

CHAPTER XX: INDICATORS AND TARGETS ADOPTED TO MONITOR PROGRESS OF ACHIEVEMENT OF ASSAM 2030: OUR DREAM OUR COMMITMENT

Introduction

The Government of Assam set out its long term development vision through the document Assam 2030: *Our Dream, Our Commitment* in July 2016, in line with the global consensus on the Sustainable Development Goals (SDGs). This historic global consensus on the SDGs was reached by heads of governments of all countries including the Prime Minister of India at the United Nations General Assembly Summit Meeting in New York in September 2015. The SDGs which replaced the Millennium Development Goals (MDGs) implemented between 2000 and 2015 are to be achieved within the next fifteen years ending 31 December 2030. The SDGs vastly expand the range of development outcomes – compared to the MDGs and include economic, social and environmental goals. They represent core development outcomes in these three areas that all countries have pledged to achieve. By adopting Assam 2030 in line with the SDGs, the Government of Assam has undertaken to achieve these basic development goals in order to guarantee substantial improvements in the standard and quality of life of all the people of Assam.

Progress on Assam 2030 will be monitored through indicators appropriate for the state. This Chapter of the Assam Economic Survey describes the adopted indicators in detail. It sets out the baselines and targets against which progress will be monitored. It is proposed that eventually the monitoring process will be conducted through real time dashboards – when the data system is upgraded to make this possible – and to report progress in detail annually through this chapter of the Assam Economic Survey.

The indicators chosen for this report of Assam 2030 are based on those for which data was available. It is proposed that in future years these will be further refined and disaggregated to provide a better picture of progress across social, economic and spatial categories of the population.

Goal 1: NO POVERTY-End poverty in all its forms everywhere

The main indicator being used to monitor progress on this Goal is the poverty head count ratio. The current poverty head count ratio for Assam is estimated at 27.34 % in 2015-16². This may be compared to the All-India average of 20.74 %, which is apparent from the Table 1 below.

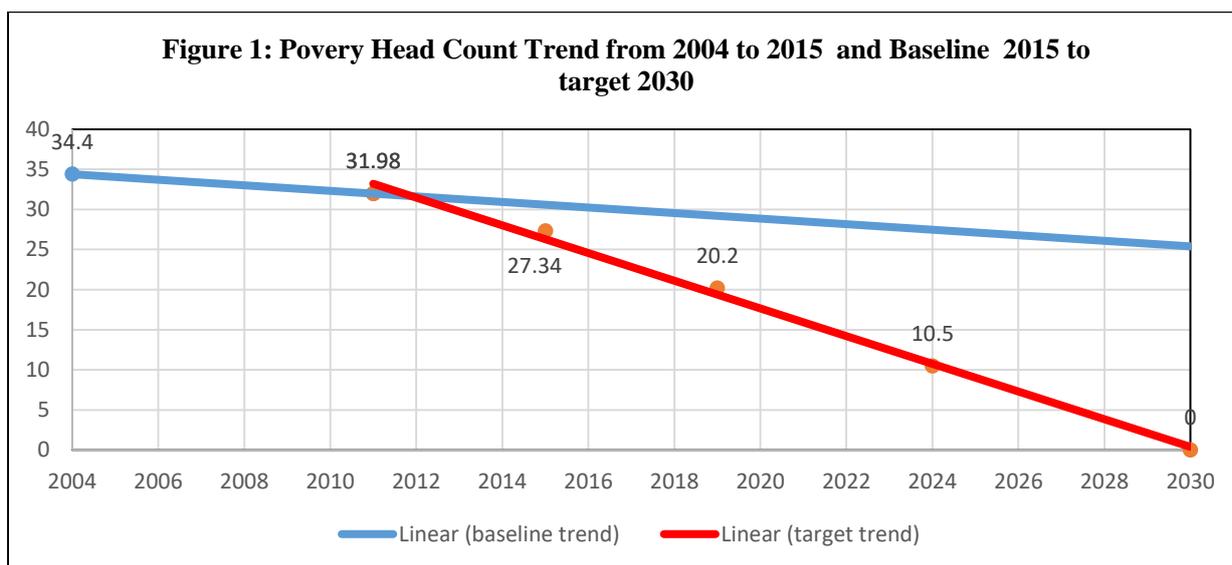
Table 1: Selected poverty indicators for Assam						
Poverty Head Count Ratio	Assam Baseline (2011-12)	India Baseline (2011-12)	Assam likely achievement (2015)	India Average likely achievement (2015)	Target (2030)	Source of Target
	31.98	21.92	27.34	20.74	0	Assam 2030

Source: Ministry of Statistics and Program Implementation (MOSPI), Millennium Development Goals India Country Report 2015, Table 1.

Vision Assam 2030 which is in line with the internationally agreed Sustainable Development Goals (SDGs) requires that extreme poverty be totally eliminated. This will require that the headcount ratio be brought down to zero by 2030.

In order to appreciate the additional effort this will require compared to the past, Figure 1 below may be referred to. This shows that the rate of improvement in poverty reduction must be substantially stepped up. The poverty headcount ratio should decline 5.26 % annually from the baseline data of 2011-12 to meet the target by 2030 as against the annual decline rate of 1.0 % during the period 2004-05 (34.40) to 2011-12 (31.98).

As per the required trend line, the target achievement levels at different intermediate periods are 20.2 % in 2019 and 10.5 % in 2024.



Source: Data based on MOSPI (2015) Table 1. Projections carried out by Directorate of Economics and Statistics, Government of Assam

Goal 2: ZERO HUNGER-End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Hunger both in the general population and particularly among children remains a matter of concern in Assam. The proportion of children below 5 years who were reported to be underweight in 2005-06 was 36.4 %¹ while it is estimated to be 29.8% in 2015-16,² (Table 2) indicating well over a quarter of all children in the state suffering from malnutrition leading to lower body weight than the norm. This figure is nearly at par with estimates for India as a whole (29.4% in 2013-14) but it is higher than several states in the northeast such as Manipur (13.80 %), Sikkim (14.20 %), and Tripura (24.20 %).

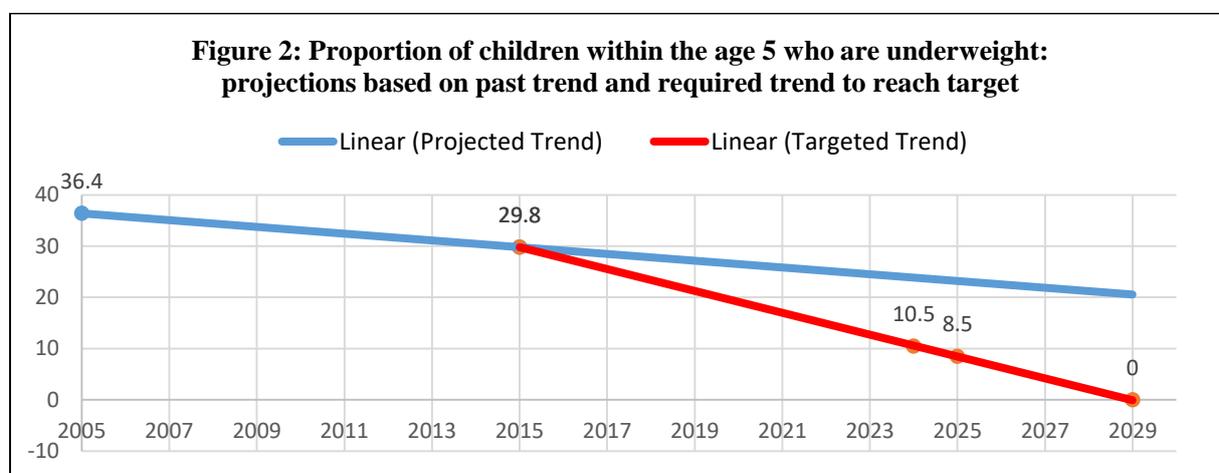
¹ According to NFHS (2015-16)

² Source : NFHS-4 (2015-16) for data on underweight children for Assam and other northeastern states cited; and Rapid Survey of Children and Adolescent Girls (RSOC) 2013-14, Ministry of Women and Child Development for data on India as a whole as this result is not yet available from NFHS-4.

Indicator	Assam Baseline (Latest Year)	India Average (Latest Year)	Target (2030)	Source of Target
2.1 Proportion of children within the age 5 who are underweight (%)	29.8 (2015-16)	29.0 (2013-14)	0	Assam 2030
2.4 Proportion of women within age 15-49 who are anemic (%)	46.0 (2015-16)		0	Assam 2030
2.5 Average Yield of Rice (kg/ha) of land cultivated	2119 (2014-15)	2390 (2014-15)	4238	Assam 2030

Source: Underweight children for Assam from NFHS 4, underweight children for India from Rapid Survey of Children and Adolescent Girls (RSOC) 2014-15, Ministry of Women and Child Development; Women with anemia Assam from NFHS 4; rice yield for Assam from Statistical Handbook of Assam 2015; rice yield India from Economic Survey (2015-16), Volume II.

Assam 2030 envisages reducing to zero the proportion of children below 5 years who are underweight by 2030 as part of the drive to end hunger. To consider the extent of challenge this poses, Figure 2 may be referred to. The required rate of decline to reach the target is almost 2.0 percentage points annually from the baseline 2015 (red line); whereas the actual rate of reduction achieved is only 0.6 percentage points annually (blue line).



Source: NFHS 3 & 4

Malnutrition among mothers has deleterious effects not only on their own health and welfare, but also on the health and welfare of their children. Anemia in the state among women in the age group 15-49 was estimated at an unacceptably high figure of 46 % in 2015-16 and needs to be reduced rapidly.

