Gaps in the Wellbeing of Scheduled Tribes in Andhra Pradesh
Swarna Sadasivam Vepa

Centre for Economic and Social Studies, Hyderabad, and

Centre for Developmental Studies, Visakhapatnam

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Gaps in the Wellbeing of Scheduled tribes in Andhra Pradesh

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Introduction

The Scheduled Tribe population in the State is 27.39 lakhs as per 2011 Census. They constitute 5.53% of the total population of the State. According to National sample survey 2011-12, 82% depend upon agriculture. There are 34 Scheduled Tribes out of which 7 tribal groups are categorized as "Particularly Vulnerable Tribal Groups" (PvTGs). These tribes suffer from malnutrition. Out of the total population of 27.39 lakhs, 11.51 lakhs are in 5 Scheduled Area districts and the remaining 15.88 lakhs are living in 8 plain area districts. Wellbeing status of those living in plains is perceptibly better than those of hilly terrain. Andhra Pradesh is covered under the provisions of Vth Schedule of the Constitution of India (Govt. AP, Perspective Plan 2017).

The authority to create and administer Scheduled Areas, comes from the Fifth and Sixth Schedules of the Constitution of India. The Fifth Schedule protects tribal interests in the states other than Assam, Meghalaya, Tripura and Mizoram. Scheduled Areas are areas in India which contain more than 50% of tribal population and subject to special governance stipulations acts and mechanism. The central government plays a direct role in safeguarding the cultural and economic interests of scheduled tribes in these areas.

In the State of Andhra Pradesh, 'schedule five', areas extend over 14132.56 Sq. Kms. in five districts of Srikakulam, Vizianagaram, Visakhapatnam, East Godavari, and West Godavari, covering 4,737 villages. The tribal habitations in the State of Andhra Pradesh may be classified into three categories i.e., a) habitations located in interior & remote areas, b) habitations located on hill tops, c) habitations located in plain areas/river valleys. The tribes living in (a) & (b) categories are not having access many amenities due to the remoteness, and difficulty of the forested hilly terrain. There are 1512 scheduled Tribe habitations located in interior and remote forest areas of the state.

In view of the corona virus pandemic and possible inability of the health system and food security mechanisms reaching essential services to the vulnerable scheduled tribes in the category 2 and category 3 areas mentioned earlier, recognition of gaps in wellbeing and strengthening of public provisioning assumes importance. Most of the men women and children in these areas suffer from undernutrition.

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, (RoFR for short) was passed in India on 18 December 2006. It is known as the Forest Rights Act. The law gives rights to the forest-dwelling communities to own operate and manage forest land and other non-timber forest resources, denied to them over decades as a result of the continuance of colonial forest laws in India.

The Scheduled Tribe families of schedule five habitations of Andhra Pradesh were allotted lands under RoFR Act to the extent of 1, 98,000 acres and the same has been developed under Mahatma Gandhi National, Rural Employment Guarantee Scheme. (Gov. of AP tribal dept. Perspective Plan 2017). There are several legislations and

several mechanisms in place since independence to protect the scheduled tribes of India. Yet this social group remained as the most vulnerable and deprived in many states, except the North east. This calls for Gap analysis and informed planning and implementation to close the Gaps.

The Gap Analysis helps us to get an overview of gaps between desired outcomes, and the existing situation. Prioritization of the gaps that need to be closed depends upon the urgency and importance. Among the wellbeing aspect importance is indicated by the nature of the need which is to be fulfilled. Urgency can change depending upon the circumstances. For example, food and nutrition get top importance, followed by water and sanitation. However, in Summer water availability assumes urgency. If there is a pandemic, public health services become urgent. In normal times urgency depends upon the magnitude of the gap between the need and access. Gap analysis, appropriately used, could ensure achievable and measurable impact by an efficient use of the existing resource and allocation of more resources, where necessary. It helps identification of resource gaps and requirement of additional resource allocation. A detailed analysis identifies the service delivery gaps and monitoring gaps and governance gaps and policy gaps. More detailed the availability of data better would be the gap analysis.

With respect to Scheduled tribe population of Andhra Pradesh, the government recognized their low wellbeing status, and their vulnerability. Accordingly, several special schemes and assistance packages have been conceived and being implemented. There is also a monitoring mechanism in place.

In view of the vulnerability of schedule castes and scheduled tribes, the government of Andhra Pradesh has legislated a historic act in 2013 to ensure adequate resource
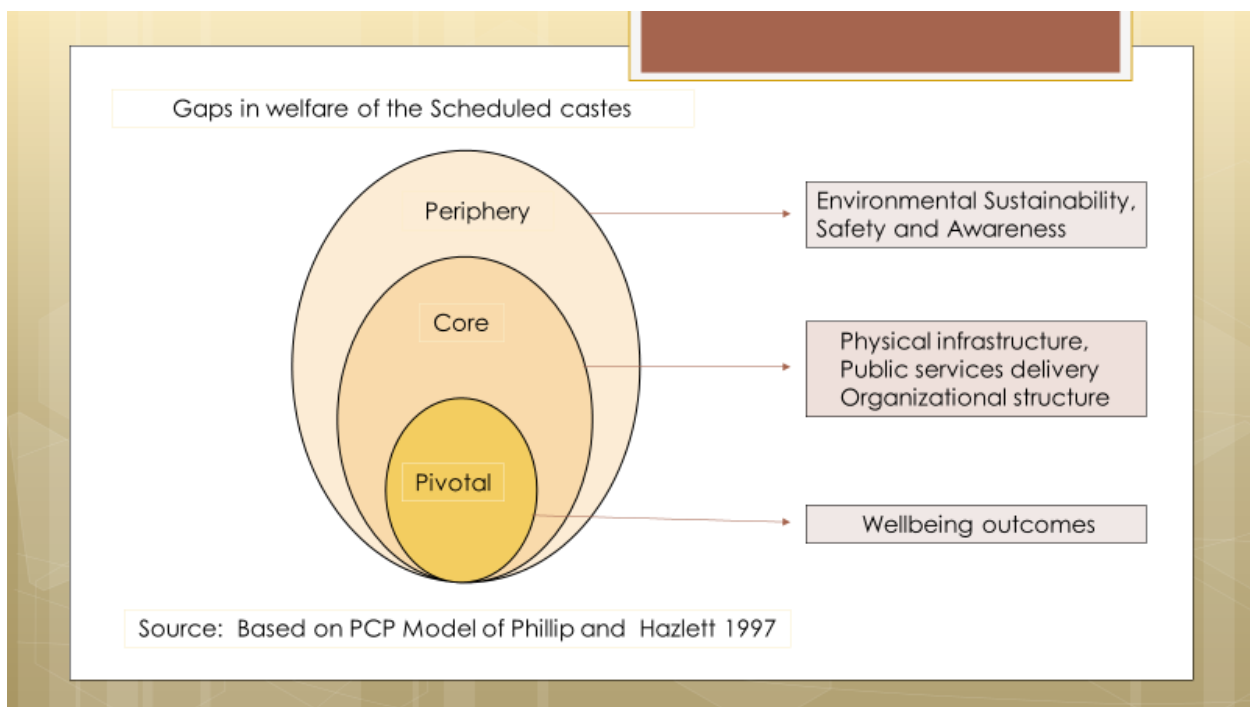
allocation. The Andhra Pradesh Scheduled Castes Sub-Plan and Tribal Sub-Plan (Planning, Allocation and Utilization of Financial Resources) Act, 2013 was enacted on 24th January 2013, to ensure, accelerated development of Scheduled Castes and Scheduled Tribes with emphasis on achieving equality in the next ten years. The focus is on economic, educational, and human development along with ensuring the security, social dignity, and equity. The act ensures earmarking a portion of the total budget out lay, in proportion to population of Scheduled Tribes in the State as the outlay of the Tribal Sub-Plan. In view of the emphasis laid on scheduled tribe welfare, a gap analysis also acts as assessment of the progress achieved so far. Such an analysis is important given the fact that 7 years have passed since the enactment and substantial progress is expected.

Welfare cannot be achieved in isolation. Gaps in one aspect of welfare will have repercussions on other areas of welfare. Constraints in one aspect may adversely affect other aspects or improvement in one aspect may make achievements of other aspects much easier. Hence there should be balance, compatibility, consistency and commitment at the policy level, program level, implementation level and law enforcement level within each aspect and across all aspects concerning the welfare.

