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State Profile

While India has increased its per capita income in recent years through fairly sustained high growth rates in income, its human development indicators still trail those of some countries with similar incomes. An oft-cited example is Bangladesh which, despite lower per capita incomes, fares better than India in various human development parameters. It is in this regard that States like Tamil Nadu within the country have been hailed as a model in recent years for combining relatively high growth with high levels of human development. In fact, Tamil Nadu along with Kerala, is likely to rank at the top among South Asian countries, with regard to attainments in health and education. Dreze and Sen (2013), in their book, *India: An Uncertain Glory*, clearly highlight the progress that the State has made in various aspects of human development such as education, health and poverty reduction. The factors that drive this process and the continuing challenge to improve further therefore warrant attention.

The experience of a relatively advanced state like Tamil Nadu also offers lessons for other less developed ones in the country. Importantly, it also offers a window to observe some of the inadequacies in the path traversed this far and hopefully help such States avoid similar pitfalls. While the possible discordance between growth and development is now well recognised, there is a growing realisation of the importance of institutions that govern growth and distribution. In the context of India, Dreze and Sen (2013) cite literature to show how the institution of caste has inhibited growth. As Ambedkar has pointed out, caste is not a division of labour, but a division of labourers that poses barriers to mobility and access to resources. The process of rendering institutions more inclusive is therefore critical to ensure growth and more importantly to ensure that the fruits of growth are shared in a broad-based manner. This is particularly important in a context where investments in human capital are seen to be critical to sustain a virtuous cycle of growth and development. Tamil Nadu has been a State that is witness to a long history of social and political mobilisation against caste-determined hierarchies; and it has been pointed out that its relatively better performance in terms of growth, poverty reduction and human development can be attributed to such collective action (Kalaiyarasan, 2014).

Tamil Nadu is a State that continued to have poverty levels higher than the national average even until the 1980s. It is only since the early 1990s that we witness rapid reduction in poverty and improvement in per capita incomes. As Dreze and Sen (2013) point out, the State's investments in social infrastructure, such as the free Mid-day Meal Scheme (MDMS) for school children, driven by the emergence of concerted public action with its roots in social movements that sought to question and delegitimise social hierarchies and democratise public spheres have been critical to this shift. Further, the case of Tamil Nadu clearly demonstrates that investments made in social welfare need not undermine the growth imperative as it was believed that such investments dried up resources for productive growth-enhancing investments. In fact, it would appear that investments in social sectors driven by democratising collective action have led to translation of such inputs into growth increases. Importantly, the improvements in growth have allowed the State to mobilise resources that could be channelled back into social sectors.

There are, however, challenges for such high performing States in order to sustain and improve upon their achievements. As the latest *Global Human Development Report* (GHDR) fears, high attainments can easily be undermined by natural and economic shocks in an increasingly interdependent world. The Report highlights the various vulnerabilities that have emerged on account of environment, financial instability, political conflicts and unresponsive State institutions.

> Real progress on human development, then, is not only a matter of enlarging people's critical choices and their ability to be educated, be healthy, have a reasonable standard of living and feel safe. It is also a matter of how secure these achievements are and whether conditions are sufficient for sustained human development. An account of progress in human development is incomplete without exploring and assessing vulnerability (p.1).

The Report observes that since 2008, there has been a reduction in the rate at which improvements in human development have taken place globally. It introduces the concept of human vulnerability to refer to the sources through which people's capabilities and choices can be undermined. Women, for instance, are more vulnerable than men. Similarly, the aged, children, casually employed and marginal social groups are all subject to certain vulnerabilities in this regard. Then again, an inability to address capabilities at one node in the life cycle can have repercussions throughout one's life cycle. Lack of education as a child or of employment for youth, for example, will perpetuate long-term vulnerabilities. To address this, the Report calls for a targeted intervention aimed at specific vulnerable groups. In this context, the Report emphasises "*human resilience*—ensuring that people's choices are robust, now and in the future, and enabling people to cope and adjust to adverse

events." Recognition of the multidimensional aspects of poverty is therefore essential to ensure such human resilience. It also highlights the importance of putting in place institutions that can insulate people from future vulnerabilities.

The Government of Tamil Nadu has set high standards for itself in its developmental endeavour. Premised on the idea of inclusive growth, the Vision 2023 document envisages six-fold increase in per capita incomes in real terms to reach the level of current median income of the upper middle income countries and also to attain a human development index comparable to that of the developed countries by 2023.[1] The document also anticipates a poverty-free Tamil Nadu to be achieved by focussing on inclusive growth policies that will assure productive employment for the marginalised and the vulnerable. Here it seeks to provide appropriate ecosystems for innovation and an institutional environment for skill formation. With regard to skill formation, the Statement envisions training and preparing 20 million persons over the next 11 years with attention to differences in schooling attainments and corresponding opportunities for skill development.

In terms of demand, the document places heavy emphasis on the manufacturing sector, given its employment absorption potential and availability of employment for labour market entrants with differential skill levels. In the domain of human development, it seeks to provide quality healthcare for all, universal secondary education, increase enrolment in colleges (including vocational education) to over 50 per cent, ensure hut free rural and slum-free urban Tamil Nadu, as well as an open, defecation-free and garbage-free environment.