A key requirement for ending hunger is ensuring food security. Improving agricultural productivity is a major requirement in this respect. Assam 2030 targets the doubling of agricultural productivity in the state by 2030 from current levels.

The average rice yield in the state, its main staple crop, stood at 2119 kilograms per hectare in 2014-15. A doubling of this by 2030 to 4238 kilograms per hectare is now targeted and is feasible given that countries in Asia have achieved much higher yields. This will require, among others, substantially increasing cropping intensity which will be possible only through enlarging irrigation. The proportion of net area sown covered by assured irrigation is only

31.4% at present³, with actual area irrigated much less, which needs to be increased substantially in the years to 2030.

Goal 3: GOOD HEALTH AND WELLBEING- Ensure healthy lives and promote well-being for all at all ages

Health covers a wide area but the focus of the SDGs is on maternal (including reproductive health) and child health; controlling spread of communicable diseases; combating emerging health challenges in the non-communicable diseases area; strengthening efforts to curb substance, narcotics and alcohol abuse; reducing deaths from traffic accidents and from environmental pollutants; and achieving universal health coverage.

Indicator	Assam Baseline (Latest Year)	India average (Latest year)	Target (2030)	Source of target
3.1 Maternal mortality ratio (deaths per 100,000 live births)	300 (2011-13)	167 (2011-13)	70	Global
3.2 Child (under 5) mortality rate (deaths per 1000 live births)	66 (2014)	42 (2015)	25	Global
3.3 Infant mortality rate (deaths per 1000 live births)	49 (2014)	39 (2014)	18	Based on global target for child mortality
3.4 Proportion of births attended by trained medical personnel (%)	74.3 (2015-16)	77.3 (2015)	100	Assam 2030
3.5 Number of allopathic doctors (Government and NHM) per 100,000 population	12.0 (2014)	51.2 (2011)	100	High-level Expert Group on Universal Health Coverage for India (2011)
3.6 Fatalities from road accidents (per 10,000 km of roads)	84.7 (2013)	317.0 (2013)	42.3 (by 2020)	Global

Source: Directorate of Economics and Statistics for Assam data; MOSPI 2015 for India figures on health; Expert Group for data on allopathic doctors for India; and GOI (MRTH) for traffic deaths. IMR data for India based on MOSPI.

Assam's current status on some of these critical areas may be seen in Table 3 above. As can be observed from the table, attainments for Assam are poorer compared to the India averages. In the case of maternal mortality, for example, Assam's current level is almost double that of the India average; child mortality is about 50% higher. The number of doctors per one lakh population is less than a quarter of the India average, which itself is half the level needed according to norms set by the High-level Expert Group on Universal Health Coverage for India.

An assessment conducted on feasibility of the targets on maternal mortality and under 5 mortality rates indicates that if the current trend of progress established under the National Health Mission (NHM) continues, Assam will be able to meet its 2030 targets. This implies, however, that the scale of effort continues unabated throughout the period till 2030. Particular attention must be focused to groups which have fallen behind (such as tea garden labour community) for this to happen.

³ Estimated using Department of Irrigation (<http://irrigassam.nic.in/achievement.htm>) data of irrigation potential created by March 2015 at 8.8 lakh hectares and net area sown of 28.1 lakh hectares (Statistical Handbook Assam, 2015)

Much greater effort will be necessary to expand universal health care which will require provision of adequate expansion of medical personnel. As against the norm of 100 allopathic doctors per lakh population, Assam has currently only 12.00. This implies that a large expansion of medical education is necessary in the state.

Although deaths from traffic accidents are low by Indian standards, they are still unacceptably high. The global SDG target requires reduction of deaths by half by 2020, which will require immediate and expanded efforts to tackle.

Goal 4: QUALITY EDUCATION-Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

The current status on selected key indicators in Assam on pre-school and school (including vocational) education is presented in Table 4 with comparisons with the All-India averages.

	Assam Baseline (Latest Year)	India average (Latest year)	Target (2030)	Source of target
Net Enrolment Ratio at primary level (Upper Primary) (%)	77.83 (2015-16)	74.74 (2015-16)	100	Assam 2030
Net Enrolment Ratio at secondary level (%)	55.67 (2015-16)	51.26 (2014-15)	100	Assam 2030
Net Enrolment Ratio at higher secondary level (%)	26.92 (2015-16)	32.30 (2015-16)	100	Assam 2030
Net enrolment rate at pre-primary (ECD) level (%)	49.8 (2008)	42.9 (2013)	100	Assam 2030
Dropout rates at primary level (%)	15.40 (2015-16)	7.40 (2015-16)	0	Assam 2030
Dropout rate at secondary level (%)	27.06 (2014-15)	17.06 (2014-15)	0	Assam 2030
Ratio of vocational enrolment to total secondary enrolment (%)	2.0 (2016)	(Not available)	25	Assam Education Department

Source. DISE Flash Statistics U-DISE(2015-16) for school education data. ECD calculated from 12th Plan and population figures for India and Department of Social Welfare for Assam⁴

While Assam's enrolment figures are generally better than the India averages, except at the higher secondary level where they are lower, all enrolment figures are significantly below the target of 100 % needed for universalisation of school education. The effort at universalisation will need to be considerably stepped up particularly at the secondary level.

⁴ The 12th Plan document (Chapter 23 Vol.III) states that 3.5 crore children are obtaining early childhood education through ICDS (out of total ICDS beneficiaries of 7.9 crores). Assuming half of the population of children in India 0-6 years from Census data which is 16.4 crores, are in the 3-6 year group, the ECD enrolment for India is worked out. A similar exercise is carried out for Assam using data from Department of Social Welfare website on non-formal pre-school education (<http://socialwelfareassam.com/nfPreSchoolEdn.asp>)

Of greater concern is the quality of education, which the drop-out rates bring out partly. More than a quarter of children at secondary level and nearly a seventh at primary level are currently dropping out of education. These figures are much higher than the all-India averages. Direct testing data also indicate that learning outcomes remain quite poor.

Greater emphasis also is needed on early (pre-primary) education which is emphasized under SDG 4. There are currently no readily available estimates for Assam. An assessment of ICDS education beneficiaries indicates that at the all-India level, about half of the eligible children 3-6 years of age are receiving early pre-primary education from ICDS programs– as in Assam.

Much greater emphasis on vocational education at the secondary level and beyond is also necessary. Only 2% of secondary students in the public school education system in Assam are opting for the vocational stream. The target set by the Department of Education is 25 % by 2030, which will require much more attention to this area.

Goal No 5: GENDER EQUALITY- Achieve gender equality and empower all women and girls

Assam 2030 acknowledges the significance of gender equality in attaining sustainable development and aims at ending all forms of discrimination against women and girls everywhere. Besides, it targets ending all forms of violence against women and girls in every sphere and ensuring full and effective participation and equal opportunities for women for exhibiting leadership at all levels of decision-making in political, economic and public life. Table 5 below presents core indicator values of Assam relating to this Goal in comparison to the national averages.

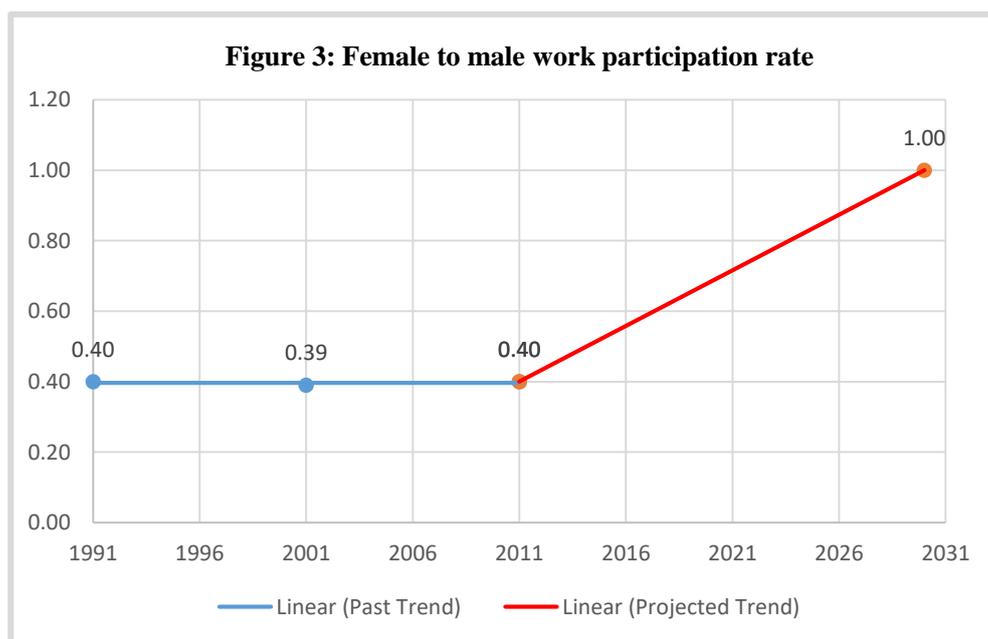
Table 5: Selected indicators on gender equality and empowering women				
Indicator	Assam baseline (Latest year)	India Average (Latest year)	Target (2030)	Source of Target
5.1 Ratio of female to male literacy (15-24 years)	0.93 (2011)	0.91 (2011)	1.0	Assam 2030
5.2 Ratio of female to male work participation rate	0.40 (2011)	0.45 (2011)	1.0	Assam 2030
5.3 Proportion of seats in the state assembly occupied by women (% to total elected members)	6.35 (2016)	(Not applicable)	33.3	Using norm set by National Bill
5.4 Proportion of women within 20-24 years getting married before the age of 18 (%)	32.6 (2015-16)	47.4 (2005-06)	0.0	National policy
5.5 Proportion of women within 15-19 years who are mothers or pregnant (%)	13.6 (2015-16)	16.0 (2005-06)	halt & reverse	National policy
<i>Source:</i> Assam and India data on gender parity in literacy and work participation rate from Census 2011. Assam data on underage marriage and adolescent pregnancy from NFHS-4; corresponding data for India not yet available and so data drawn from NFHS -3.				