Vast literature exists on the framework of Gap analysis. There are many ways in which a situation is viewed. The choice depends upon the nature of the problem studied, and data available. This report chose two simple frameworks appropriate for wellbeing gaps. The strategy for closing the wellbeing gap of scheduled tribes requires simultaneous balanced action on several fronts. Achievement of a few targets will not have any perceptible impact on the overall welfare. These aspects can be conceptually put in the 'Periphery, Core and Pivotal' (PCP) framework.

Wellbeing may be categorized into three broad areas and conceptualized as being interrelated to each other. The **pivotal** (or essential) aspects are the wellbeing outcomes that define the physical wellbeing of the target group. The **core** is the infrastructure created and organizations designed to deliver public services to achieve the wellbeing outcomes. The periphery is an enabling atmosphere for wellbeing. It includes environmental and livelihood sustainability, promotion of equity, to prevent extremism. The target population's wellbeing is achieved only when the pivotal, the core and the periphery are in harmony with each other. This can be represented in the diagram (Fig. 1) given below.

Figure 1

Gaps in welfare of the Scheduled castes

Periphery → Environmental Sustainability, Safety and Awareness

Core → Physical infrastructure, Public services delivery Organizational structure

Pivotal → Wellbeing outcomes

Source: Based on PCP Model of Phillip and Hazlett 1997

This is the broad framework. The gaps need to be filled in all the three areas. Each area must be defined.

The **pivotal** (essential) wellbeing outcomes are the expected levels of nutrition, literacy, income, livelihoods, assets, and access to housing with basic household amenities. The difference in the expected outcome and achieved outcome is the assessed gap. Wellbeing outcomes are ultimate hall mark of capability enhancement and welfare gain of the target group. They are like basic needs.

Certain **core** aspects related to governance should be in place to achieve and sustain the above essential wellbeing outcomes. The necessary infrastructure and the quality of public service delivery constitute the core. The gaps in the expected infrastructure and the infrastructure available on one hand and the gaps in public services quality expected and the service quality delivered (performance expectation gap) on the other must be closed.

Infrastructure gaps pertain to road connectivity, transport facility, street lighting, waste disposal structures, electricity generation/distribution network, water supply facilities such as pipelines or bore wells and so on, located within the tribal habitations

The major services relate to food distribution and supplementary nutrition services and mid-day meals (PDS, ICDS, MDM), water supply, sanitation, electric supply rvices, educational services[1], health services, financial services and market services.

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[1] Educational services are different from educational outcomes. Educational outcomes tell us about the present status of literacy and educational achievements. Educational services on the other hand show the facilities available and actions taken to spread education among Scheduled tribe children.

Efficient public service delivery needs adequate, well trained staff. Often the tribal areas experience inadequate staff. Efficient working of the administrative system to deliver basic services determines the service quality. Special Organizations created for scheduled tribes such as Scheduled caste co-operative finance corporation, Girijan cooperative corporation, Integrated Tribal development agency, Andhra Pradesh Forest Development Corporation, etc., are expected to solve the specific problems faced by scheduled castes.

There are certain enabling aspects and conditions that constitute the **periphery.** They not only enhance livelihood capability and wellbeing, but also facilitate effective public provisioning. Livelihood sustainability depends upon the prevailing conditions of equity, protection of legal rights, political rights, and a life without conflict. Environmental sustainability of the tribal areas and awareness about the opportunities created by development activities are vital for the success of the core activities. Periphery helps the core to achieve the pivotal. Gap between expected enabling conditions and the actual conditions show the gaps that can either constrain wellbeing or enhance wellbeing.

The framework given above in its entirety constitutes the framework of wellbeing Gap analysis. It requires collection of data through a representative sample from all parts of the state, on all the aspects pertaining to the scheduled tribes. In the absence of such an expensive effort, the report makes use of the secondary data sources to estimate the gaps. Secondary data sources have a disadvantage. The surveys which are representative of the entire population of the state adopt a proportional sample and the sample size of the scheduled tribes tend to be small. The sample is not representative at the district level and Mandal level. The only data that gives some

information at the district level on scheduled tribes is census data of 2011, which is outdated. The report extensively uses the recent National Family Health Survey data of 2015-16, along with other sources for state level analysis. Report uses data from Government of Andhra Pradesh publications and others from journals.

Next, we develop the focus areas of wellbeing and base line indicators of present status and measure the gaps in outcomes and other wellbeing aspects. Of the eight focus areas listed below, one to five constitute the essential or pivotal, six and seven focus areas constitute the core and the eighth focus area refers to periphery.

Following eight focus areas have a bearing on the wellbeing of the scheduled tribes.

1. Nutrition Status of Adults
2. Nutrition status of children under five
3. Poverty levels, literacy levels and educational achievements
4. Access to basic amenities of Drinking Water, Toilets, Electricity for lighting, Fuel for cooking
5. Ownership of Land, Housing and Mobile phones
6. Physical infrastructure access at the habitat level such as road connectivity, sewerage & drainage connections, drinking water supply, electricity, streetlights if electricity is available.
7. Quality of Public services delivery - health service, education services, food distribution service, financial services, market services. Organizational arrangements administrative efficiency.

8. Access to Common property resources, environmental degradation, displacement by river projects and lack of safety due to leftwing extremists.

The report has three chapters in addition to the introduction and recommendations. First chapter analyses the gaps in wellbeing outcomes of the scheduled castes (aspects 1-5 listed above). The second chapter analyses the gaps in the habitat infrastructure and gaps in public service delivery of health and educational services and other services within the limits of the data availability. The third chapter briefly discusses tribes of Andhra Pradesh and particularly vulnerable groups. It also covers issues related to livelihood sustainability and environmental sustainability of tribal areas. It is mostly a descriptive section, and narrative due to the lack of data to assess the gaps. The report presents recommendation based on the conclusions in the end.

Chapter One

Gap Analysis in Wellbeing outcomes

Specified indicators for each wellbeing aspect show the magnitude of gaps between expected status and the actual status of the scheduled tribes. Magnitude of the gap, and importance of the focus area together determine the priority for implementation. Non availability of data at the disaggregate level prevent wellbeing assessment at habitat level and tribe level or district level. We could only make state level assessment.

1.1 Data and Methodology

Data for the report comes from a variety of National Surveys, government reports and published and unpublished studies undertaken by the Centre for Economic and Social Studies, Hyderabad, and studies compiled by other researchers. All the material used has been properly referenced in the report. The advantage of the NFHS-4 data is its most recent recorded status. The disadvantage is that it excludes the population older than 50 years that constitute a substantial proportion of the population for some aspects, though it has collected limited household level information.

The eight aspects fit into the framework of Pivotal, Core and Periphery (PCP) framework, defined earlier. The framework mainly conveys the important point that the system in entirety, delivers welfare. Piecemeal approach will not help to achieve the desired welfare.

Quality service depends upon the basic infrastructure built for the service delivery such as primary health centers, hospitals, schools, banks, and so on. It requires staff with knowledge and ability to perform the service, responsiveness to the consumer/target population needs, and attention to complaints. These aspects are difficult to assess. Some services are high intensity interaction and low customization such as education, Others are low intensity interaction and low customization as with water supply and supply of electricity. There are some services that need high intensity interaction and high customization as in health care services.

Monitoring Information System (MIS) suited for a specific service should be put in place. MIS alone is of no use if there is no midcourse correction based on the

indications of failure. Knowledge, competence, responsiveness, commitment, honesty and discretion of the public authorities result in an efficient public delivery system. Last but not the least is empathy which involves caring for the people to whom the service is provided. At present this aspect cannot be measured from the secondary data. Lack of empathy and indifference to the people leads to a deterioration of public service quality. The core of wellbeing consists of people, processes and ability of the target population to negotiate effectively with the public provisioning authorities.

Gap at any level will adversely impact the welfare and make the target group vulnerable. If the actual service delivery is of the expected and intended quality, wellbeing of the targeted population is enhanced. Not only the quality of the end-product or service delivered by the public provisioning but also the way it is delivered makes a difference to the wellbeing of the target population. Public service disruptions, organizational dysfunction, technical glitches in delivery, lack of information to monitor breakdown in service, absence of empathy to consumer needs renders public provisioning ineffective and reduces the wellbeing of the target population in the long run. Environmental sustainability of tribal areas that promote livelihood sustainability, safety of the tribal population in extremist dominated areas, awareness creation that enhances utilization of public services, enhance the welfare of the scheduled tribes and enable them to get optimal benefits from the public provisioning.