The second TNHDR (Tamil Nadu Human Development Report) will therefore be a useful document to understand the progress that the State has made with regard to various parameters of human development and the implications and challenges entailed with attainment of the goals set out by the Vision 2023 document. The second TNHDR also pays attention to aspects of human vulnerability as highlighted in the Global HDR. Discussions of multidimensional poverty, social security policies and emerging vulnerabilities accompany an engagement with the challenges for sustaining and improving current attainments across various parameters of human development. The persistence of some important gaps and the need for special policy attention will be highlighted in discussions in each of the chapters.

Chapter 2 focuses on district-level disparities on various indices, such as the HDI (human development index), GII (gender inequality index), CDI (child development index) and MPI (multidimensional poverty index). The remaining chapters address specific aspects of human development, such as employment, poverty, health and nutrition, education, gender aspects and social security policies. The final chapter attempts to highlight the over-arching challenges through a summary of important observations made in each chapter. In the rest of this chapter, we provide an overview of trends in demographic, economic and social development of the State.

Some Trends in Tamil Nadu's Development Experience

Demography

Accounting for close to 6 per cent of the country's population, Tamil Nadu's population stood at 72.14 million as of March 2011, which has gone up to 74.32 million in 2013. The decadal growth rate of population for the period 2001-2011 was 15.6 per cent, which is higher than that of the previous decade (i.e., 11.19% during 1991-2001). Yet, the 2001-2011 decadal growth rate was lower, compared to that at the national level (i.e., 17.64%). The decadal change in rural population was 6.49 per cent and that of urban population was 27.16 per cent, for the period 2001-2011, indicating a growing urbanisation of the State's population. During the same period, the rural population grew at 12.3 per cent and the urban population grew at 31.8 per cent at all-India level. The State attracts a significant number of in-migrants from other parts of the country, even though there has been a large-scale out-migration from the State. In fact, according to Chandrasekhar and Sharma (2014: 11), Tamil Nadu and Kerala are the only two advanced States that have a negative net migration rate, i.e., more people out-migrate compared to those migrating into the State.

The population density is gradually increasing over a period of time. As per the Census 2011, the State has a population density of 555 persons per sq km, which is

1. "Over the next 11 years, Tamil Nadu, given its factor endowments and the combination of strengths and opportunities, will aim to grow its GSDP at 11% or more per annum—about 20% more than the expected growth rate of India's GDP over the same period. Given the expected increase in population of 15% over the next 11 years, the increase in per capita income would amount to 6 times over this period" (p.11), *Vision Tamil Nadu 2023: Strategic Plan for Infrastructure Development in Tamil Nadu,* Government of Tamil Nadu (2012).

much above the national average of 382 persons per sq km; the population density was 478 persons per sq km in 2001, 429 in 1991 and 372 in 1981. Increasing population density also produces negative externalities, such as sewage pollution and solid waste, affecting human well-being if it is not backed by adequate investments in appropriate urban infrastructure. Moreover, Tamil Nadu is the most urbanised large State in the country with 48.45 per cent of its population living in urban areas. Rapid urbanisation leads to enhanced human capital through access to better education and healthcare facilities, but it does also adversely affect the quality of life due to various environmental problems unique to urban areas, such as air pollution. Sex ratio has increased from 987 in 2001 to 995 in 2011, which is a good sign. While the sex ratio is favourable in 16 out of 32 districts, it is however unfavourable in the remaining 16 districts. In 15 districts, the sex ratio is below the State average of 995. The chapter on gender disparities in well-being discusses this aspect in greater detail.

Tamil Nadu's slum population was estimated to be 2.8 million in 2011, which constitutes approximately 8 per cent of its total urban population (i.e., 34.90 million). Around 18.88 per cent of Chennai's population live in slums out of which 50 per cent live in dense slum areas; in 1981, the slum population was 13.8 per cent, which increased to 15.3 per cent in 1991 and further to 19.6 per cent in 2001. The government has been concerned about improving welfare of the slum population by applying various measures, especially through housing schemes. For example, from 1971 until 2007, a total of 81,038 tenements have been constructed and handed over to slum households by the Tamil Nadu Slum Clearance Board (TSCB) (Raman, 2011), and by 2010-11, the total number of tenements went up to 1.05 lakh (in: *www.tnscb.org.in/*). Under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 35,270 tenements are to be constructed as integrated townships in Chennai, Madurai and Coimbatore at a total cost of ₹15,024.80 million.

Economy

Tamil Nadu is an economic powerhouse in India. From 2010-11 to 2013-14, Tamil Nadu has constantly maintained its status as a State with the second largest economy in terms of the size of real GSDP (gross state domestic product). In 2013-14, the size of its GSDP was ₹480,618.00 crore in terms of constant prices (2004-05); in 2010-11, the real GSDP was estimated at ₹403,416.00 crore, which increased to ₹433,238.00 crore in 2011-12 and further to ₹447,944.00 crore in 2012-13. The real GSDP registered a growth rate of 14.64 per cent at current prices and 7.29 per cent at constant prices in 2013-14 (see Table 1.1).