Several Assam indicators in this Goal are at relatively satisfactory level and compare quite favorably with all-India averages. For example, the ratio of female to male literacy (15-24 years)

for Assam is similar to the national average although overall literacy is lower (82.4% compared to 86.1%). Assam also looks likely to achieve the target of total parity with ease.

However, several other indicators point to a still unsatisfactory situation. For example, women's representation in legislative bodies remains low. In Assam's last General Election in 2016, the proportion of seats won by women in the assembly stood at only 6.35%, far below the norm of 33.3% set by the national bill on women's representation to legislative bodies. The proportion of women married before the age of 18; and within 15-19 years who are mothers or pregnant have been identified as key indicators that need to be reduced in order to promote women's empowerment. Both indicators remain high for the state.

An important path to economic empowerment of women is through entering the work force. Assam 2030 envisages raising the female to male work participation rate to 1 by 2030. However, this ratio stands currently at only 0.42 (and is also lower compared to the national figure). The low level of women's work participation indicates that a large section of female population in the state is staying away from productive pursuits. The past trend indicates near stagnancy in this respect, with women's to men's participation ratio remaining almost flat increasing from 0.39 in 2001 to only 0.40 in 2011 (Figure 3). As this Figure indicates, increasing the ratio to 1.00 by 2030 will present a big challenge for the state. The required rate of improvement of the ratio is 7.9% annually from the baseline figure of 2011 to meet the target by 2030; as against virtual stagnation in the recent past.



Source: MoSPI-2011/Census 2011

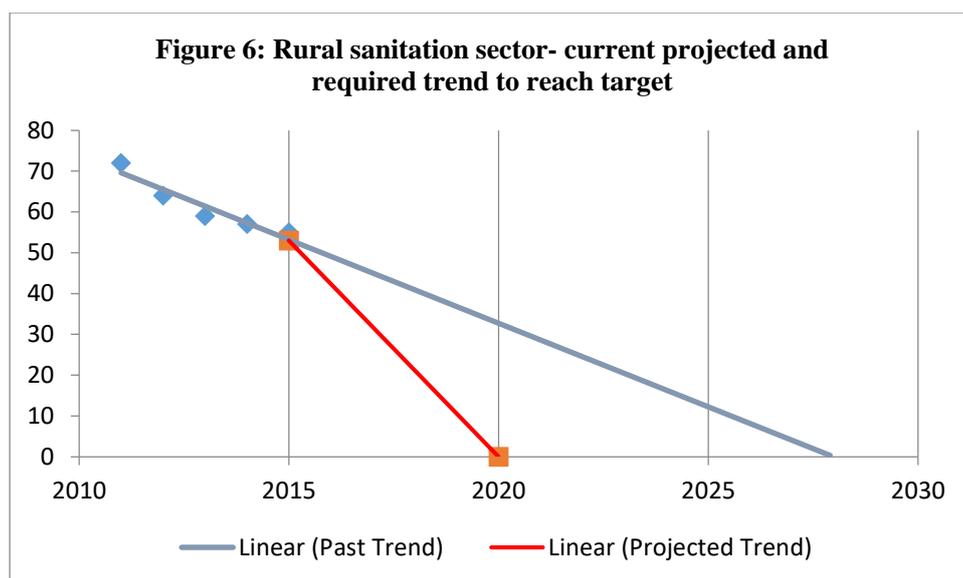
Goal 6: CLEAN WATER AND SANITATION-Ensure availability and sustainable management of water and sanitation for all

The scarcity of water has become a global issue and is also impacting in our daily life. Absence of safe drinking water and lack of sanitation pose threats to health of households. The proportion of households with access to safe drinking water and proportion without sanitary latrines have therefore been identified as key indicators for this goal (Table 6).

Table 6: Selected indicators on clean water and sanitation				
Indicator	Assam Baseline (Latest Year)	India Average (Latest Year)	Target (2030)	Source of Target
6.1 Proportion of households with access to safe drinking water (%)	85.9 (2012)	87.8 (2012)	100	Assam 2030
6.2 Proportion of households without access to sanitation	12.0 (2012)	43.4 (2012)	0.0 (By 2020)	Assam 2030 (National Policy by 2020)
<i>Source:</i> NSS 69 th Round (2012) quoted in MOSPI (2015) Millennium Development Goals India Country Report Tables 7.5 and 7.6.				

The latest available data on these indicators indicates that 85.9 % of households have access to safe drinking water in Assam. This is slightly below the overall all-India average which stood at 87.8 %. The still large population without access to safe drinking water suggests an unhealthy state of affairs and its vulnerability to water borne diseases. The target set in Assam: 2030 is to provide safe drinking water to all households which will require considerable efforts to achieve. Under such circumstances, Government has to work out suitable strategies so as to achieve universal availability of safe drinking water by 2030.

Twelve percent of households did not have access to sanitation in the state in 2012. Against this, the national figure was much higher at 43.4 %. Although the state position is much better than the national scenario, the still remaining households without access to sanitation in the state are a concern. Open defecation leads to poor hygienic condition, which invites multiple diseases. As in the case of water, Assam: 2030 set a target for 100% provision of sanitation facilities to all household by 2030. Government of India, under Swachh Bharat Mission has targeted to achieve 100% household sanitation facilities much earlier –by 2019-20. Accordingly, Assam's Public Health Engineering Department has geared up to achieve targets for rural sanitation as shown in Figure 6 below.



Source: Public Health Engineering Department

There have been reports of non-use of sanitary latrines provided to by a section of the population, which defeats the objective of universalization of sanitation. Accordingly, all aspects of the programme: its implementation, monitoring, and post implementation efforts to encourage use need to be carefully assessed and analyzed and corrective measures undertaken to achieve the sanitation target.

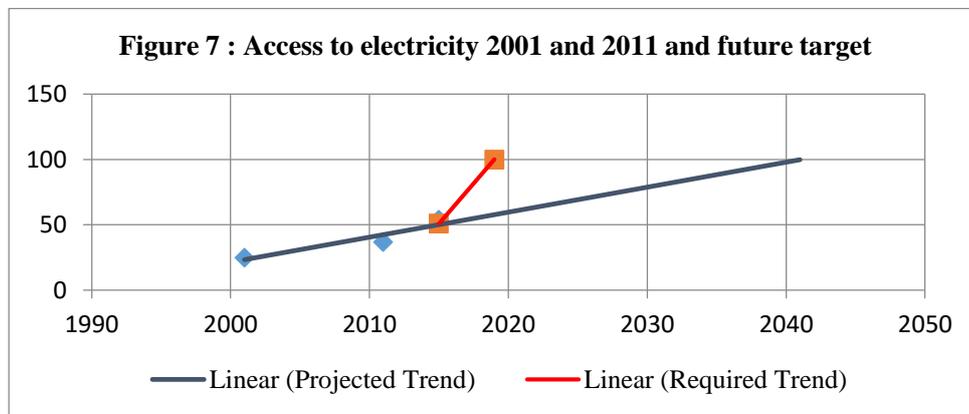
Goal 7: AFFORDABLE AND CLEAN ENERGY-Ensure access to affordable, reliable, sustainable and modern energy for all

This Goal recognizes the significance of energy choice in promoting sustainable development and, therefore, targets at ensuring affordable, reliable, sustainable and modern energy for all by 2030. Government of Assam, in accordance with this SDG, envisions utilising the full energy potential in the state, prioritizing renewable sources and making the state fully meet future energy needs; working to increase energy efficiency to the maximum; and ensuring access to affordable, reliable, sustainable and modern energy for all households and habitations by 2030

Indicator	Assam Baseline (Latest Year)	India Average (Latest Year)	Target (2030)	Source of Target
7.1 Proportion of households using electricity as the primary source of lighting (%)	37.0 (2011)	67.2 (2011)	100 (By 2019)	Assam 2030

7.2 Proportion of renewable energy to total annual energy production by installed capacity (%)	2.5 (2015)	14.2 (2016)	15	In line with international commitments ⁵
7.3 Proportion of transmission and distribution loss to total energy produced (%)	21.0 (2014-15)	21.46 (2016)	5.0 ⁶	Assam 2030
<i>Source:</i> Households using electricity Assam and India from Census (2011); Proportion of renewable energy Assam and India from CEA; T&D Losses India from CEA. T&D Losses Assam from Statistical Handbook Assam2015.				

The proportion of households using electricity as the primary source of lighting is an important indicator for monitoring achievement under this Goal. Between 2001 and 2011, census data indicates that this proportion increased in Assam from 24.9% to 37.0% (Figure 7). Thus access to electricity remained still low in the state in 2011 and much below the national figure of 67.2%. Assam: 2030 envisages raising this proportion to 100% by 2030 to ensure that all households have full access by that date. The Government of India has, however, moved this target forward for the country as a whole to 2019. As can be seen from the figure the required pace of increase in access will need to be considerably stepped up compared to past trends to achieve this target by 2019.