The outcome gaps are easier to measure as the standards of expected target outcomes are well established. The service quality of public provisioning is more difficult to measure due to the lack of data. Most of the studies on service quality, measure gaps

between the expectation of the service and the perception of the service delivered, based on the consumer sample surveys specially conducted to assess the gaps. The report uses two methodologies for Gap Assessment. The first one is for wellbeing outcomes (Focus areas 1-5), which may be referred to as Wellbeing Outcome Gap Index. The second method is used to assess the Habitat infrastructure gap (Focus area 6) and the public services such as health services, educational services (Focus group 7). These methodologies can also assess the gap in access to services between different geographical areas. Paucity of data at district level did not allow us to compute such an Index.

Methodology to assess Wellbeing Outcome Gaps

Wellbeing for the sake of simplicity may be conceptualized as a "good" that has several attributes. The attributes are measurable in terms of specified indicators. We apply a modified version of evaluated performance framework (Nitin Seth et.al 2005, Teas 1993) to assess the wellbeing outcomes of scheduled tribe population in the state of Andhra Pradesh. The assumption is that an individual or community or development authority can evaluate welfare "I" with certainty, and it has certain attributes of specified quantity

$$Q_i = -1 \left(\Sigma^m_{j=1} W_j \mid (A_{ij} - I_j) \mid \right)$$

Where,

Q_i = Quality of Wellbeing of the target group

W_j = Importance of the attribute j

j = Attributes/ Indicators of Wellbeing

m = Number of attributes

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A_{ij} = Percentage of the attribute 'j' of wellbeing 'i 'experienced by the target group

I_j = The ideal amount of attribute 'j' of Wellbeing 'I' conceptualized

This method suits the evaluation of wellbeing outcomes. The report uses this formula to measure the essential (pivotal) wellbeing outcome gaps of scheduled tribes. Indicators of wellbeing outcomes in the five focus areas (1-5) listed above constitute the wellbeing attributes. Gap magnitude (urgency) ranking and the ranking of the indicators by importance together decide the priority.
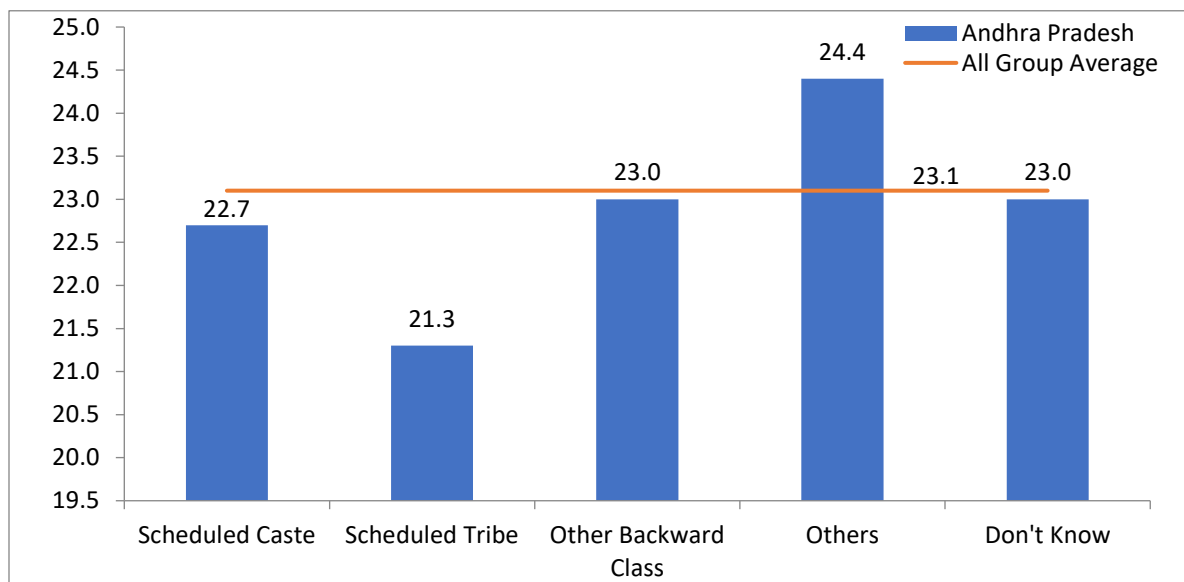
This measure is nothing but a simple calculation of weighted wellbeing gap Index. This enables an understanding of the overall welfare gap as well as the gaps in individual outcomes. If we do not want an aggregate measure, we may simply look at the individual indicator gaps and relate them to the action plan.

1.2 Gaps in Nutrition Status of Adults and Children

Generally, the age group of 15-49, rather than the age group of 20 years and above assumes importance. The improvement in Heights and BMI, of adolescents and young women who may conceive in near future, and the expectant and lactating mothers reflect the nutrition improvements achieved and transmitted to the future generations - children to be born and those born. Recent NHHS-4 data for Andhra Pradesh, shows the gaps in BMI and Heights across the social groups for women and men of the age group 15-49. Average BMI of the scheduled tribes is the lowest both for men and women as shown in figure 1.1. Against an average BMI of 23.0 for women of all groups the average for scheduled castes is only 21.3. It is not any better for men. The BMI of scheduled tribe men is only 21.1 compared to 23.9 for all men of this age group. The gap is very large (Figure 1.2). Chronic energy

deficiency of BMI level lower than 18.5 among women as well as men is the highest for Scheduled tribes compared to other social groups. About 28% of both men and women are chronically energy deficient. Among the severely energy deficient of lower than 17 BMI level, there are more women than men (Table 1.1 and Table 1.2).

Figure 1.1: Mean BMI of Women in Across Caste in Andhra Pradesh

Source: NFHS-4

Table 1.1				
Pect. of women aged 15-49 with specific body mass index (BMI) levels,				
	Body Mass Index Levels			
Caste/tribe	**<18.5 (total thin)**	**<17.0 (moderately/ severely thin)**	**> 25.0 (overweight or obese)**	**> 30.0 Obese**
Scheduled caste	19.8	8.1	30.7	7.7
Scheduled tribe	28.8	11.9	21.5	6.1
Other backward class	17.8	7.4	32.8	10
Other	12.0	5.5	39.6	14.7
Total age 15-49	17.6	7.4	33.2	10.3
NFHS-4 2015-16				

Figure 1.2 :Mean BMI of Men in Across Caste in Andhra Pradesh
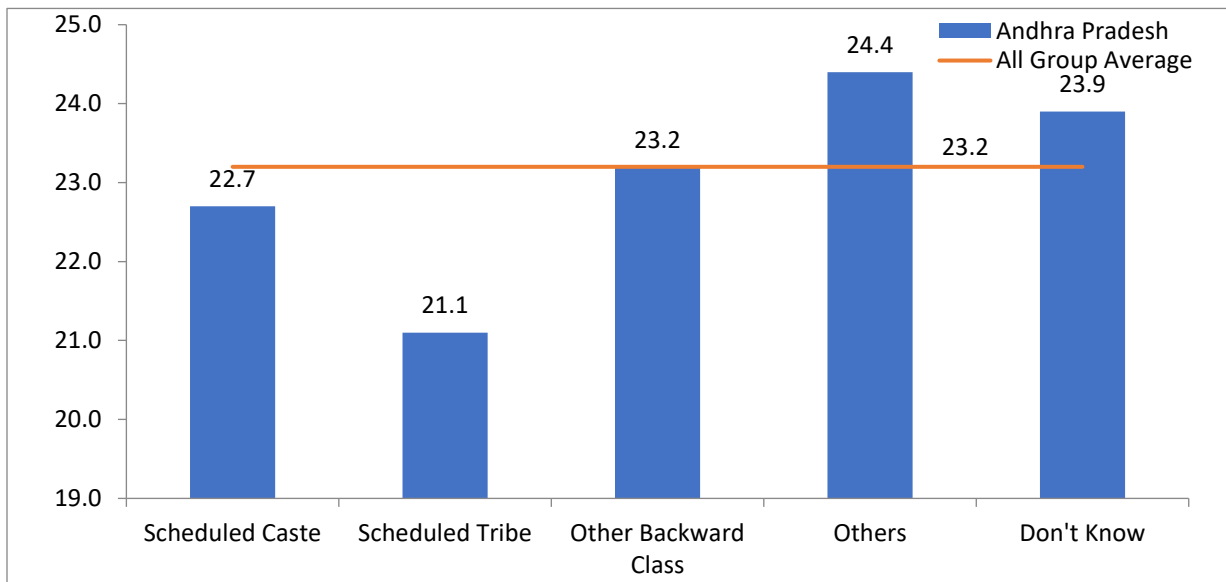
Source: NFHS-4

Table 1.2				
Pect. of Men aged 15-49 with specific body mass index (BMI) levels				
	Body Mass Index level			
		<17.0	> 25.0	
Caste/tribe	<18.5	(moderately/	(overweight	> 30.0
	(total thin)	severely thin)	or obese)	Obese
Scheduled caste	15.6	5.4	30.8	5.5
Scheduled tribe	28.3	8.6	14.3	1.5
Other backward class	13.7	5.1	33.4	7.6
Other	13.0	6.0	40.9	11.2
Total age 15-49	14.8	5.6	33.5	7.7
NFHS-4 2015-16				

Height is also an indication of Nutritional achievements of adults and an indication of intergenerational nutrition improvement. It is also closely related to the cognitive skills of people at an average level. With respect heights, scheduled castes appear to be disadvantaged. Average heights of men and women of 15-59 show that scheduled tribe women and men have the lowest average height compared to others. (figures 1.3 and 1.4).