The improved power situation and a good north-east monsoon in 2014 are expected to significantly enhance economic growth in the coming years. Although the decline in real GSDP growth rate in recent years can be attributed to the influence of overall global recession, Tamil Nadu economy is withstanding its impact better than many other Indian States.

During 2005-06 to 2013-14, Tamil Nadu economy's average growth rate of real GSDP was 9.20 per cent which is, relatively, a better growth rate, compared to India as a whole. During the above period, the primary sector grew at 4.38 per cent, the secondary sector registered a growth rate of 8.42 per cent and that of the tertiary sector was 10.48 per cent. Table 1.1 provides a comparative picture of Tamil Nadu's growth performance vis-à-vis other States.

A comparison of the nine-year (2005-06 to 2013-14) average growth rate of real GSDP of some of the major States in India reveals that Tamil Nadu has ranked 5th among all the Indian States in terms of income growth. Although the State ranked 9th in terms of agricultural growth and 6th in terms of industrial and service sector growth, the overall rank is higher than that of individual sectors (see Table 1.2). This is due to the consistent and strong growth performance of Tamil Nadu across sectors, which is a reflection of the diversified and resilient structure of its economy. The following sub-sections provide a sectoral overview.

Agriculture

Around 40 per cent of the State's population is still directly dependent on agriculture for its livelihood. The State has been divided into seven agro-climatic subzones for planning agricultural development. In 2004-05, agriculture and allied activities contributed 11.65 per cent to the NSDP (net state domestic product), which declined to 8.7 per cent in 2011-12. During 2005-06 to 2013-14, the primary sector grew, on an average, at 4.38 per cent (as against 3.96 per cent at all-India level). In the Eleventh Plan period (2007-2008 to 2011-12), this sector grew at 3.49 per cent as it recorded negative growth rate in the initial two years, especially due to bad monsoon. An important aspect of the State's agricultural sector is the predominance of marginal landholdings therein (Table 1.3).

Table 1.1

Growth Rate of Gross State Domestic Product at Constant Prices (Tamil Nadu)

Sector	*2005-06*	*2006-07*	*2007-08*	*2008-09*	*2009-10*	*2010-11*	*2011-12*	*2012-13*	*2013-14*
Agriculture	11.49	15.42	-4.69	-2.70	6.56	7.69	11.05	-13.04	8.22
Forestry and Logging	5.74	-0.54	2.82	-0.88	3.16	3.30	2.49	3.44	4.08
Fishing	43.04	1.95	-6.47	1.17	6.58	8.16	3.40	1.03	0.70
Agriculture and Allied Activities (1+2+3)	13.26	13.24	-4.41	-2.29	6.35	7.47	9.95	-11.11	7.33
Mining and Quarrying	-4.86	4.36	1.17	-1.78	9.30	3.13	13.15	5.96	6.01
Sub-total of Primary	12.12	12.76	-4.13	-2.27	6.51	7.23	10.12	-10.20	7.24
Manufacturing (5.1+5.2)	15.11	18.75	0.59	-1.31	29.18	12.31	1.42	1.12	4.58
Registered	22.07	24.06	-1.96	-2.44	41.31	14.26	0.75	0.90	4.58
Unregistered	4.37	9.18	5.82	0.82	6.91	7.59	3.13	1.68	4.58
Construction	16.19	4.45	18.61	5.31	5.18	22.49	9.24	-2.18	1.22
Electricity, Gas and Water Supply	2.06	3.62	-27.81	-74.31	22.36	38.71	13.75	151.04	-9.98
Sub-total of Secondary	14.54	13.62	3.90	-2.06	21.14	15.52	3.96	2.06	3.07
Industry (b+4)	14.08	13.44	3.86	-2.06	20.93	15.32	4.09	2.12	3.11
Transport, Storage and Communication (8.1+8.2+8.3+8.4)	12.40	13.56	9.35	15.49	13.87	14.13	7.53	4.41	6.73
Railways	4.22	7.44	11.47	17.62	14.19	-1.71	-14.13	0.46	0.46
Transport by Other Means (including storage)	10.57	11.31	7.14	7.57	8.23	8.99	10.97	2.86	7.55
Storage	4.60	22.09	9.35	5.28	22.73	10.38	13.19	-1.51	5.97
Communication	20.76	21.21	13.90	32.49	23.80	25.93	6.78	7.22	6.50
Trade, Hotel and Restaurants	16.28	20.58	4.30	3.66	4.50	13.22	7.68	2.76	7.33
Banking and Insurance	17.55	19.09	17.11	10.18	2.97	14.65	9.73	12.65	12.65
Real Estate, Ownership of Dwellings and Business Services	15.17	16.50	16.75	13.40	6.82	10.03	14.16	12.79	14.99
Public Administration	3.48	12.53	1.01	24.50	0.53	8.85	0.83	-4.46	5.76
Other Services	12.18	11.48	7.34	10.31	10.69	14.26	7.46	2.35	5.08
Sub-total of Tertiary (8+9+10+11+12+13)	14.02	16.57	9.33	10.56	6.90	12.80	8.77	6.05	9.31
Growth Rate of GSDP	13.96	15.21	6.13	5.45	10.83	13.12	7.39	3.39	7.29

Source: Computed from CSO data.