Source: Past data from Census of India 2001 & 2011

In the past, improvement of access to energy has been quite slow. Between 2001 and 2011, only 1.1% of additional households have gained access to electricity per year. This rate is quite insufficient as it would leave 41% without access to electricity by 2030. Since 2011, however, new programmes⁷ provided access to another 10 Lakhs BPL households which is estimated to have improved the proportion with access from 37% to 54% currently. A further step up of the pace of access to achieve the universal access target by 2019 is essential.

An important objective of this Goal is generating energy from renewable sources. Accordingly, the proportion of renewable energy in the total energy produced in the state has

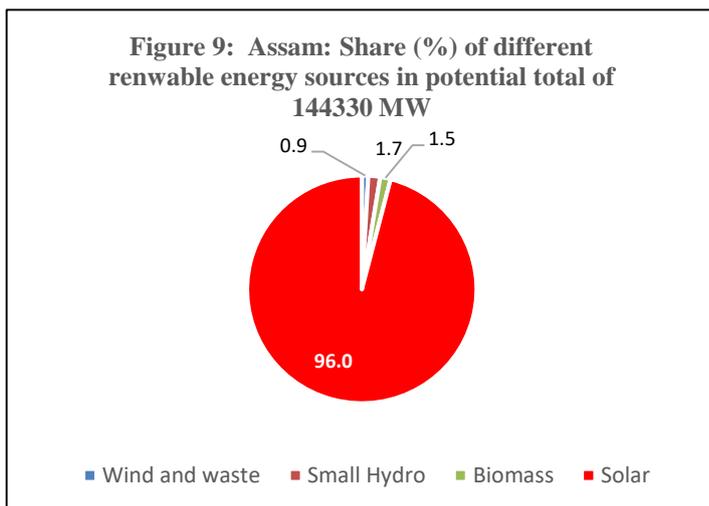
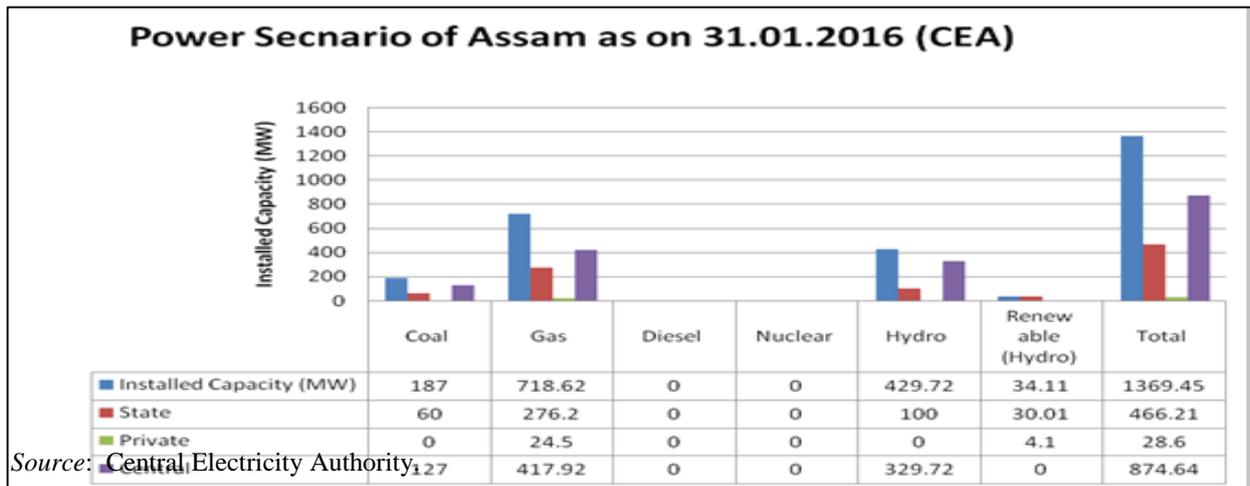
⁵ India's international commitment at the international climate negotiations is to increase renewable energy sources to 40% of total energy capacity installed. This requires about a fourfold expansion from the current share of renewable energy. In order for Assam to catch up, more than a four-fold increase is necessary hence target placed at 15% which is a little more than the current all-India proportion and thus attainable.

⁶ The target has been set at 5.0% considering Vision Assam 2030 target of "utilizing the full energy potential of the state" and "working to increase energy efficiency to the maximum." As it is not technically feasible to eliminate all T&D losses, however, the target has been set at 5% which is around the best achieved internationally.

⁷ Such as RGGVY

been adopted as a key representative indicator to track progress towards this Goal. The Central Electricity Authority (CEA) has estimated that as of 31st January 2016, Assam produced only 34.11 MW of energy from sustainable and renewable sources (mainly small hydroelectric plants) out of a total generation of 1369.45 MW or just 2.5%. Renewable energy sources cover solar, photovoltaic, small hydro up to 25 MW, wind, biomass, and waste to energy etc. much of which remains yet to be exploited. The present scenario of the energy mix is presented in Figure 8 below.

Figure 8: Assam’s energy generation mix



Assam: 2030 aims at raising the proportion of renewable energy in the total energy production to 40% by 2030 (in keeping with the national commitment at the Oct 2015 Paris Climate Change Agreement). As per the CEA, Assam has a renewable energy potential of 14330 MW, mainly comprising solar energy at 96% (Figure 9). These sources will need to be tapped.

Source: Central Electricity Authority.

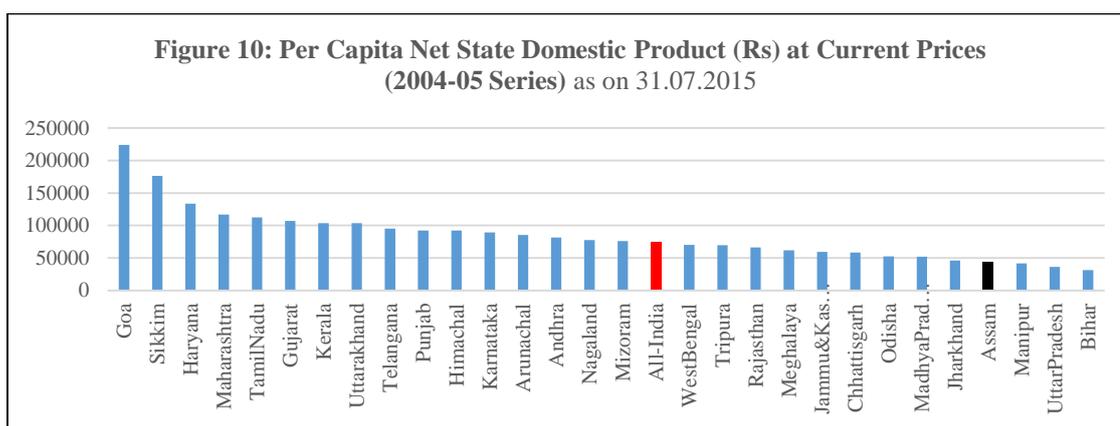
In addition to producing energy sustainably, efforts to reduce waste and conserve energy produced are also critical. An important indicator adopted therefore is proportion of transmission and distribution losses to total energy produced. This stood at a staggering 21% in 2014-15 indicating that more than a fifth of energy produced is lost. The target adopted is to reduce this loss to 5% by 2030.

Goal 8: DECENT WORK AND ECONOMIC GROWTH-Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

The Government of Assam, in accordance with this Goal, envisions bridging the gap in per capita income between Assam and other states by accelerating the state’s pace of economic growth; and eliminating unemployment among all sections, particularly among youth, women, marginalised communities and people with disabilities, by ensuring full and productive employment and decent work for all by 2030. The indicators used to track progress on this Goal are in Table 8 below.

Table 8: Selected Goal 8 indicators				
Indicator	Assam Baseline (Latest Year)	India Average (Latest Year)	Target (2030)	Source of Target
8.1 Annual Rate of Growth of SGDP (constant prices) (%)	7.88 (2014-15)	7.3 (2014-15)	10	Projected on current trends/GoI
8.2 Total Unemployment Rate usual status (ps) (per 1000 population)	61 (2015-16)	50 (2015-16)	20	Projected on current trends
<i>Source:</i> GDP and GSDP growth data from MOSPI; unemployment Assam and India from Ministry of Labour and Employment, Report on Fifth Annual Employment-Unemployment Survey (2015-16)				

The gap between Assam and other states in per capita incomes as of 2013-14 is shown in Figure 10. below. In order to catch up, a target growth rate of GSDP to reach at least to 10% per annum by 2025-26 is envisaged.