Figure 1.3: Mean Heights of Women in Across Caste in Andhra Pradesh
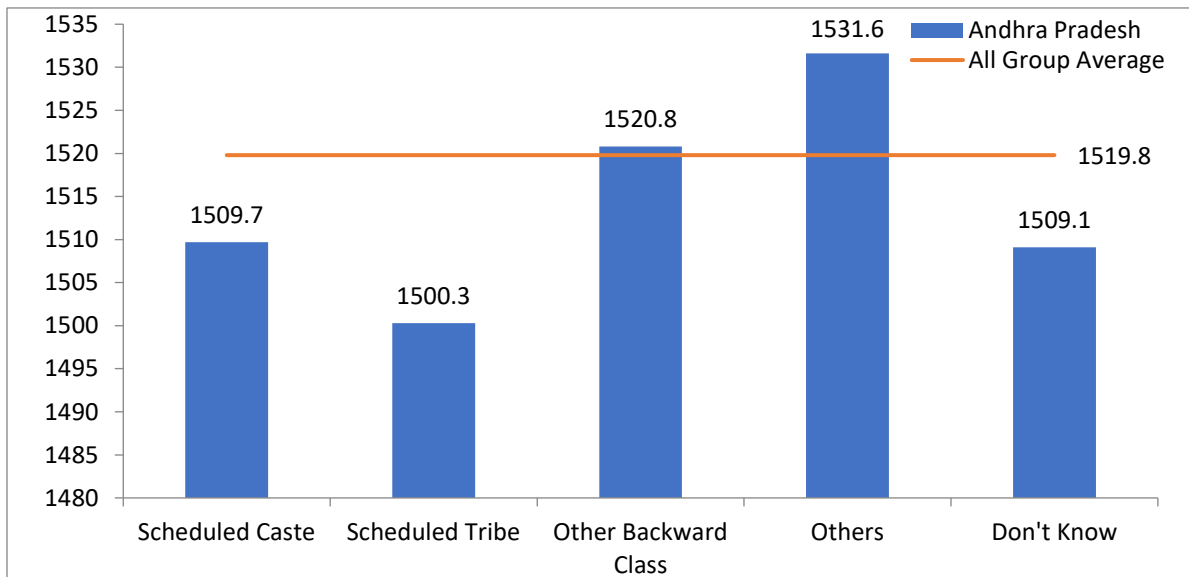
Source: NFHS-4

Figure1.4: Mean Heights of Men in Across Caste in Andhra Pradesh
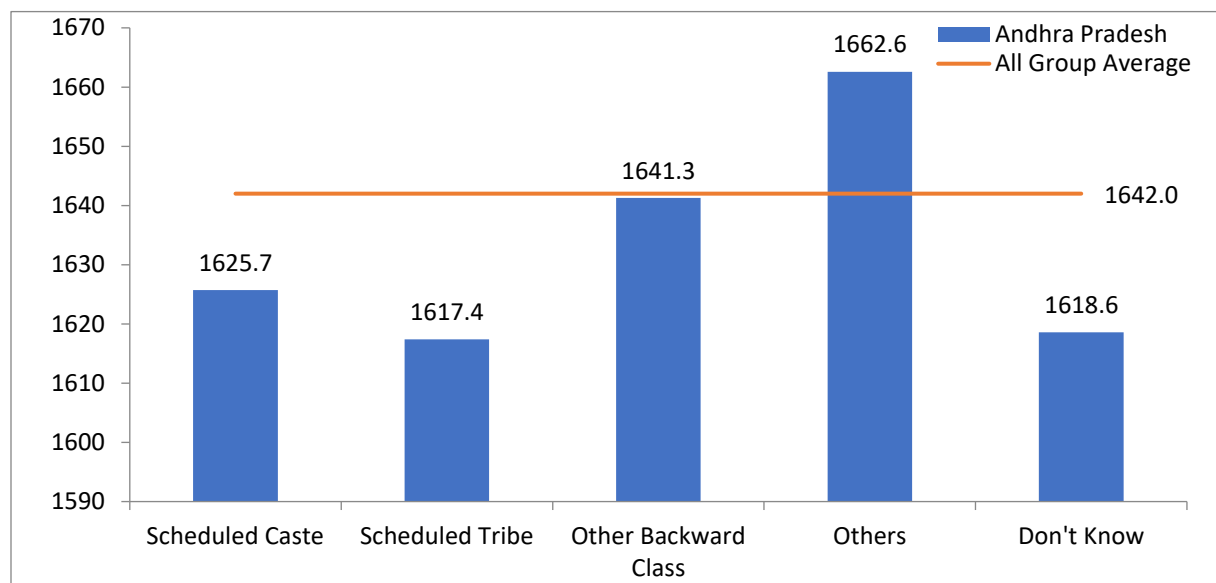
Source: NFHS-4

Gaps in Nutrition Status of Children under the age of five years

Child mortality rates Infant mortality, neonatal mortality rates and maternal mortality are important indicators of risks of survival. The measure of mortality rates of children from birth to age five is number of deaths per 1000 live births. The measure of Maternal mortality is number of deaths per 100000 live births. Andhra Pradesh Schedule tribe population has an infant mortality rate of 68 per thousand and maternal mortality rate of 195 per 100000, according to perspective plan of Tribal department. Unicef 2019 gives 30 as the average for Infant mortality and 145 as the maternal mortality rate for India. The SDG goal for maternal mortality is 70 and under five mortality is 25 and neonatal mortality is 12.

Underweight and wasting incidence is highest among the scheduled tribe children in Andhra Pradesh at 47.4% and 26.6% respectively. Both the adults and children appear to be undernourished among the scheduled tribes. This is a serious basic deprivation.

Table 1.3			
Percentage of children under five who are stunted, wasted and underweight			
	Height for Age	Weight for height	Weight-for-age
	Percentage	Percentage	Percentage
Caste/tribe	below	below	below
	-2 SD2	-2 SD2	-2 SD2
Scheduled caste	33.0	17.6	35.3
Scheduled tribe	31.7	26.6	47.4
Other Backward Class	32.9	17.1	30.7
Other	25.2	14.0	26.3
All	31.4	17.2	31.9
Source: NFHS-4 2015-16			

1.3 Gaps in Poverty, livelihoods and literacy and educational achievements

Undernourishment among scheduled tribes is due to their poverty, which appears to have remained high. According to the National Sample survey 2011-12, the incidence of poverty was the highest among the scheduled tribes. More recent data of 2016 has not been published. Judging from the high level of under nutrition, it appears that poverty is still very high. The latest data on poverty pertains to 2011-12 National Sample Survey data. Poverty rate was very high among tribal population, at about 31%, while it was very much lower at 11.6% for the state. This is a very big Gap (Table 1.4)

Table 1.4: Poverty in Andhra by Social Groups						
Social Groups	Rural 2004-05	Rural 2011-12	Urban 2004-05	Urban 2011-12	R+U 2004-05	R+U 2011-12
SC	38.54	13.61	38.3	15.97	38.49	14.02
ST	62.49	31.27	48.2	26.09	61.00	30.73
OBC	34.02	10.32	28.6	10.69	32.61	10.42
OC	16.17	5.84	19.54	6.94	17.25	6.23
Source: NSS 61st round (2004-05) and NSS 68th round (2011-12)						
CESS MDG Report for Andhra						