Table 1.2

Nine Year Average Annual Growth of GSDP and Sectors of Major States (2005-06 to 2013-14) at 2004-05 Prices

States	Agriculture and Allied		Industry		Services		GSDP	
	Growth (%)	Rank	Growth (%)	Rank	Growth (%)	Rank	Growth (%)	Rank
Andhra Pradesh	5.11	7	7.88	10	9.73	10	8.21	8
Gujarat	5.36	4	9.58	3	11.45	3	9.75	3
Karnataka	3.43	13	6.13	15	9.08	14	7.25	15
Kerala	-0.52	20	8.98	5	9.63	11	8.07	9
Maharashtra	5.34	5	9.16	4	10.07	7	9.31	4
Tamil Nadu	4.54	9	8.79	6	10.17	6	9.15	5
India	3.96		6.91		9.08		7.62	

Source: Shanmugam, 2014.

Table 1.3

Number of Operational Holdings in Tamil Nadu (2010-11)

Category	Number of Operational Holdings	Percentage
Marginal (up to 1 ha.)	6266372	77.18
Small (1ha.-2 ha)	1181797	14.55
Semi-Medium (2 ha.-4 ha.)	502332	06.18
Medium (4 ha-0 ha.)	150570	01.85
Large (10 ha. and above)	17365	0.21
ALL SIZE CLASSES	8118436	100.00

Source: *Statistical Handbook of Tamil Nadu, 2013.*

Approximately, 92 per cent of the farmers in the State belong to marginal and small farmer category (Table 1.3). Fragmentation of land, despite increased production and productivity in the agriculture sector, poses a major challenge for achieving a 'second green revolution' in the State. Declining returns to agriculture has been a disconcerting feature of agricultural development in the State, with cost-price differentials being one of the highest in the country. Since large-scale or cooperative farming has the potential to increase production and productivity in the farm sector and establish better economic linkages in terms of processing and marketing in the coming years, identifying and implementing appropriate institutional arrangements are critical to not only sustain or increase production and productivity in the agricultural sector, but also to ensure better returns for farmers in the State and thereby ensure better economic resilience in the long term.

Another area of concern has been the decline in net sown area in the State. The net area sown had witnessed a gradual decline from 56.38 lakh ha. in 1950s to 50.43 lakh ha. in 2008-09, and further to 49.85 lakh ha. in 2011-12. Due to a boom in the real estate sector and land-use pattern changes taking place in rural areas, the proportion of land put under non-agricultural uses had expanded from 21.69 lakh ha. in 2007-08 to 21.73 lakh ha. in 2008-09 and to 21.80 lakh ha. in 2011-12. Although the net sown area had declined, interestingly the latest estimates suggest that the State had achieved 10.33 million metric tonnes of food grain output during 2013-14, registering an increase by 0.18 million metric tonnes over the state's output in 2011-12. This is due to increased productivity of certain principal crops being cultivated in the State (see Table 1.4). The productivity of both cereal crops as well as pulses has increased by approximately 49 per cent between 2007-08 and 2011-12.

Table 1.4

Trend in Productivity of Principal Crops (kg/ha.)

Crops	2007-2008	2010 -2011	2011-2012
Cereal Crops	2571	3039	3848.72
Pulses	2125	2393	3163.86

Source: *Statistical Handbook of Tamil Nadu*, various years.

Policy measures to address vulnerabilities emanating within the agricultural sector will be therefore critical for sustaining human development as well as facilitating more balanced growth in the State. In order to promote a second green revolution, the State

government has proposed to initiate the following measures, as mentioned in its Vision 2023 document: improving soil healthcare and increasing productivity per unit area; providing access to quality inputs; bringing fallow lands under cultivation; increasing the cropping and irrigation intensity; promoting micro-irrigation to increase water use efficiency; massive farm mechanisation to meet labour shortage; speedy transfer of information through ICT (information and communication technology) enabled extension; strengthening and improving agriculture infrastructure including market infrastructure and paving way for market-led agriculture; and, raising the income of farmers.

Industry

Tamil Nadu is the second most industrialised State after Maharashtra, accounting for around 11 per cent industrial output of the country (2011-12). The government is the major investor with 51 per cent of total investment, while that made by private Indian investors stands at 29.9 per cent and by foreign investors at 14.9 per cent (Kathuria, 2014). However, in recent years, most investments have been from the private sector. The major industries are automobiles, auto-components, light and heavy engineering, machinery, cotton, textiles, rubber, food products, transport equipment, chemicals, and leather and leather goods. The manufacturing sector has a unique diversity consisting of both modern (e.g., automobiles and power-driven pumps) as well as traditional industries (e.g., leather and textiles). Compared to other States, the industries in Tamil Nadu are more spatially distributed across all its regions (there are 27 clusters in 13 districts), with several of them being export-oriented in nature. The industry sector contributed 27.91 per cent to the NDP (net domestic product) of the State, with the manufacturing sector alone accounting for nearly 17.5 per cent of NDP in 2011-12. However, this share has been virtually stagnant between 2004-05 and 2011-12, with the construction sector increasing its share in industry from 9.69 per cent to 10.09 per cent. Clearly, the decline in the share of agricultural sector and stagnation in the secondary sector has been compensated by growth in the services/tertiary sector.