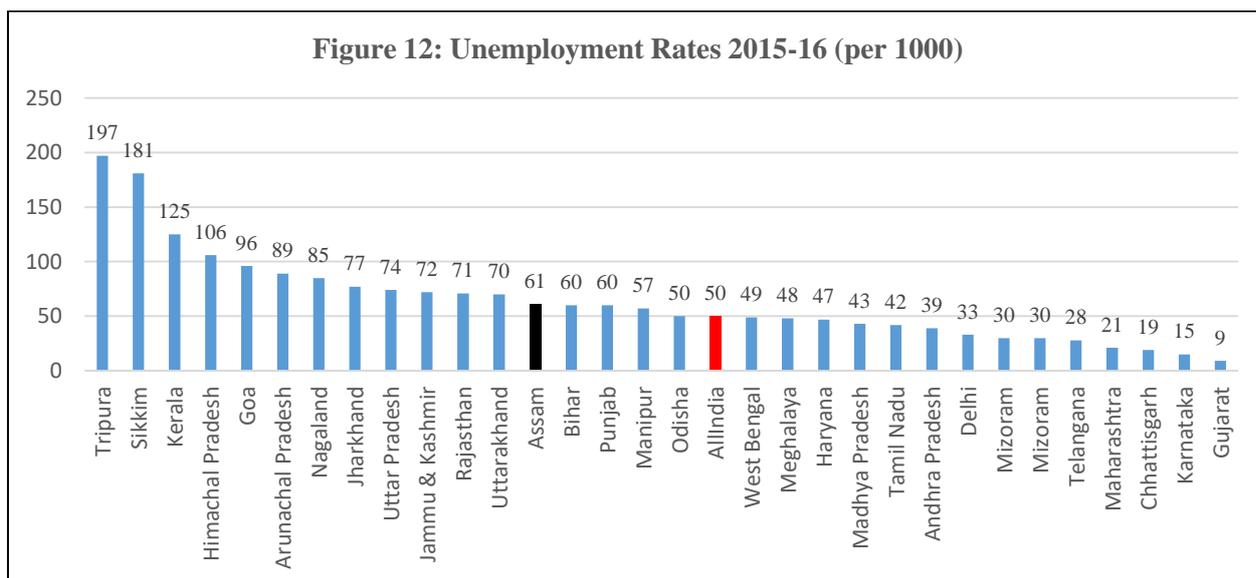
Source: Government of India, Economic Survey 2015-16

The current annual rate of growth of Assam’s GSDP (constant prices) at 7.88% exceeds the national GDP growth rate of 7.3% (2014-15). In order to achieve the target of 10% by 2025-26, however, continuous effort will be required. Given the trend rate of improvement from the recent past this appears quite feasible as can be observed from Figure 11 below.



Source: DES projections.

Achieving full and decent employment is another key objective under Goal 8. The relevant indicator to measure this is the total unemployment rate at usual status (ps). According to the Fifth Survey of Employment and Unemployment conducted by Ministry of Labour in 2015-16, this unemployment rate stood at 61 per 1000 population (age 15 and above) against the national figure of 50 per 1000 population (Figure 12). The target adopted is to reduce this unemployment rate by two-thirds, i.e., to 20 per 1000 population by 2030. As some states in India (such as Maharashtra, Chhattisgarh, Karnataka and Gujarat) have achieved such levels this targeted rate of unemployment although challenging is feasible.



Source: Government of India, Ministry of Labour and Employment, *Report on Fifth Annual Employment-Unemployment Survey (2015-16)*

Goal 9: INDUSTRY, INNOVATION AND INFRASTRUCTURE- Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation

Considering the poor state of infrastructure and industrial development, the State requires to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation, which form the core objectives of the Goal 9. The key indicators identified for monitoring progress of the state under this Goal may be seen in Table 9 below.

Indicator	Assam Baseline (Latest Year)	India Average (Latest Year)	Target 2030	Source of Target
9.1 Total length of surfaced road (NH, SH and PWD) per 100 sq. km area	35.42 (2015)	35.51 (2013)	Ensure full connectivity	Assam 2030
9.2 Total length of surfaced roads (NH SH & PWD) per 100,000 population	89.03 (2015)	96.45 (2013)	Ensure full connectivity	Assam 2030
9.3 Total (wireless+wireline) telephone connections per 100 population	53.95 (2015)	79.4 (2015)	100	Assam 2030
9.4 Share of manufacturing sector in GSDP (at 2011-12 constant prices, %)	9.0 (2015-16)	16.05 (2015-16)	Triple	Assam 2030
9.5 Share of manufacturing sector employment in total employment (%)	4.8 (2015)	10.5 (2015)	triple	Assam 2030

Source: Assam PWD for Assam surfaced roads; MORTH Roads Statistical Year Book India 2016, for India surfaced roads data; MOSPI Statistical Year Book of India 2016 for telecom data; Share of manufacturing for India from MOSPI, Statistical Yearbook 2016; share of manufacturing Assam from Directorate of Economics & Statistics, Assam; GoI, Min. of Labour & Employment, *Fifth Survey of Employment and Unemployment 2015* for share of manufacturing employment for Assam and India (Table 22) based on NIC2008 according to Usual Principal Status Approach (ps).

The length of surfaced road (NH, SH and PWD) per 100 sq. km area and proportion of NH, SH & PWD roads per 100,000 population are indicators to monitor the extent of access by the population to the road network. Currently while the area density of surfaced roads in Assam is comparable to the national average, the length of surfaced roads per lakh population is lower. The Government of Assam in accordance with the Assam: 2030 will seek to ensure all weather connectivity to all habitations. However, currently, only 8% of existing state highways are of 2-lane and only 2% of the major district roads are of 2-lane. These comprise the vital network for maintaining proper accessibility to smaller urban areas and rural nodes. About 50% of rural roads are still gravel roads. Thus achieving vision of Assam 2030 poses a challenge requiring a major gearing up of effort. In addition to providing road access to the state's population, further efforts are necessary to develop state-of-art road communication facilities with neighboring States and countries to improve connectivity and develop trade.

Apart from roads, improved communications through telephones is essential for growth. Currently, a little over half of the population has access to either a mobile or fixed line telephone (as compared to nearly 80% for India as a whole). The target is to reach universal (100%) connectivity by 2030. Given past trends, this target should not be difficult to achieve.

The share of manufacturing sector in GSDP (at 2011-12 constant prices)⁴ in 2015-16 stands at 9% against the National average of 16.05 %. The share of manufacturing sector employment in total employment is very low standing at only 4.8 % against the national average

of 10.5% which itself is considered insufficient. As industrial employment offers avenues for higher incomes to the state’s population which currently is still engaged predominantly on low productive primary sector activities, Assam 2030 proposes to increase the share of manufacturing in the gross state domestic product by double of the present level by 2030 through promotion of sustainable industrialisation in the state. A corresponding tripling of the share of manufacturing sector employment is also necessary. These goals are well within the grasp of the State which is making efforts to reduce the current over-dependency on the primary sector and strengthening of manufacturing growth and employment along with the “Make in India” and expansion of manufacturing skills initiatives of the country.

Goal 10: REDUCE INEQUALITIES- Reduce inequality within and across countries

The Government of Assam, in accordance with this Goal, envisions reduction of inequality in all possible dimensions in the state by 2030, including, among others, better access to cultivable land and equality of opportunity for all sections of the society, especially the disadvantaged, vulnerable and those living in difficult areas and conditions. The indicators selected for Goal 10 are given in Table 10 below.

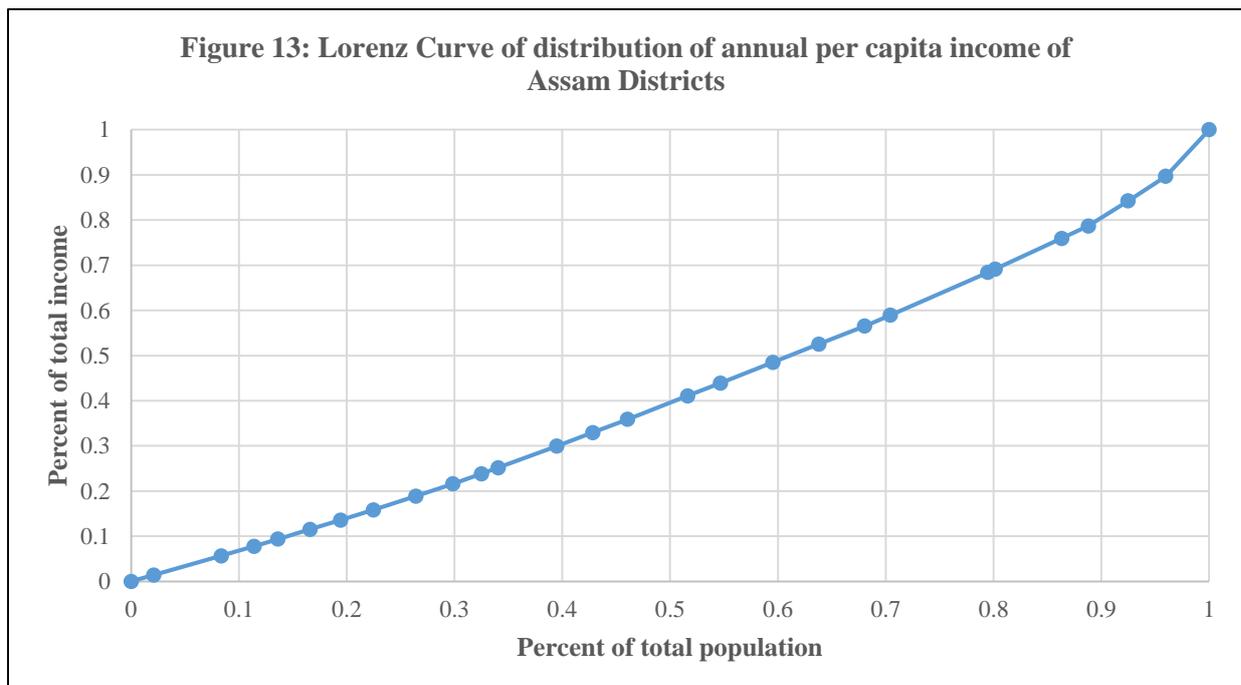
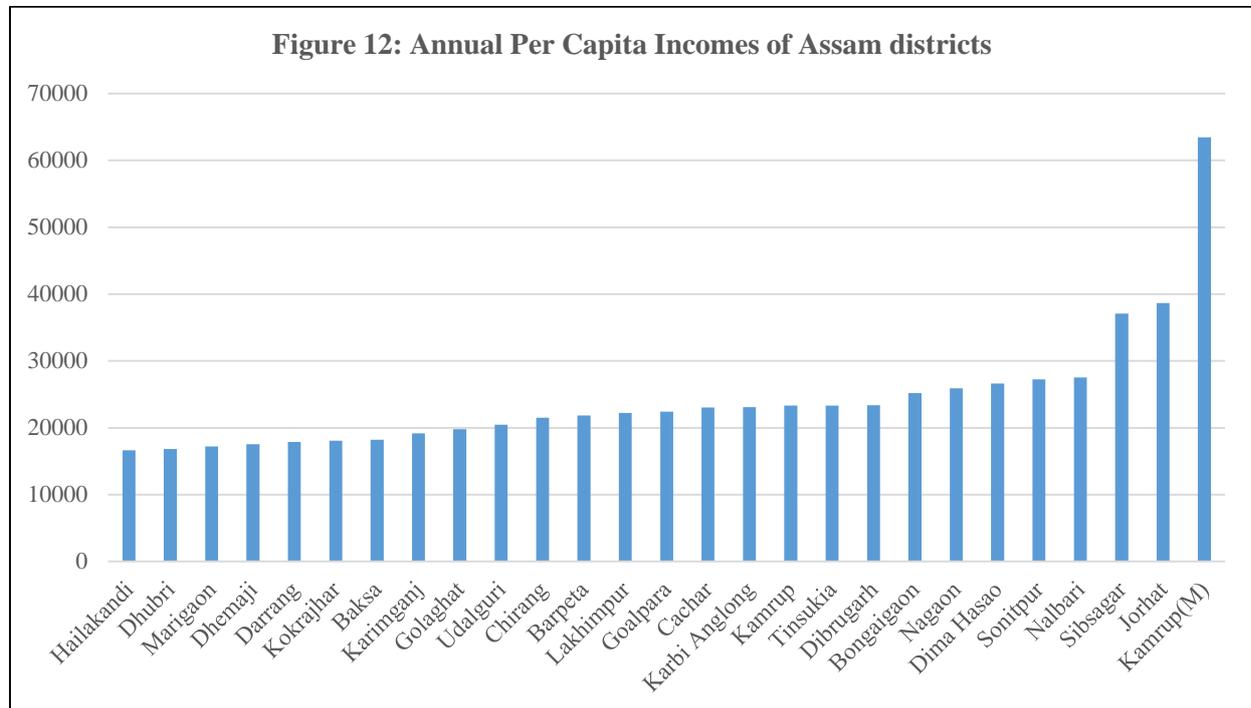
Indicator	Assam Baseline (Latest Year)	India Average (Latest Year)	Target (2030)	Source of Target
10.1 Ratio of average size of holdings of small and marginal farmers to semi-medium, medium and large farmers (%)	16.1 (2010-11)	14.2 (2010-11)	Increase	Assam 2030
10.2 Gini co-efficient of inter-district DGDP	0.16 (2014)	(not applicable)	Reduce	Assam 2030
<i>Source:</i> Landholding data computed from Economic Survey Assam 2014-15 for Assam and Agricultural Census 2010-11 for India. Gini coefficient computed from Assam HDR 2014 and population from Census 2011				