Livelihood Options

Sector-wise distribution of population as per NSS 2011-12 survey clearly shows that higher percentage of scheduled tribes are engaged in agriculture than scheduled castes, other back ward classes and the other castes. Most of the scheduled tribe work force, (80.8%) in 2011-12 was engaged in agriculture and only 3.0% were in the service sector. The percentage of those in agriculture to the total Scheduled tribe workers slightly went up from 79.4% in 2004-05 to 80.8% in 2011-12 (Tables 1.5 and 1.6) (Table numbers will be changed later)

Table 2.2				
Sector-wise Employment				
2004-05				
Social group	Agriculture	Industry	Services	All
ST	79.4	6.8	13.8	100
SC	72.4	11.4	16.2	100
OBC	56.1	18.9	25.0	100
Others	54.7	14.1	31.1	100
All	59.9	15.4	24.7	100
Source: NSS 61st round (2004-05) (Unit record				

Table 2.3				
Sector-wise Employment				
2011-12				
Social group	Agriculture	Industry	Services	All
ST	80.8	16.2	3.0	100
SC	67.1	25.6	7.3	100
OBC	54.9	31.6	13.5	100
Others	42.9	40	17.1	100
All	56.3	31.3	12.4	100
Source: NSS 68th Round (2011-12)(unit records)				

Literacy levels

Literacy rate was low among scheduled tribes at 48.8% as per the 2011 census. It improved from a low of 38.5 % in 2001 (Table 1.7). As per the NFHS-4 data of 2015-16, those with education among Scheduled tribes was 54.65%. The literacy rates have improved since 2011 due to the universal education drive and school enrollments undertaken (Table 1.8).

However, some caution is required. As per the 2011 census data for residual Andhra Pradesh the literacy rate was 67.4%. As per NFHS-4 data of 2015-16 the percentage of population with education works out to 64.51%, lower than census figure due to the exclusion of population above the age of 50 years. As per the education level data of NFHS-4, only 6% of the scheduled tribes in the age group of 15-49 had higher education (Table 1.8).

Table 1.7									
Literacy rates of Schedule Tribes									
2001 Census	Total			Rural			Urban		
Scheduled Tribes	Persons	Male	Female	Persons	Male	Female	Person	Male	Female
Andhra pradesh	39.3	48.5	30.0	37.9	47.1	28.6	53.5	62.4	44.2
India	47.1	59.2	34.8	45.0	57.4	32.4	69.1	77.8	59.9
2011 census									
Andhra pradesh	48.8	56.9	40.9	46.6	54.7	38.6	64.0	71.3	56.6
India	59.0	68.5	49.4	56.9	66.8	46.9	76.8	83.2	70.3

Table 1. 8: Distribution of social groups by education levels						
Levels of Education	SC %	ST%	OBC%	Other%	don't know	Total %
No education	39.30	45.35	36.76	26.92	38.14	35.49
Incomplete primary	12.20	13.53	13.18	11.76	20.10	12.73
complete primary	6.89	7.19	8.05	8.24	10.82	7.84
incomplete secondary	28.36	23.81	28.52	32.27	24.23	29.06
Complete Secondary	4.66	4.03	4.56	5.88	2.06	4.83
Higher education	8.48	6.00	8.83	14.83	5.15	9.95
don't know	0.12	0.09	0.10	0.12	0.00	0.10
Total	100.00	100.00	100.00	100.00	100.00	100.00
Source: NFHS-4 Unit level data						

Instead of the gaps in enrollments, which do not tell us the quality of education, in this chapter we consider the achievement scores of the tenth-class students in 2015-16 that show the quality gaps as outcome indicator. The second chapter on educational services uses the enrollment data. The quality of education at tenth grade, reflects not only the past school outcomes but also the suitability of the students for higher education. However, the data only pertains to government schools and government aided schools. Since a large percentage of scheduled tribe children only attend government schools, exclusion of other schools does not matter much. Yet, this may underestimate the gap between the quality achieved and the

potential that can be achieved. There is no benchmark for the target quality. To reduce the under estimation of the gap calculation, the report uses the average achievement scores of ICSE schools for English and Mathematics given in the report. The benchmark can be the average achievement scores of Indian Certificate of Secondary Education (ICSE) schools which stands at 372 for English and 315 for mathematics. Scheduled tribe students received the lowest scores (Table 1.9).

Table 1.9				
Educational achievement scores for class 10 in Andhra Pradesh				
caste/tribe	SC	ST	OBC	OC
English	238	231	237	245
Mathematics	247	229	250	263
Source: MHRD, Education statistics at a Glance				

1.4 Gaps in Asset Holdings

Some important asset holdings of the Scheduled tribe population determine the capability to overcome adverse situations. The most recent available data from NFHS-4 shows the assets of people from 15-49 (Table 1.10). As per the table, scheduled tribes are better off as to the house ownership and land ownership. About 31% of the people own land in tribal areas. Ideally it must be much higher because 81% the tribal households depend upon agriculture compared to only about 56% dependent on agriculture in the state. Being in remote locations, they do not have a chance of multiple sources of income. Originally the entire forest land was available to them. Recently land alienation due to mining, forest laws and acquisition of land for river projects deprived them of the access to land. Implementation of the forest rights Act of 2006 and allotment of forest lands to tribal people probably resulted in

higher level of land ownership by scheduled tribes compared to other social groups. According to the perspective plan of the department of tribal welfare about 47% of the tribal households in the plains do not own any land. Polavaram project land acquisition also resulted in land alienation of tribal people in the plains. Further we do not know the productivity of the land. We also do not know if they get remunerative price for the produce from the lands. Despite of the enactment of forest rights in 2006, the 2011-12 national sample survey data shows highest incidence of poverty among the scheduled tribes.

Conscious efforts may have been made in the hilly and forested areas for over a decade or two, to wean away the tribal population from left wing extremism through development activities. Land allotment was one of them. One of the issues of discontent was land alienation of tribal people.

Table 1.10			
Asset Ownership: Andhra Pradesh 2015-16			
Pect. of Men & Women aged 15-49 who own singly or jointly			
Caste/tribe	House	Land	Mobile phone
Scheduled caste	46.2	27.6	30.2
Scheduled tribe	50.9	30.8	18.6
Other backward class	42.8	25.2	36.8
Other	37.5	27.3	44.5
All	42.7	26.4	36.2
NFHS -4: 2015-16			

The percentage of Scheduled tribe households with owned houses for the state as whole was only 5.71% as per the 2011 census data and Visakhapatnam district has reported a largest percentage of scheduled tribe households with owned houses at 19% (see Appendix table 1.0). According to the NFHS-4 data of 2015-16 about 51%

of men and women of the age group of 15-49 own, houses either singly or jointly. Census data gives household ownership and NFHS-4 gives the individual ownership and hence the figures of not comparable. Yet improvement in house ownership is apparent. The state government perspective plan 2017 puts it at 44%. The improvement in house ownership for scheduled tribes is due to the construction of houses under house construction schemes such as Indira Gandhi Awas Yojan. under Congress government, NTR housing scheme under Telugu Desam, and YSR, housing scheme in the present government. The continuing schemes of building houses for the poor by the government is noteworthy.

Mobile phone ownership is the lowest for scheduled tribe households. Their communication ability would be hampered due to the lack of ownership of mobile phones. It is probably due to lack of cell towers in remote areas (Table 1.10).

Most of the houses in the state are pucca houses. If we disaggregate by social groups, we find that scheduled caste population have fewer pucca housed compared to others. About 62% live in pucca houses and about 28% live in semi pucca and a about 10% live in kutcha houses. Despite the effort to build houses for the poor scheduled tribes benefited less compared to other social groups (Table 1.11).

Table No. 1.11					
Type of housing by social group					
House Type	SC%	ST%	OBC%	Other%	All
Kachha	5.40	9.66	2.00	0.94	2.83
Semi-pucca	17.07	28.60	12.77	8.43	13.46
Pucca	77.53	61.74	85.22	90.63	83.71
Total	100.00	100.00	100.00	100.00	100.00
Source: NFHS-4 2015-16					

Ownership of TV sets and motor vehicles

Compared to other groups, fewer Scheduled tribe households, own vehicles. It could be partly due to inadequate road connectivity and internal roads. About 19.91% of the households own a motorcycle or scooter. Only 0.04% own car or truck. Less than 20% of the ST households, own vehicles as against 40% of the households in Andhra Pradesh who own vehicles (Table 1.12). Since electricity is available in 96% households as per NFHS-4 data, colour television sets are owned by 61.58% households as against 85.52% of all households in the State (Table 1.13).