In terms of FDI (foreign direct investments), Tamil Nadu ranks third at the national level. Between April 2010 and May 2014, the Chennai region received FDI of about ₹67,964 crore, accounting for 6.32 per cent of the total FDIs made in India during this period. Tamil Nadu has been a leader in attracting foreign investment into the ICT and automobile sectors. The contribution of ICT to the economy of Tamil Nadu in recent years is worth mentioning. Export earnings from the sector increased from ₹5,223 crore in 2001-02 to ₹46,791 crore in 2011-12, employing about 145,000 professionals directly. Tamil Nadu accounts for 23 per cent of the country's total export earnings (Rajeev, 2014).

Per Capita Income

The real per capita income (2004-05 prices) of Tamil Nadu rose to ₹62,361 in 2013-14 (advanced estimates) from ₹46,692 in 2009-10 and from ₹30,062 in 2004-05. In other words, per capita income has doubled during the last nine years. The State government aims to increase the nominal per capita income by six fold from 2010-11 level to ₹450,000 (US$ 10,000) in 2023 in line with per capita income of UMI (upper middle income) countries. Although the growth of per capita NSDP is relatively high in comparison to many other Indian States and is also escalating fast over a period of time, wide disparity in per capita income between districts has become a serious developmental concern. For example, the per capita income of Kanyakumari district is four times greater than that of Perambalur district. Out of 32 districts, 18 districts have per capita income lower than the State's average per capita income (State Planning Commission, 2012). The reassessment of per capita consumption expenditure at district level may, however, be a more revealing measure of welfare-level disparities. Unfortunately, district level data is not available.

Importantly, this growth in the state's income has been accompanied by investments in the social sector that has led to considerable improvements in poverty reductions and improvements in other aspects of human development. In fact, in terms of per capita development expenditure comprising of expenditure on both social and economic services, the state ranked second highest among all states in 2011-12 and well above the all India average.[2]

Poverty Levels

In 2011-12, 15.8 per cent of the rural and 6.6 per cent of the urban population in Tamil Nadu lived at BPL (below the poverty line). In fact, it is one of the larger States with relatively low poverty levels. As far as poverty reduction is concerned, the state has thus performed very well especially given its high levels until the late 1980s and early 1990s. Through various public policies and welfare schemes, the poverty reduction strategies in Tamil Nadu have yielded pay-offs. For

2. Finance Accounts of the State Governments, Comptroller and Auditor General, Government of India, cited in Panagariya et al. (2014: 86).

example, in 1993-94, the proportion of poor people in rural areas was 51.2 per cent, which has declined to 15.8 per cent in 2011-12. Indeed, the State gained 34 percentage point reduction in rural poverty during the past two decades.[3] Among social groups, the poverty reduction is significant. The rate of decline in poverty among SCs/STs (scheduled castes/scheduled tribes) was 2.3 percentage points per annum during 1993-1994 and 2011-12. During the period 1993-94 to 2011-12, the incidence of urban poverty also lowered from 33.8 to 6.6 per cent in Tamil Nadu, with a reduction of 1.5 percentage points per annum. The chapter on employment, income and poverty addresses this issue in greater detail. The Government of Tamil Nadu in its Vision 2023 document clearly lays out strategies for facilitating inclusive growth with a major aim to reduce poverty and inequality.

Health

Tamil Nadu has been often highlighted for its strong public intervention in the domain of healthcare, leading to substantial achievements on the health front. The LEB (life expectancy at birth) in the State was 67 for males and 71 for females in 2005-06. The IMR (infant mortality rate) stood at 68 in Tamil Nadu in 1992-93, coming down to 48 in 1998-99, to 30 in 2005-06 and to 22 by 2011. The MMR (maternal mortality ratio) too has declined significantly. The MMR was 111 per 100,000 live births during 2004-2006 and declined to 97 during 2007-2009. The IMR in 2013 was 24 in 1000 deliveries, as against 48 at the all-India level. The U5MR (under-5 mortality rate) was 95 in the State in 1992-93 and declined significantly to 25 by 2011.

The National Family Health Survey (NFHS) 3 (2005-06) reveals that the fertility level was 1.8 children per woman, which was comparatively lower than the all-India level at 2.7 children per woman. Indeed, the fertility level in Tamil Nadu was the lowest among all Indian States, except Andhra Pradesh (AP) and Goa which also achieved fertility level at 1.8 children per women. Fertility rate decreased by 0.3 children per mother between NFHS-1 (1992-93) and NFHS-2 (1998-99) and by 0.4 children per mother between NFHS-2 and NFHS-3. The fertility rate in rural areas (1.9 children per woman) was slightly higher than in urban areas (1.7 children per woman). The CBR (crude birth rate) for the State declined from 31.4 in 1971 to 19.3 in 2000 and to 15.9 in 2011. The CDR (crude death rate) declined from 14.4 in 1971 to 7.9 in 2000 and to 7.4 in 2011. The TFR (total fertility rate) for Tamil Nadu has shown a sharp decline from 3.9 in 1971 to 2.0 in 1997 and to 1.7 in 2007-2009 (SRS).