Size Classes (hectares)	Average holding size (hectares)
Marginal farmers (below 1.0)	0.4
Small (1.0-2.0)	1.4
Semi medium (2.0-4.0)	2.7
Medium (4.0-10.0)	5.2
Large (10.0 and above)	68.1
Source: Statistical Handbook Assam 2015	

The landholding pattern in the state is extremely unequal (Table 11). Small and marginal farmers who comprise the bulk of the rural population experiencing extreme poverty operate on farms whose average size (for both these categories together) is less than one sixth of the size of other larger farmers (i.e. semi-medium, medium and large). The sizes of small and marginal farmers are miniscule compared to large farms.

Another major source of inequality within the state is inequality in the levels of living in different districts of the state. In line with the objective in Assam 2030 of lowering inequality in all possible dimensions, spatial inequality of this nature needs to be reduced too. The ranking of districts by their annual average per capita incomes is shown in Figure 12. The three districts of Kamrup (Metropolitan), Jorhat and

Sibsagar stand out from the rest quite significantly. The corresponding Lorenz curve is presented in Figure 13, which yields a Gini inequality coefficient of 0.16. The target is set to bring down this Gini co-efficient over the years to 2030. Considering the existence of different deprived populations with varied socio-economic and geographical conditions in Assam such as Tea Tribe Areas, Char Areas, Border Areas, Forest Villages, and Slum Areas, a major challenge will be to bring them at par with the rest of the state within the medium term.



Source: Based on data from Assam Human Development Report 2014 and Census of India 2011

Goal 11: SUSTAINABLE CITIES AND COMMUNITIES: Make cities and human settlements inclusive, safe, resilient and sustainable

Assam 2030 envisions making cities, towns and villages all inclusive, safe, resilient and sustainable with access to adequate, affordable housing, transport system, urban amenities and clean environment for all. Three critical representative indicators have been adopted to monitor progress towards this Goal in Assam as shown in Table 12 below.

Table 12 Selected Goal 11 indicators				
Indicator	Assam Baseline (Latest Year)	India Average (Latest Year)	Target (2030)	Source of Target
11.1 Proportion of total urban population living in slums (%)	4.48 (2011)	17.36 (2011)	0.0	Assam 2030
11.2 Proportion of municipal solid waste treated to the total municipal solid waste generated in the state (%)	6.3 (2012)	12.5 (2012)	100.0	Assam 2030
11.3 Ambient Air Quality Index of Guwahati (PM10) average for Guwahati monitoring stations (in $\mu\text{g}/\text{m}^3$)*	257.8 (2013)	(not applicable)	100.0	Assam 2030 & CPCB Air Quality Index Standards
<i>Source:</i> Data on slum populations from Census of India 2011. Data on solid waste generated and treated from Central Pollution Control Board, Status Report on Municipal Solid Waste Management (Annexure C). Air quality data on Assam from Directorate of Economics and Statistics, Assam.				
*NB. In future years, this index will be converted to proportion of days in year exceeding the standard of 100.				

Although the urban slum population in Assam is low by overall Indian standards, creation of sustainable cities will require provision of decent housing for all urban residents as envisaged under Assam 2030. In order to achieve this, the slum population needs to be brought down from 4.48% to zero with all nearly 2.0 lakh slum population that exists in urban areas of the state being provided housing and care taken to see that no new additions to the slum population takes place.

Clean cities will need proper management and disposal of municipal solid wastes. Only about 6% of such solid wastes are now being properly treated and disposed of. Bringing this to full coverage (100%) by 2030 as envisaged under Assam 2030 will require additional waste treatment facility creation at a rapid rate.

The Air Quality Index for the State in general and Guwahati in particular, as per methodology evolved by Central Pollution Control Board, Delhi ranges from moderate to satisfactory during months of December to March and from satisfactory to good and occasionally excellent at certain locations during April to September every year. However, the mean of the range is still very high. Efforts need to be stepped up for regular monitoring of Air Quality and bringing it to “Good to Excellent” levels round the year to make Assam a state with the cleanest air quality.

Goal 12: SUSTAINABLE CONSUMPTION AND PRODUCTION-Ensure sustainable consumption and production patterns

Assam: 2030 targets to expand use of Life Cycle Assessment and Management for encouraging responsible production and consumption. This involves amongst others, the sustainable and efficient use of natural resources, reduction of waste and its recycling and reuse through environmentally sound industrial processes, and to put in place policy frameworks and statutory provisions for integrating compliance of sustainability principles by companies and industrial houses. No separate indicator is proposed currently under this Goal as several indicators (such as for renewable energy, lowering transmission and distribution losses under Goal 7) are already included under other Goals which support the objectives of Goal 12.

Goal 13: CLIMATE ACTION-Take urgent action to combat climate change and its impacts

Assam can contribute significantly to mitigating climate change through better preservation of its vast forest resources. This is discussed extensively under Goal 15. The major focus of attention under this Goal is on adaptation measures which are important for Assam as it is prone to natural disasters such as floods the severity of which is increasing. Three important indicators have therefore been adopted under this Goal as presented in Table 13.

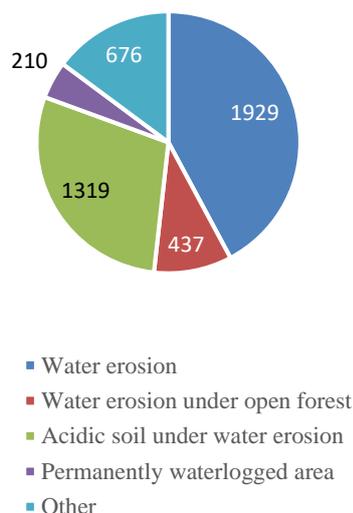
Indicator	Assam Baseline (Latest Year)	India Average (Latest Year)	Target (2030)	Source of Target
13.1 Proportion of cropped area affected by flood to the total cropped area (annual average) (%)	8.1 (2014-15)	(not available)	Halt and reduce	Assam 2030
13.2 Proportion of people affected by flood (annual average) (%)	11.7 (2014-15)	(not available)	0.0	Assam 2030
13.3 Proportion of area degraded and wasteland (%)	5.83 (2010)	3.66 (2010)	Halt and reduce	Assam 2030

Source: Directorate of Economics and Statistics, Statistical Handbook Assam 2015 for 13.1 & 13.2. For 13.3 ICAR, Degraded and Wastelands of India: Status and Spatial Distribution, Table 10. June 2010.

Assam 2030 emphasizes the welfare of all citizens of the State, especially the most vulnerable. In this category of persons falls those prone to climate and environment related hazards. These include people affected by floods living along river banks, embankments, disaster prone areas and in the vicinity of hazardous waste generating industries.