Table No.1.12: Ownership of Motorcycle/Scooter/Car/Truck						
Has Motorcycle/ Scooter	Scheduled castes	scheduled Tribes	Other Backward classes	Other castes	Unknown	Total
No	72.32	80.09	61.97	47.09	71.13	61.59
Yes	27.68	19.91	38.03	52.91	28.87	38.41
Total	100	100	100	100	100	100
Has Car/Truck	Scheduled castes	scheduled Tribes	Backward classes	Other castes	Unknown	Total
No	99.27	99.96	98.59	95.67	97.94	98.13
Yes	0.73	0.04	1.41	4.33	2.06	1.87
Total	100	100	100	100	100	100
Source: NFHS-4 2015-16						

Table 1.13: Ownership of Colour Television sets						
Colour Television	Scheduled castes	Scheduled Tribes	Backward Classes	Other Castes	Unknown category	total households
No	19.15	38.42	12.97	7.84	30.41	14.48
Yes	80.85	61.58	87.03	92.16	69.59	85.52
Total	100	100	100	100	100	100

1.5 Gaps in Housing Amenities among Scheduled Tribe households

There are differences in the data from the department of Tribal Welfare and that of NFHS-4. The perspective plan gives the gaps in basic amenities of drinking water and electrification. According to the perspective plan report, 93% of the tribal households have access to electricity in 2017. It is expected to reach 100% by 2020. The NFHS-4 data had closer estimate of the access of tribal households to electricity at about 96% (Tables 1.14).

Table No.1.14						
Access	Scheduled Castes	Scheduled Tribes	OBC	Others	unknown	Total
No electricity	1.08	5.14	0.5	0.14	7.22	0.82
Electricity available	98.92	94.86	99.5	99.86	92.78	99.18
Total	100	100	100	100	100.00		100
Source: NFHS-4						

According to the perspective plan 51% of the scheduled tribe households get safe drinking water in 2017. As per NFHS-4 survey piped water supply into the dwellings and to the public taps covers at about 40% of the household and another 30% get

water from tube wells and borewells. About 70% of the scheduled tribe households had access to safe drinking water in 2015-16. The scheduled tribes are not particularly disadvantaged compared to the state average access at 70% (Table 1.15).

While coverage is similar, we do not know about the frequency of supply and shortages in summer months. Field survey conducted by Centre for Economic and Social studies in the tribal areas of Visakhapatnam in 2018 as well as the perspective plan document of 2017 reported water shortages. As per the NFHS-4 survey, about 22% of the scheduled tribe households seem to mention bottled water as a source of drinking water. But it is generally not included as a main source of water, as it is of supplemental nature and not a substitute for piped water.

Table 1.15						
Drinking water sources by Social groups						
Source of Drinking Water	Scheduled Castes	Scheduled Tribes	OBC	Others	Unknown	Total
Piped into dwelling	3.35	2.70	5.07	8.82	6.70	5.47
Piped to yard/plot	14.97	6.17	15.07	17.62	13.92	15.13
Public tap/standpipe	38.63	30.92	36.22	22.36	29.90	33.20
Tube well or borehole	16.65	30.32	15.55	10.40	20.62	15.44
Protected well	0.97	4.24	1.57	0.67	0.00	1.40
Unprotected well	3.01	7.45	4.21	1.34	1.03	3.50
Protected spring	0.14	2.70	0.03	0.02	0.00	0.20
Unprotected spring	0.00	0.39	0.10	0.00	0.00	0.07
River/dam/lake/ponds	0.31	1.97	1.05	0.63	2.58	0.88
Rainwater	0.00	0.00	0.03	0.00	0.00	0.01
Tanker truck	0.52	0.77	0.85	0.43	3.09	0.70
Cart with small tank	0.05	0.21	0.09	0.10	0.00	0.09
Bottled water	19.14	10.58	18.17	35.27	22.16	21.83
Community Ro plant	2.24	1.33	1.74	2.30	0.00	1.93
Other	0.01	0.26	0.24	0.03	0.00	0.15
Total	100.00	100.00	100.00	100.00	100.00	100.00
Source: NFHS-4 Unit level data (2015-16)						

Sanitation is an important aspect of welfare and the NFHS-4 shows that the evidence of sanitation in India is rather distressing. NFHS-4 data shows that 76% of the tribal households as against 40% of the households in Andhra Pradesh did not have a toilet facility. About 23% of the households of the scheduled tribes had flush toilets, mostly septic tank type, as the sewerage system is rudimentary in tribal areas (Table 1.16).

Table 1.16						
Type of toilets by Social groups (% of households)						
Type of Toilets	**Scheduled Castes**	**Scheduled Tribes**	**OBC**	**Others**	**Unknown**	**Total**
Flush to piped sewer	1.14	1.03	3.37	4.78	0.00	3.13
Flush to septic tank	39.67	20.81	52.78	71.29	54.64	52.74
Flush to pit latrine	0.91	0.73	0.91	1.47	0.00	1.02
Flush to somewhere else	0.23	0.13	1.29	1.25	6.70	1.04
Flush, don't know where	0.00	0.00	0.01	0.00	0.00	0.00
Pit latrine with slab	1.10	0.77	1.23	1.24	0.00	1.18
Pit latrine without slab	0.54	0.21	0.22	0.19	0.00	0.27
No facility/bush/fuel	55.60	76.32	40.11	19.75	38.66	40.41
Composting toilet	0.00	0.00	0.00	0.04	0.00	0.01
Dry toilet	0.00	0.00	0.04	0.00	0.00	0.02
Other	0.82	0.00	0.04	0.00	0.00	0.18
Total	100.00	100.00	100	100	100	100
Source: NFHS-4 2016-17						

Table 1.17						
Type of cooking fuel	Scheduled Castes	scheduled Tribes	OBCs	Others	Unknown	Total
Electricity	0.08	0.00	0.36	0.24	0.00	0.26
Lpg, natural gas	48.10	22.87	62.41	77.39	56.70	60.88
Biogas	0.20	0.00	0.26	0.47	0.00	0.28
Kerosene	0.77	0.21	0.36	0.34	0.00	0.42
Coal, lignite	0.03	0.00	0.02	0.12	0.00	0.04
Charcoal	0.23	0.00	0.49	0.00	0.00	0.30
Wood	49.42	76.49	35.04	21.28	43.30	36.97
Straw/shrubs/grass	0.56	0.26	0.35	0.03	0.00	0.31
Agricultural crop	0.09	0.17	0.29	0.00	0.00	0.18
Animal dung	0.29	0.00	0.33	0.00	0.00	0.23
No food cooked in						
House	0.22	0.00	0.07	0.14	0.00	0.11
Other	0.00	0.00	0.02	0.00	0.00	0.01
Total	100.00	100.00	100.00	100.00	100.00	100.00
Source: NFHS-4 2015-16						

As far as the cooking fuel is concerned, NFHS-4 data shows that 23% used LPG gas cylinders, while 76.5% used firewood. The average for Andhra Pradesh was about 61% for LPG and about 34% for firewood (Table 1.17).

1.6 Index of Wellbeing Outcomes

We chose twenty-one wellbeing outcome indicators from NFHS-4. NSS (2011-12), perspective plan of the department of Tribal welfare, education statistics of the Government of India and re-categorized as four groups to calculate Gap Index for each group.

1. Nutrition outcomes of children and adults
2. Water, Sanitation, and hygiene
3. Poverty, education, and livelihoods

31

4. Asset ownership

To calculate the gap to be closed, we deduct the value of the target Indicator from Scheduled tribe indicator. The targets to be achieved for each indicator dependent on various criteria. Whenever the government mentions its aim as 100% achievement, the target becomes hundred percent. Wherever appropriate, the average outcome of the other castes in Andhra Pradesh becomes the target, as the aim of the Gap exercise is to reduce inequality. Averages given in the Unicef data became targets when recent data are not available otherwise. Average for the state becomes the target for most indicators as the aim is to bring the Scheduled tribes to the level of state average. The groups and the indicators are arranged in the order of their importance. Wherever the indicators are not in percentage term, the percentage of ST indicator as a % of the target Indicators give the gap. As we can see, the positive Indicator gap mean, that the situation improves with a reduction in the indicator. Negative gaps mean that the situation improves with an increase in the Indicator (Table 1.18).

