly 20 percent of marginalized families do not possess a ration-card; 7.45 percent of marginalized families should have a BPL card but do not; 13 percent should have an AAY card but do not; and 6.83 percent of marginalized families

possess the incorrect card-type (Sahoo and VaskarMutum 2012).The National Program for Nutrition support to Primary Education, , known as the Mid-Day Meal program, was implemented by the government to cover the entire state of Karnataka. As per the directions of the Supreme Court of India, the scheme now provides hot cooked mid-day meals for pupils in grades one through eight. In addition to this, the Government of Karnataka provides hot cooked meals to pupils in ninth and tenth standards of government aided schools out of its own resources. In Karnataka, there are currently 47432 schools, 4955 of which have 107 NGOs participating in the program and supplying food to about 10.96 lakh children (Srinivas 2008). The rest of the schools have separate kitchen centers where cooks are appointed at the school level. The schools with kitchen centers are divided in to four categories based on the number of children in the schools, and cooks are appointed to these centers to prepare and serve food (ibid 2008). Karnataka has maintained positive standards for its mid-day meal program. An example of successful intervention is the case of Bellary district in Karnataka where innovations/variations in ICDS from several states are used. The successful experiment in Bellary district suggests that potential for better implementation and making better impact does exist. Furthermore, schools supplied de-worming tablets and vitamins and iron tablets, and no discrimination was found with respect to serving and eating food on the basis of caste etc. (ibid). The overall results of the study found that 72 percent of the parents felt that their children had gained weight, 59 percent felt that their children suffered less from common ailments like cold and cough, and more than 90 percent were satisfied with the scheme (ibid).

Beside these, Karnataka has been able to implement a Comprehensive Nutrition Mission to combat malnutrition and increase nutritional security throughout the state in the shortest possible time. The policy is one of its kind, and will work with other standalone programmes and NGOS in the State in a targeted and comprehensive manner. Moreover, it is the only scheme in India that addresses specific and exclusive programmatic objectives of reducing under-nutrition, micronutrient deficiencies, and anemia. (KNM Concept Paper) The target group is children between 0-6 years old with a special emphasis on 0-2 year old children. This is intended to supplement the 'life cycle' approach to help children in a significant development period in their life. Other target groups include adolescent girls (10-18 years old) and pregnant and lactating mothers. On the surface, food availability in Karnataka seems promising; however, there is a need to differentiate between food availability in general and availability of nutritious food in particular to understand the full implications food insecurity. The poor soil-quality due to frequent visitation of droughts in Karnataka often depletes the nutritional value of food grown in such soil and indirectly adds to nutritional deficit. Moreover, the stress on farming communities and overall circumstances of unemployment and poverty hinder the purchasing power of households to gain access to nutritional food. The State Government has indeed implemented policies to address food security; however, the leakages and bottlenecks in the distribution system have been coming in the way of attaining success in our efforts to eradicate malnutrition and hunger.

Conclusion

The above exercise clearly demonstrates that Karnataka has sufficient agriculture commodities to feed its population. With Karnataka's cultivable land potential as well as agriculture workforce population, the state can provide enough grain to maintain food security. However, more needs to be done on the accessibility front of food security, in order to eradicate malnutrition and hunger. Uneven access to food is a pointer to low incomes and poverty, which leaves the state's population vulnerable to food insecurity (UNDP 2012). In fact, The UNDP iterates "malnutrition is an obstacle to human development, inflicting irreversible damage on individuals early in life and imposing large economic and social losses on countries for years to come" (UNDP 2012). Moreover, it has found that middle-income states, exhibit no correlation between HDI and level of development. This finding underlines the fact that allocation of adequate public resources is not enough in itself; it must also be used effectively and efficiently (UNDP 2013). The present backwardness in human development found in the state can be traced to past poverty, unemployment and malnutrition. The above analysis reflects how economic trends greatly intersect with social relations. The state government's focus is seemingly less on investing in the agricultural sector, and if the current economic growth trends are to be believed, there is a clear shift of government investment towards the services sector. However, the transition to services sector is not reflected in the employment pattern in the state, as over half of Karnataka's workforce still remains as farmers and agricultural laborers. As a result, farmers are pushed towards increasing indebtedness, and rural farming communities are still mired in poverty and employment. While Karnataka agricultural production reflects promising growth in overall yield, (despite some decreases in specific food crops due to unfavourable monsoons) the State continues to battle with the silent crises of chronic malnourishment and hunger. Moreover, increasing growth trends found in food production do not seem to have resulted in improving income, nutritional status and standard of living of agricultural workers.

It is apparent that human development is multidimensional in nature. Food security is a major indicator that has been overlooked while utilizing such yardsticks as the HDI to gage state and national development. The current methods for calculating HDI are apparently incomplete and should incorporate indicators of food security and nutrition in it to make it meaningful. Moreover, income measurements, poverty index, calorie based norms, and GDP economic growth are insufficient yardsticks to gage a state's development. As the above comparison among southern states illustrate, Karnataka may show positive human development growth if measured in terms of isolated growth indicators. However, when compared to other southern states, Karnataka's human development is much below par, especially in IMR and MMR, though comparable to growth indicators of other backward Indian states. Furthermore, identifying the poor according to headcount ratios or poverty-gap indexes rely too much on economic indicators, and do not take into account inequality or vulnerability of groups. The effects of economic liberalization may have positively contributed to Karnataka's economic growth, but, this improvement has been unbalanced; it has only contributed to widen the inequality gap, and has not resulted in meaningful human development.

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INSTITUTE FOR SOCIAL AND ECONOMIC CHANGE
Dr V K R V Rao Road, Nagarabhavi P.O., Bangalore - 560 072, India
Phone: 0091-80-23215468, 23215519, 23215592; Fax: 0091-80-23217008
E-mail: vani@isec.ac.in; Web: www.isec.ac.in