Floods are a perennial source of grief and hardship to thousands in the state. Thus efforts to halt and reduce the cropped area affected by floods in the State from the present level of 8.1% of the total cropped area; and bringing the proportion of people affected by floods from the present level of 11.7% to zero are major objectives to be achieved by 2030. Given that climate change appears to be increasing the ferocity and impact of floods yearly, these are challenges which will require considerable effort and resources to tackle.

Figure 14: Area (sq.kms) under different categories of soil degradation in Assam, 2010



Source: ICAR, Degraded and Wastelands of India: Status and Spatial Distribution, Table 10. June 2010.

Climate change and environmental damage is also taking a toll on soil quality and leading to soil degradation in a variety of ways. As much as 5.8% of the total land area in Assam has been classified by ICAR as degraded. Assam is particularly vulnerable due to floods and most of the land degradation in the state is the result of water erosion (see Figure 14).⁸ Efforts to arrest the rate of degradation and reverse it, is therefore a major objective.

Considering the above, the State Government has prepared a State Climate Change Action Plan (2015-2020) in conformity with National Climate Change Action Plan, which identifies the possible consequences of

climate change in the State and also outlines a plan for adaptation and mitigation, which focuses on management of water resources, management of flood and erosion, forest and biodiversity and enhancing energy use efficiency.

Goal 14: LIFE BELOW WATER-Conserve and sustainably use the oceans, seas and marine resources for sustainable development

This Goal aims towards conservation and sustainable use and development of oceans, seas and marine resources. However, as Assam is rich in inland water resources, protecting inland water systems is considered under this Goal.

Table 14: Mean of range of levels of total Coliform in tributaries of the Brahmaputra and Barak at locations with high concentrations

Indicator	Assam Baseline (Latest Year)	Target (2030)	Source of Target
14.1 Mean of range of total coliform levels of Dhansiri at Golaghat (MPN/100 ml)	7500 (2013)	Halt and reduce significantly	Assam 2030
14.2 Mean of range of total coliform levels of Bharalu at Guwahati (MPN/100 ml)	121000 (2013)	Halt and reduce significantly	Assam 2030
14.3 Mean of range of total coliform levels of Disang at Dillighat (MPN/100 ml)	10680 (2013)	Halt and reduce significantly	Assam 2030
14.4 Mean of range of total coliform levels of Kharsang before confluence with Buridhing (MPN/100 ml)	120000 (2013)	Halt and reduce significantly	Assam 2030
14.5 Mean of range of total coliform levels	11250	Halt and reduce	Assam 2030

⁸ICAR, Degraded and Wastelands of India: Status and Spatial Distribution, Table 10. June 2010.

of Barak at D/S of Silchar (MPN/100 ml)	(2013)	significantly	
<i>Source:</i> Statistical Handbook of Assam 2014			

Assam's rivers and inland water bodies are getting increasingly polluted. The indicators in Table 14 measure one representative pollutant, namely Coliform, as an indicator of pollution in the tributaries of the Brahmaputra and Barak, taken from samples with the six highest concentrations of the pollutant in the state. Presence of Coliform bacteria in high concentrations indicates possibility of discharge of human and animal wastes from untreated sewage systems. Such bacteria reduce the levels of oxygen in the water and kills aquatic animal and plant life.

Halting and reversing the increasing trend of Coliform and other pollutants (such as phosphates, nitrates and electrical conductants such as ions and cations from discharge of untreated agricultural, urban and industrial wastes) in the river systems and water bodies of Assam is essential through measures to treat effluents from all sources currently being discharged without adequate treatment. Periodic monitoring of water samples from rivers and water bodies will need to be carried out to observe the extent of success of such measures and to ensure that the target of halting and significantly reducing and ultimately eliminating such pollutants altogether is achieved.

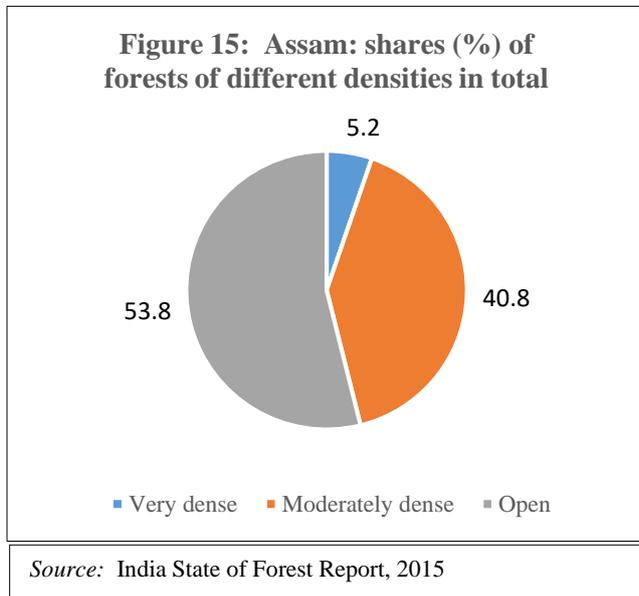
Goal 15: LIFE ON LAND-Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

The focus of this SDG is on protecting, restoring and monitoring sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests and wetlands; promoting sustainable management of all types of forests, halting deforestation, biodiversity loss and strengthening wildlife protection. The indicators to be used for monitoring progress on this Goal are presented in Table 15.

Indicator	Assam Baseline (Latest Year)	India (Latest Year)	Target (2030)	Source of Target
15.1 Proportion of area under forest cover (%)	35.22 (2015)	21.34 (2015)	Increase	Assam 2030
15.2 Growing stock of timber in notified forests and trees outside forest (million cubic meters MCuM)	176.7 (2015)	5768.4 (2015)	320.00 ⁹	Forest Department, Government of Assam

⁹Target set by Department of Forest, Government of Assam

15.3 Total area protected (national parks and wildlife sanctuaries) (sq. km)	3817.9 (2014)	516584.0 (2014)	Increase	Assam 2030
15.4 Number of tigers in the wild	167 (2014)	2226 (2014)	Increase	Assam 2030
<i>Sources:</i> India State of the Forests Report 2015 for 15.1 and 15.2; MoEFCC (cited in MOSPI MDG India Country Report 2015 Table 7.3 for 15.3; Status of Tigers in India 2014, National Tiger Conservation Authority for tiger population.				

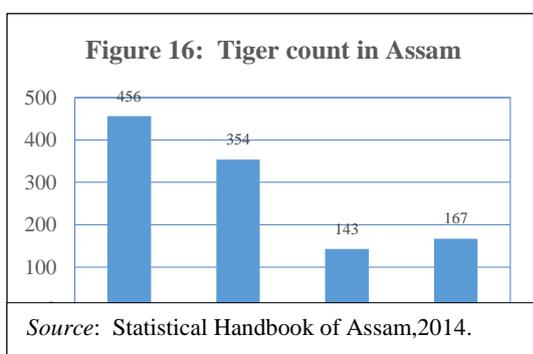


Assam can take a pride in the country with regard to its forest cover. With only 2.39% of the geographical area of the country, the state contributes to 3.27% of the total forest and tree cover of the nation. The area under forest cover is 35.21% of the geographical area of the state. However, not all of this area is of uniform density of forests. The areas under “very dense forest” and “moderately dense forest” constitute only 5.2% and 40.8% respectively of the total forest area and the majority (53.99%) is of “open forest” category which has density in the range of 10-40% only (Figure 15).

The forests in the state are facing serious challenges from encroachment and unregulated felling. Over 30% of the notified reserve forest area is presently under encroachment. As per State of Forest Report, 2015, Assam lost 48 sq. km of forest cover as compared to the assessment made in 2013. Assam: 2030 seeks a paradigm shift from joint forest management to community ownership of degraded forests, water bodies and wastelands outside notified reserved forests and protected areas for protection from encroachment, enhancing productivity and raising income of village communities. It also lays emphasis on massive afforestation and re-forestation.

Stress needs to be placed on enhancing the quality of the state’s forest cover, too. An indicator to monitor this is the total growing stock which is proposed to be increased from the baseline figure of 143 million cubic meters in 2015 to 320 MCuMs by 2030.

Protection of the state’s biodiversity is another major objective. An indicator to measure progress on this is the total area protected against biodiversity loss. This includes national parks and wildlife sanctuaries. The total area under these two categories was 3817.9 square kilometre in 2014. Assam has managed over the recent past to keep such areas protected with only very minimal loss. Like in the case of forests such areas should continue to be protected and expanded if possible.



Another important objective under this Goal is to expand the stock of wildlife in the state, many of which are under threat. Assam has a rich variety of wildlife such as elephants, rhinos, leopards and tigers,

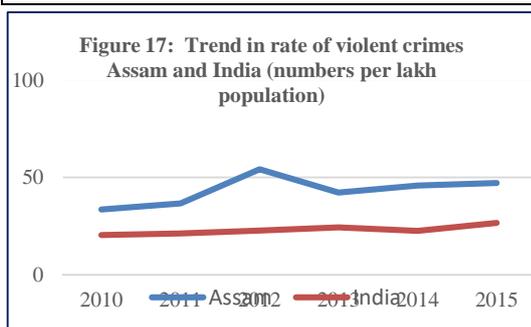
besides many endemic species of plants and animals. Of these, tigers were under threat of extinction with numbers dwindling. Recently however, there has been an increase due to intensive conservation measures (Figure 16). These efforts need to be further strengthened.