The indicators are prioritized after multiplying the gap that indicates urgency with its importance. Priority ranking shows which aspect of wellbeing needs to be addressed first. The calculations show that maternal mortality, infant mortality, access to piped drinking water, quality of education, safe cooking fuel, access to toilets, child undernutrition, land ownership and house ownership and level of literacy are the top ten (Table 1.19)

The unweighted gap Indices calculated for each of the four groups based on the methodology already mention at the beginning of the chapter show that the gap Index is highest for assets a -2.2. Tribal people cannot afford assets that an average urban

dweller can afford, partly due to higher poverty and partly due to infrastructure such as roads, cell towers etc. The next most important Gap is Nutrition Gap, which is close to the Asset gap, at -1. 91, followed by poverty literacy gap at -1.65 and water sanitation gap at -1.22.

Table 1.18: Indicators of Wellbeing Outcomes				
		NFHS-4	Target	Remarks
S.no.	Wellbeing indicators	2015-16	Well being	on targets
I	Nutrition outcomes of children and adults			
1	Infant mortality	68*	30	Unicef India avg
2	Maternal mortality	195*	145	Unicef India avg
3	Stunting in Children under five	31.70%	25%	avg. for AP
4	Wasting in Children under five	26.60%	14%	Others for AP
5	Underweight in children under five	47.40%	26%	Others for AP
6	CED among women	28.80%	12%	Others for AP
7	CED among Men	28.30%	13%	Others for AP
II	Water Sanitation and Hygiene			
8	Percentage with acces to drinking water	51%*	100%	AP Govt. target
9	Percentage with access to toilets	22%	57%	avg. for AP
10	Percentage with access to LPG	23%	61%	avg. for AP
IIi	Poverty literacy livelihoods			
11	Pect. of rural poverty	31.27%**	11%	avg. for AP
12	Percentage of literacy (15-49)	54.65%	90%	Desirable level
13	Edu. Maths avg. scores(Xth class)	231 #	314	ICSE average
14	Dependence on agruclture (%)	81%**	44%	India average
IV	Assset Ownership			
14	Percentage owning land	31%	80%	All ag dependent
15	Percentage owning houses	44%*	100%	AP Govt. target
16	Percentage owning pucca houses	62%	100%	AP Govt. target
17	Percentage of houses with electricity	93%*	100%	AP govt. target
18	Percentage owning motor transport Vehicles	20%	40%	avg. for AP
19	Percentage owning TV sets	62%	85%	avg. for AP
20	Percentage with mobile phones	18%	45%	avg. for AP
Source: NFHS-4 ; * perspective plan, ** NSS (2011-12), # Educational statistics				

Not only the magnitude of the indicator gaps but also the number of Indicators affect the Index value. Even if we make the number of indicators equal in all the groups, the magnitude of the Index become lower, but the order of the group Index does not seem to change much. Assets have larger gaps followed by nutrition outcomes. Water sanitation and hygiene gaps are lower. Giving equal weights to all sets of Indicators misses out on the importance. If we give a weightage of .50 to nutrition gaps and 0.30 to water sanitation gaps and 0.10 each to poverty and assets gaps then weighted, gap Index ranking changes. Nutrition gaps will be highest at -0.955, followed by water sanitation and hygiene gap and at -0.366, asset gap at -0.220 and the poverty education gap at -0.165.

These gaps however should not be considered in isolation. The Indicators are interrelated. Unless the water sanitation and hygiene gaps are closed, it is not possible to close the infant mortality and undernutrition gaps. Further, the indicators of quality of water, sanitation and hygiene are missing from the data, making the index lower. The weighted average aggregate Index for the essential (pivotal) aspect is -1.76 and unweighted average is -1.75.

What is important to note is that all aspects need attention and balance approach with an eye on the interactions effects that cumulatively improve the wellbeing or causes deterioration need to be addressed.

S.no.	Wellbeing indicators	Gap	GAP Rank	Importance score	Priority Score	Priority	Unweighted
			Urgency	Importance	Priority	Rank	Gap Index
I	**Nutrition outcomes**						**-1.91**
1	Infant mortality	0.44	16	21	336	2	
2	Maternal mortality	0.74	21	20	420	1	
3	Stunting in Children under five	0.07	1	19	19	17	
4	Wasting in Children under five	0.13	3	18	54	16	
5	Underweight in children under five	0.21	8	17	136	7	
6	CED among women	0.17	5	16	80	12	
7	CED among Men	0.15	4	15	60	15	
III	**Water Sanitation and Hygiene**						**-1.22**
8	Pect. with acces to drinking water	-0.49	17	14	238	3	
9	Pect. with access to toilets	-0.35	11	13	143	6	
10	Pect. with access to LPG	-0.38	14	12	168	4	
III	**Poverty literacy livelihoods**						**-1.65**
11	Pect. of rural poverty	0.20	6	11	66	14	
12	Pect. of literacy (15-49)	-0.35	11	10	110	10	
13	Edu. Maths avg. scores(Xth class)	-0.73	20	9	180	4	
14	Dependence on agruclture (%)	0.37	13	8	104	11	
IV	**Assset Ownership**						**-2.20**
15	Pect. owning land	-0.49	17	7	119	8	
16	Pect. owning houses	-0.56	19	6	114	9	
17	Pect. owning pucca houses	-0.38	14	5	70	13	
18	Pect. of houses with electricity	-0.07	1	4	4	21	
19	Pect. owning transport Vehicles	-0.20	6	3	18	18	
20	Pect. owning TV sets	-0.23	9	2	18	18	
21	Pect. with mobile phones	-0.27	10	1	10	20	

Table 1.19: Indicators of Wellbeing Outcomes

Chapter 2

Gaps in Habitat Infrastructure and Public service delivery

The core of wellbeing framework is not the same as that of the wellbeing outcomes. As described in the literature of service quality assessment, there are several angles to assess the quality. The assessment differs from one service to the other and the best assessment is possible with data collected from the target group receiving the public services. In the absence of primary data, the secondary data helps the assessment.

This chapter follows a simple method used by World Health Organization (WHO) in its report. World Health Organization assessed the public health preparedness of the countries in the world to deal with situations like the Influenza pandemic of 2009 (WHO 2013).

Gap analysis framework for public health or public provisioning is like the one used by WHO. Need detection capacity, Provisioning capacity, Monitoring capacity, and Coordination Capacity together help us to assess the quality of public service delivery. Various sources give us the indicators of public service that we want to measure.

The methodology is simple. It consists of first assessing the gap between need, and actual availably of the facility/service quality in the target locations for target population. We assign scores to each indicator based on the availability of a facility or its quality. Scores assigned vary from 0 to 10. For example, proportion of habitations having the facility vary from 0 to 1 in the tribal areas. The overall Index

of that aspect is the total of the scores. We shall illustrate it with the help of habitat infrastructure.

Figure 2.1
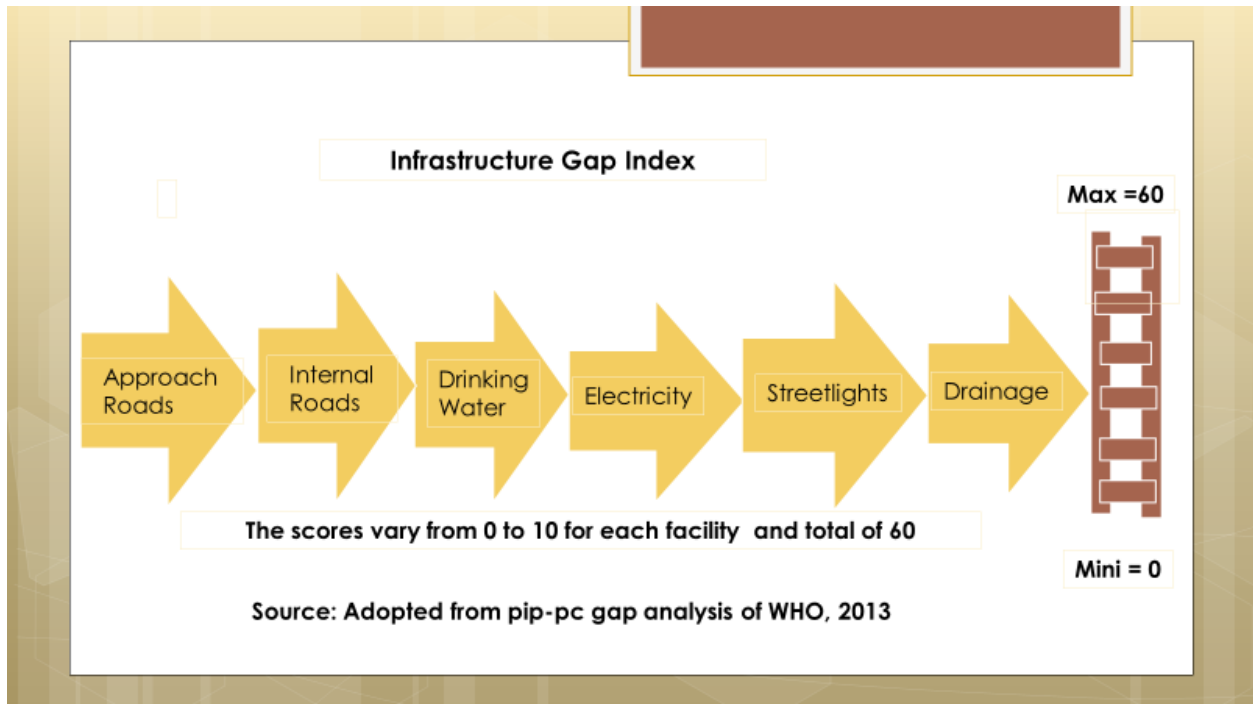
Scores aggregated across the infrastructure availability or a public provisioning capacity and quality give us an idea of the infrastructure adequacy and service quality. The advantage of this over the outcome Index used earlier is that, it can include some variables which do not give % of people using it, but gives a binary answer as to some facility such as hospital waste disposal exists or not. It is possible to give a score of 0 if it does not exist and 1 if it exists. Scores can be applied to percentages as well as qualitative information about the service.