Literacy and Education

Tamil Nadu's human development achievements include substantial improvements in educational attainments over a long period, backed with investments made by both public and private actors (chapter on Literacy and Education). The achievements on the education front are reflected in terms of significant improvements in human development in the State. The literacy rate of the State has been increasing progressively over the years. As per the 2011 Census, the literacy rate in Tamil Nadu stands at 80.33 per cent, next only to Kerala (with 93.91%) and Maharashtra (with 82.91%), and much higher than the all-India level, i.e., 74.04 per cent. The literacy rates in rural and urban areas are 73.8 per cent and 87.24 per cent, respectively.

The State government in its endeavour for Universalisation of Primary Education has invested considerably in education infrastructure, especially in rural areas. This is partly reflected in the GER (gross enrolment ratio) which has gone up from 95.73 per cent in 2001-02 to 112 per cent in 2010-11. At the primary level, the gross enrolment of boys is 111.8 per cent and that of girls is 112.2 per cent for year 2010-11. In the case of NER (net enrolment ratio) in 2010-11, it stands at 99.60 per cent for all students; 99.57 per cent for boys; and 99.63 per cent for girls.

Table 1.5

Gross Enrolment Ratio in Tamil Nadu, 2010-11

Classes	*Gross Enrolment Ratio (Total)*	
	ST	*All Categories*
Class I-V (6-10 years)	137	116
Class VI-VIII (11-13 years)	88.9	85.5
Class I-VIII (6-13 years)	119.7	104.3
Classes IX-X (14-15 Years)	53.3	65
Classes I-X (6-15 Years)	106.8	96.2
Classes XI-XII (16-17 Years)	28.8	39.3
Classes IX-XII (14-17 Years)	41.5	52.1
Classes I-XII (6-17 Years)	94.8	86.5

Source: Statistics of School Education, 2010-11.

In the domain of adult education, Tamil Nadu became the only State in the country to have achieved its target in the 'Saakshar Bharat' scheme, by educating over

3. The information used in this section is drawn largely from: Kalaiyarasan (2014).

17.25 lakh adults. The State also has done very well in terms of enrolment in higher education. According to the provisional results of All India Survey on Higher Education (AISHE) 2014-15 conducted by the Ministry of Human Resource Department (MHRD), the GER in higher education of those in the age group of 18-23 is 46.9 in 2014-5 for the state and highest among all major states.

Tamil Nadu has been very active in terms of ensuring greater social inclusion and quality of education, through various innovative programmes, such as implementing nutritious meal scheme, introducing and strengthening ICT in the education sector, introducing ABL (activity-based learning) and ALM (active learning methodology), providing free bicycles for schoolchildren, providing free laptops to school and college students and so on.[4]

Infrastructure

Sustaining and improving human development, and minimising vulnerabilities also require robust and inclusive economic growth. The relationship between economic growth and investments in infrastructure is well known. The power sector in the State has an installed capacity of 22,474.7 MW in 2015, as against 13,084.75 MW in 2007-08. Another essential feature is that the transmission and distribution loss is comparatively lower at 18 per cent. Tamil Nadu is also a leader in renewable energy in the country with an installed capacity of 8,533 MW which accounts for nearly 37 per cent of installed capacity in the state and 23.29 per cent of the country's installed capacity for renewable energy. Efforts are also underway to strengthen distribution and improve quality of supply to rural areas (*http://cms.tn.gov.in/sites/default/files/documents/energy_e_pn_2015_16.pdf*). As per the Vision 2023 document, the energy demand-supply gap in Tamil Nadu is fairly high. The energy deficit of the State in FY (financial year) 2013 was around 17.5 per cent as compared to 2.8 per cent in FY 2008, and peak deficit in FY 2013 was over 13 per cent. This energy demand gap poses an important challenge to sustained growth of the State, which in turn could affect its human development. The State government, having realised the potential negative impact of energy demand gap on the growth, proposed to initiate certain long-term measures, such as setting up of an additional 20,000 MW of power generating capacity including two ultra-mega power projects of 4,000 MW each; thrust for green power by maximising investments in wind power and solar energy so as to create incremental renewable generation capacity of 10,000 MW; and significant investment in the transmission sector to create the required evacuation capacity with buffers for higher power generation capacity.[5]

The total length of major roads in the State stands at 62,017 km at present. It includes 4,974 km national highways, 10,764 km State highways, 11,247 km major district roads and 35,032 other district and sugarcane roads[6]. Including the rural roads, total length of the road networks in Tamil Nadu is 272,252.61 km. The length of the total surfaced roads was 216,352.37 km and that of the un-surfaced road was 55,900.242 km. Tamil Nadu has therefore well-established road networks with a road density that is 2.5 times that of all-India and hence contributes to a number of social and economic benefits. However, one of the negative externalities of improved road networks is road accidents. In 2011, a total number of 65,873 road accidents occurred in the State, where 74,245 persons were injured and 15,422 persons were killed.