Goal 16: PEACE, JUSTICE AND STRONG INSTITUTIONS-Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

This Goal aspires to promote peaceful and inclusive societies for sustainable development; provide access to justice for all and build effective, accountable and inclusive institutions at all levels. Government of Assam considers these critical, since strong institutions provide the bedrock, and peace and justice the foundation, on which good governance systems are established and free, equitable and just societies prosper. Government of Assam is totally committed to providing corruption free, transparent & accountable governance, sensitive to the needs of the citizen and ever-vigilant to prevent violation of law or ethics. Providing effective, outcome-oriented and future ready governance is a major component of the state’s strategic architecture for actualisation of Assam 2030. The indicators employed to monitor progress on this Goal are presented in Table 16 below.

Indicator	Assam Baseline (Latest Year)	India Average (Latest Year)	Target (2030)	Source of Target
16.1 Total violent crimes (all forms) per lakh population	47.1 (2015)	26.7 (2015)	Halt and reverse	Assam 2030
16.2 Murders per lakh population	4.2 (2015)	2.55 (2015)	Halt and reverse	Assam 2030
16.3 Cases of human trafficking per lakh population	4.6 (2015)	0.5 (2015)	Halt and reverse	Assam 2030
16.4 Crimes against children (all forms combined) per lakh children	23.8 (2015)	21.1 (2015)	Halt and reverse	Assam 2030
16.5 Cases reported of crimes against women per lakh female population	148.2 (2015)	53.9 (2015)	Halt and reverse	Assam 2030
16.6 Pendency of trials of IPC cases at courts (%) ¹⁰	83.9 (2015)	85.8 (2015)	Reduce	Assam 2030

Source: National Crimes Records Bureau (NCRB) Report 2015



Source: National Crime Records Bureau Reports, 2010-2015

A key measure of the soundness of institutions and the quality of governance is the ability to maintain peace and control all forms of violence, particularly violence against vulnerable sections of the population such as children, and women. The indicators chosen will help in monitoring progress in control of crime in

¹⁰
$$\left[\frac{\text{Cases pending trial at year end}}{\text{cases brought forward from previous year} + \text{new cases brought to trial within the year}} \right] \times 100$$

general and specific crimes of particular concern, such as murders, human trafficking, and crimes against children and women.

As Figure 17 shows, incidence of violent crimes in Assam is currently nearly double that of India as a whole and also shows a higher rate of increase since 2010. The aim of the Government is to halt this trend and reverse it and bring it lower than national levels in case of all these five indicators by 2030.

Crime reduction does not involve only the police. Speedy dispensation of justice also plays a crucial role. The last indicator in Table 16 can be used to monitor the pendency of criminal cases in courts. Although Assam has a slightly better pendency situation compared to India as a whole measured by the cases pending at the end of a year as a percentage of the sum of cases brought forward from the previous year and new cases filed, it is behind several states in this regard. Andhra Pradesh for example, leads with a pendency percentage of only 63.7.

Goal 17: PARTNERSHIP FOR THE GOALS- Strengthen the means of implementation and revitalize the global partnership for sustainable development

In order to implement Assam 2030, the means of implementation have to be strengthened. The SDGs have particularly emphasized three areas where national action is also relevant: strengthening financial resources; utilization of science, technology (particularly ICT) and innovation; and capacity building, in particular statistical capacity building, to better monitor and assess progress on the SDGs.

Adequate availability of financial resources is essential to support achievement of the ambitious Goals of Assam 2030. One of the key measures to monitor progress in this area is the state's own tax revenue collection as a ratio of the state's Gross State Domestic Product. In 2013-14, this stood at 5.79 % compared to the All-State average of 7.74 %. An increase in this ratio during the implementation period of Assam 2030 is a major state priority.

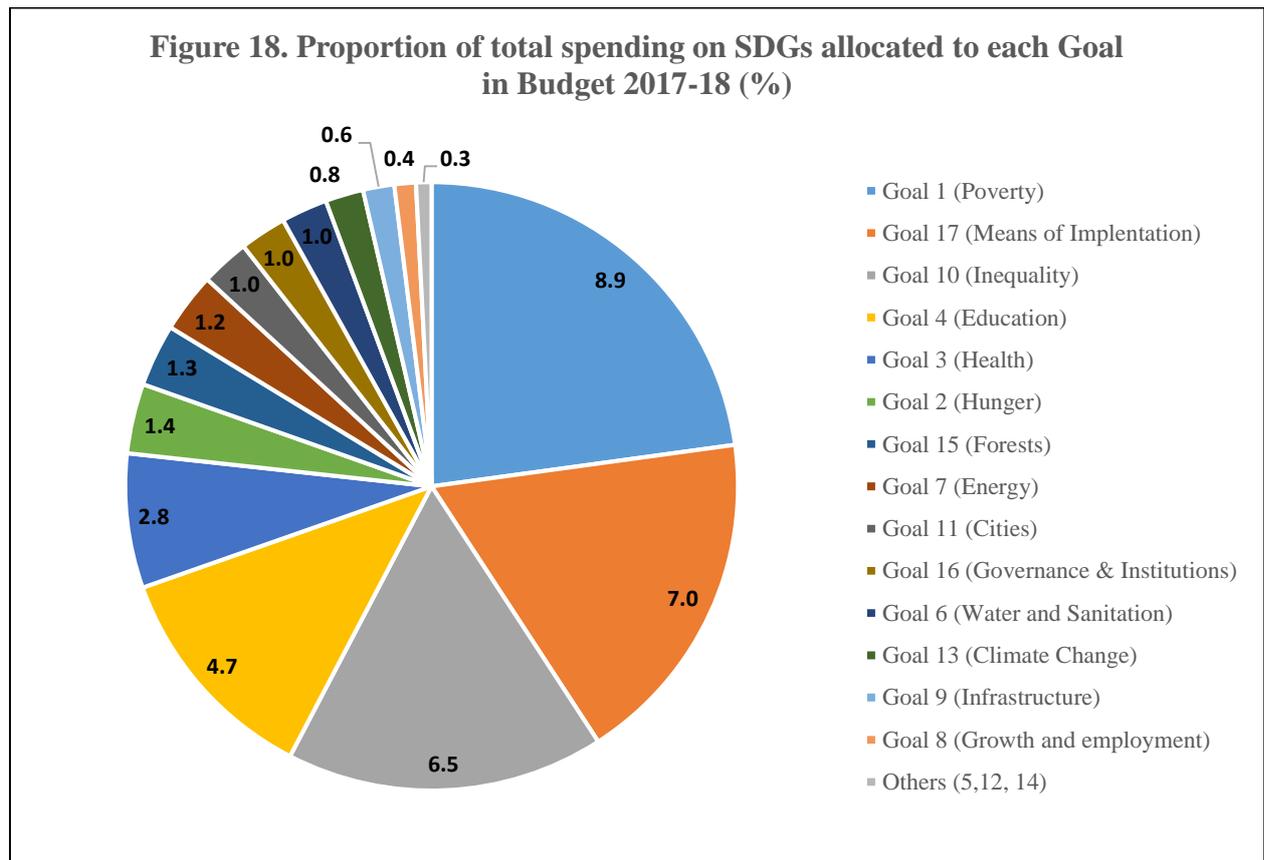
Table 17 Selected Goal 17 indicators

Indicator	Assam Baseline (Latest Year)	India Average (Latest Year)	Target (2030)	Source of Target
17.1 State's own tax revenue collection as a ratio of the state's Gross State Domestic Product (%)	5.79 (2013-14)	7.74 (2013-14)	Increase	Assam 2030
17.2 Share of SDG goals 1-17 in total expenditure budget (%)	55.6 (2017-18)	Not Available	Increase	Assam 2030

Source: Own tax revenues from Planning Commission data base downloaded from http://planningcommission.nic.in/data/datatable/data_2312/DatabookDec2014%20166.pdf; Assam Budget 2017-18.

Apart from improving resources, better and more productive utilization of expenditures is crucial. Assam has therefore developed an outcome budget based on linkages to the SDGs with every item of expenditure tagged to the SDGs and their subsidiary targets. Through this

exercise, it will be possible to track relative priorities placed on the Goals in the state's budget. For the 2017-18 Budget, 55.6% of the total expenditures were devoted to supporting the SDGs. The allocation of the total expenditure on the SDGs to each Goal is shown in Figure 18.



Source: Assam Budget 2017-18.

Improved technology (particularly use of ICT) and innovative practices can economize on the use of resources and make public service delivery (such as by introducing virtual classrooms and telemedicine) more efficient and of higher quality. Introduction of technology and innovations, supporting Assam 2030 need to be actively promoted and monitored. A suitable indicator will be developed and included within the core indicators of Assam 2030 to monitor progress on innovations.

Statistical capacity building to improve better information on each of the Goals and targets is essential to see where progress is inadequate and to speed up achievement through provision of resources and changes in policies, institutions and partnerships. It is therefore necessary not only to develop a key set of indicators which can be tracked regularly (at least annually) both at the overall state level as well as at disaggregated levels, disaggregated by (i) districts; (ii) gender; (iii) deprived groups such as SC/ST/OBC, tea garden labor, char area people etc. The earlier this is done, the earlier can effective policies be put in place to speed up implementation of Assam 2030.

Conclusions

This brief overview of the monitoring framework of Assam 2030: Our Dream, Our Commitment indicates that Assam has adopted an ambitious set of development goals, implementation of which will require preparation of appropriate development strategies, introducing changes to policies and institutions and allocation of adequate resources towards the fulfillment of these Goals both financial and human.

This monitoring framework is one among many crucial steps that the state government has adopted towards results based functioning to achieve Assam 2030. Others such as outcome based budgeting based on Assam 2030 Goals and targets demonstrate its clear commitment to bringing about innovations and changes to achieve a peaceful, prosperous and well-governed state where no one is left behind in the path to progress.