As for financial infrastructure, as of 2012-13, the total number of bank branches in Tamil Nadu was 7,830, which constitutes about 7.5 per cent of the total number of bank branches in India. During this period, the population served per branch stood at 9,946, which is lower than the all-India level of 12,598. The aggregate bank deposit was ₹401,182.00 and the gross bank credit was ₹466,031.00. The credit-deposit ratio at the State level was 116.20, which was higher than the all-India figure of 78.10.

The water supply and sanitation situation in Tamil Nadu is in a relatively better position compared to the all-India status. Out of 94,614 rural habitations, 84,003 habitations (88.90%) have been fully covered with a water supply of 40 LPCD (litres per capita per day) or more and the remaining 10,611 (i.e., 11.10%) habitations have been covered partially. At present, there is no uncovered habitation in the State. However, a lower proportion of the households have access to drinking water source, latrine and a bathroom within their homes. Further in terms of sanitation, Tamil Nadu has been noted for relatively high levels of open defecation (45.7% in 2011), which is higher than States like Kerala, Maharashtra and Gujarat.

4. For further details on various schemes on education, please see chapter on Literacy and Education.

5. *http://agritech.tnau.ac.in/pdf/2012/TN%20VISION%202023_Volume%20II.pdf*.

6. *www.tnhighways.gov.in/about.html*

In the case of urban water supply, Chennai region needs special mention. The total water demand in the Chennai metropolitan area was estimated at 848 MLD (million litres per day), but the supply was 765 MLD in 2010. The supply-demand gap was supposed to come primarily from groundwater sources. Around 6,530 deep bore wells have been dug at different locations in the city to supplement the supply from surface sources. In addition, Chennai Metro Water hires private tanker trucks regularly to deliver water to areas with less coverage, greater scarcity and more slum population. For instance, about 6,000 tanker trucks (with a capacity of between 10,000 and 20,000 litres each) were used to deliver 120 MLD of water to different locations of the metropolitan area in 2004. At present, private trucks make around 700 trips to deliver an estimated 125 MLD of water, purely on a commercial basis (Venkatachalam, 2014). In rest of the urban areas, over a third of the Corporations (12) and Municipalities (125) are provided with more than 110 LPCD of water (*www.spc.tn.gov.in/12plan_english/6.%20WATER_SUPPLY.pdf*). In recent years, rapid growth of the private water markets is observed in almost all regions of the State. Even though the private markets fulfil water requirements of the consumers to a certain extent, quality of the water supplied is reported to be poor. Tapping into alternate and more sustainable sources and regulating the current system of water supply therefore require the state's attention.

Environment and Natural Resources

The natural capital stock consisting of various environmental and natural resources is important for enhancing and sustaining wellbeing, health and livelihoods. Tamil Nadu is endowed with abundant environmental and natural resources. The natural capital stock of the State generates four different types of ecosystem services namely, provisioning services (e.g., food, freshwater, etc.); regulating services (e.g., climate regulation, water purification, etc.); cultural services (e.g., spiritual, recreational, aesthetic, etc.); and supporting services (e.g., nutrient recycling, soil formation, etc.). Changes in the ecosystem services do significantly affect human wellbeing in the State, even though the causal relationship between ecosystem services and its impact on human wellbeing has not yet been adequately quantified. Since the estimation of GSDP is silent about changes in numerous non-market ecosystem services and their impact on economic welfare, human development of the State measured by using the variant of GSDP may deviate from properly reflecting real human welfare. In other words, if people of the State are enjoying a greater amount of non-market benefits from nature, then the current wellbeing measured by applying conventional GSDP becomes underestimated; on the other hand, if people are experiencing more environmental problems, then the currently measured wellbeing becomes overestimated.

The State has 28,343 sq km of forest and tree cover, occupying 18 per cent of its total geographical area (130,058 sq. km). The State harbours rich flora and fauna, contributing to human welfare in many different ways. The State is endowed with 5,640 species of flowering plants—the highest number of plant species among all States in the country. The plant species include 533 endemic species, 230 red-listed species, 1,559 species of medicinal plants and 260 species of wild relatives of cultivated plants. In addition, the State is endowed with 165 species of fresh water fishes, 76 species of amphibians, 177 species of reptiles, 454 species of birds and 187 species of mammals. The Western Ghats with abundant flora and fauna acts as a global biodiversity hotspot. The State has demonstrated its commitment to protect the environment and biodiversity resources by way of creating 10 wildlife sanctuaries, 13 bird sanctuaries, a bird conservation reserve, 3 biosphere reserves, 4 elephant reserves and 3 tiger reserves. There are 1,175 ecologically important wetlands with a total water spread area of 1,615.12 sq km. Mangrove forests in three locations—namely, Muthupet in Thiruvarur district, Pichavaram in Cuddalore district and Kazhiveli in Villurpuram district, and coral reef formations in the Gulf of Mannar provide support to the unique biodiversity in the State. The State accounts for 30 per cent of total bio-resources in India and has a larger potential for promoting biodiversity-based industry. Apart from biotechnology industry, nature-based tourism has greater potential to improve conditions of the people in such regions—especially—if proper institutional arrangements are explored to promote eco-tourism. The total length of the coast line is 1,076 km, which constitutes about 13 per cent of the country's coast line as a whole; apart from being endowed with biological and ecological resources, the coast line supports a large fishing population and generated 61.15 million tonnes of protein in the year 2011-12. The State faces certain environmental challenges which need to be addressed in the coming years. The State's important water sources (rivers, lakes and wetlands) that generate various types of ecosystem benefits are to be protected from several negative externalities, such as dumping of solid and liquid waste and encroachment.

Water Resources

Water has become a key factor in determining growth and sustainability of Tamil Nadu economy—especially, its agricultural and livestock economy. The State is endowed with 3 per cent of water resources of the country. The average annual rainfall is 945 mm; the South-West monsoon (June–September) brings an average of 322 mm rainfall, the North-East monsoon (October–December) fetches 470 mm, and the remaining 153 mm of rainfall occurs during other periods. The average rainfall varies from 865 to 3,127 mm among sub-regions, making water availability and distribution naturally unequal. There are 17 major river basins in the State, acting both as a strong life support system and as a waste sink. The water potential of the State is 46,540 MCM (million cubic metres) per annum, of which 22,423 MCM accounts for groundwater and 19,525 MCM for surface water. Intensive agriculture, rapid urbanisation and growth of industries heightened the demand for water in the State, which is expected to increase to 57,725 MCM in 2050 from the current level of 54,395 MCM. Around 80 per cent of the utilisable water is being diverted for agricultural purposes. There are 2,239 irrigation canals with a length of 9,747 km, 81 reservoirs, 41,127 irrigation tanks, 315,000 tube wells and 1,505,844 open wells—dug especially for irrigation purposes. Erratic monsoons, declining storage capacity of the surface sources (such as, rivers and irrigation tanks), over-exploitation of groundwater in certain parts and industrial and sewage pollution in industrial and urban areas caused potential threat to the supply of good quality water. In fact, ground water in 138 out of 385 blocks is found to have been over-exploited with another 100 blocks in critical or semi-critical stages. Ensuring adequate water supply to meet growing demands as well as regeneration of water sources remains a critical challenge in the years to come. On the other hand, factors such as conversion of agricultural land for non-agricultural purpose, farmers abandoning agricultural practices and general decline in net area irrigated suggest that surface water previously used for irrigation purpose is now available for other beneficial uses. Reforming the pollution control policies with a greater role for incentive-based economic instruments is expected to generate significant marginal benefits in the economy. The government's high priority to protect water resources and to utilise available water resources more efficiently are reflected in the State's water policy, which includes promoting rainwater harvesting, encouraging the farmers to utilise micro-irrigation technology and strictly implementing pollution control measures in the industry sector.

Other Resources

The State is endowed with a limited number of mineral resources. Lignite, oil, bauxite, limestone, magnesite, mica and quartz are some of the mineral resources that are found in different parts of Tamil Nadu. In recent years, sand, especially from the river beds, is being mined and is supplied to the booming construction industry in the State. Sand mining leads to various kinds of environmental problems and therefore, regulation of sand mining has been made more effective. However, a prerequisite for optimum utilisation of sand available in the State is to prepare a sand accounting system, which would indicate the amount exploited every year, amount replenished and the final stock available. Based on the above information, sand mining activity can be regulated in an environmentally sustainable manner in the future.

The above discussion has highlighted the State's achievements in terms of growth, even while hinting at some critical environmental and resource constraints to sustaining the growth process. Such constraints are also likely to negatively impinge upon securing improvements in human development. The next chapter addresses the State's performance in various aspects of human development and spatial differences in this regard.

References

Chandrasekhar, S. and Ajay Sharma (2014). "Urbanization and Spatial Patterns of Internal Migration in India", *IGIDR Working Paper* No. WP-2014-016

Drèze, J. and A. Sen (2013). *An Uncertain Glory: India and its Contradictions*. Princeton University Press.

Government of Tamil Nadu (n.d.). *Vision 2023*.

Kalaiyarasan, A. (2014). "A Comparison of Developmental Outcomes in Gujarat and Tamil Nadu", *Economic and Political Weekly* 49(15): 55-63.

Kathuria, Vinish (2014). "Industrial Development in Tamil Nadu", in V.K. Natraj and A. Vaidyanathan (eds.), *Development Narratives: The Political Economy of Tamil Nadu*. New Delhi: Academic Foundation.

Panagariya A., P. Chakraborty and M. Govinda Rao (2014). *State Level Reforms, Growth and Development in Indian States*. New Delhi: Oxford University Press.

Rajeev, Meenakshi (2014). "IT Industry in Tamil Nadu", in V.K. Natraj and A. Vaidyanathan (eds.), *Development Narratives: The Political Economy of Tamil Nadu*. New Delhi: Academic Foundation.

Raman, Nithya (2011). "The Board and the Bank: Changing Policies towards Slums in Chennai", *Economic and Political Weekly* 46(31): 74-80.

Shanmugam, K.R. (2014). "Finances of Tamil Nadu Government". Madras School of Economics. *Mimeo*.

Venkatachalam, L. (2014). "Informal Water Markets and Willingness to Pay for Water: A Case Study of the Urban Poor in Chennai City, India", in *International Journal of Water Resources Development* 31(1): 134-45.