2.1 Gaps in Habitat Infrastructure

Habitat Infrastructure give percentage of scheduled tribe habitations reporting the facility. The diagram adopted for our purpose given above in figure 2.1 for illustration purpose, has 6 aspects of infrastructure, while the Index calculated for ST habitats covers 8 aspects. World Health Organization classifies the countries as low, weak, moderate, and high, based on the aggregate scores. Information on infrastructure and public service indicators for scheduled tribe population is not available at the district level or Integrated tribal development area level (ITDA). Information is available on habitat infrastructure from the perspective plan document of the Department of tribal welfare on eight aspects. Progress was made with respect to electrification, but the drainage connections and internal roads within the habitations were neglected. Basic infrastructure is important for effective public service delivery (Table 2.1).

The percentages are converted into scores between 0 and 10 by giving coverage of less than 10% habitations as zero and 100% coverage as 10. The scores are given to the habitations covered by the infrastructure and not those which do not have the infrastructure. Four levels as low, weak, moderate and high based on the scores describe the situation. The overall score of 5.5 describes the situation as weak in infrastructure. Individual gaps are obvious from the habitats not having the facility.

S.No.	Physical Infrastructure	Total no. of Habitations	Pect. of Habitations without the facility	Habitations with facility Scores
Table 2.1: Habitation- Infrastructure Gaps in 2017				
1	No Approach Road	6452	67	4
2	No Internal Roads	7133	75	3
3	No Drinking Water facility	4252	44	6
4	No Drainage Facility	7885	82	2
5	No Primary School	4731	49	6
6	No Anganwadi Centre	4398	46	6
7	No Electricity connection	927	10	8
8	No Street lights (has electricity)	219	2	9
				44
Source: Govt. AP. Tribal Welfare Dept.," ST perspective Plan 2017-2024				
Level Low =below 4		Overall score of Infrastructure is = 5.5 and weak		
Level weak = 4 to 8				
Level Moderate=8-10		Overall avg. Gap = -4.5 or -0.45		
Level High = 10				

2.2 Gaps in Public Health Services in Andhra Pradesh

The service quality assessment literature of profit oriented enterprises stress the importance of five aspects viz., 1.Tangibles (Buildings equipment and adequate qualified staff), 2. Reliability of Service, which includes coverage and competence, 3. Responsiveness in providing service as soon as it is required. 4. Assurance is the guaranteed delivery of services 5. Empathy is concern for those who use your service (Nitin Seth et.al., 2005). Public services quality assessment deferrers from that of for-profit services. The indicators also depend upon the type of service provided. Literature on public health services recognises care as an important aspect. Literature

recognizes six dimensions of making care safe, effective, patient cantered, timely, efficient, and equitable. Patient priorities as opposed to patient expectations are useful to assess health service quality. Doctor's and staff's competence is paramount, rather than the patients' assessment of the doctor. A five point or three-point Likeart scale assess health care service quality. This report looks at various aspects of health across social groups and finally chooses indicators to measure the health service quality.

Health care assessment literature cites certain aspects such as access to health care by the distance to travel, availability of transport to the patient, cleanliness in the health facility, arrangement for hospital waste disposal, availability of qualified staff, waiting time etc. It is not possible to assess all these aspects without primary data collection.

As Brief description of the nature of public health care services available in the state, provides a backdrop to the gaps in various aspects of health services. The Aarogyasri scheme for below poverty (BPL) population was started in Andhra Pradesh in 2007 as a health insurance scheme for secondary and tertiary health care and continuing at present in the name of Dr. YSR Agrogyasri Health Insurance Scheme. The scheme has been popularised and self-help groups and Arogya Mitra (a helper posted at the hospital premise), helps the poor at the private hospitals to get admission and treatment without cash payment. It is a private-public partnership scheme and incorporates information technology services, insurance companies and public and private hospitals. Insurance covers up to 2 lakhs per annum per family. In deserving cases up to 6.5 lakhs have been sanctioned. It is now extended to COVID-19

hospitalization cases as well. Serious curative treatment, surgeries, and expensive therapies for cancer etc., are normally covered. Covid-19 testing facilities for the virus are limited at present. There are six Indian Council of Medical research approved laboratories in Andhra Pradesh and two more are in the process of being commissioned. Since those with respiratory and other ailments are susceptible for infection, disease incidence indicates vulnerability and mortality risk. Scheduled tribe population will be at a disadvantage due to their low nutritional status. Though the lifestyle diseases are low for scheduled tribes, compared to other social groups, as the Covid-19 spreads, Scheduled Tribes will be most affected. Poor physical infrastructure also could act as a bottleneck, increasing the risks. It is better to strengthen the health care system for scheduled tribes in India along.

Critics argue that the present public health system is skewed away from primary care of the people. It is tilted towards curative tertiary care and is a big drain on the state exchequer with questions of sustainability, and it profits the private hospitals (Sunita Reddy et.al2013). Moreover, procedures though simplified, through information technology services, Arogya Mitra and Self-help groups who facilitate the process, it requires documentation and not easy for illiterate people to avail the services. Scheduled tribes in the remote areas may be at a disadvantage. Statistics on use of the insurance by scheduled tribes is not available, though the coverage is almost universal. Though scheduled tribes are poorer than the scheduled castes, the health insurance coverage is lower for the scheduled tribes. NFHS-4 data shows that the coverage of men is higher than that of women (Table 2.2).

Table 2.2 Health insurance coverage among women and men (15-49)		
Caste/tribe	Percentage of women covered by any health scheme or health insurance	Percentage of men covered by any health scheme or health insurance
Scheduled caste	75.0	78.4
Scheduled tribe	75.1	78.1
Other backward class	69.8	75.8
Other	64.3	73.4
Total age 15-49	70.0	75.8
Source: NFHS-4 2015-16		

Table 2.3			
Percentage of Women age 15-49 who have ever undergone specific health examinations			
Type of examination			
Caste/tribe			Oral
	Cervix	Breast	cavity
Scheduled caste	32.8	4.6	11.1
Scheduled tribe	29.3	3.00	9.4
Other backward class	35.0	5.7	12.5
Other	32.2	4.9	14.7
Total	33.6	5.1	12.5
Source: NFHS-4 2015-16			

This probably indicates the use of insurance more by men than by women. In contrast to the insurance coverage, primary care is limited. The primary health care services delivered appear to be low judging from the tests done to women (Tables 2.3). Percentage of child births at a health facility are the lowest for scheduled tribes compared other castes, in Andhra Pradesh. About 31% of the child births take place

in private facility and scheduled tribes incur out of pocket expenditure of over Rs. 2500/-as per the NFHs-4 survey.

Health personnel mostly assisted Child births. Both the births at a private (31%) or public health facility (46.1%), and health personnel assisted births were the lowest for scheduled tribes compared to other social groups (Table 2.4). The coverage of Maternal and Child Protection cards appears low for scheduled tribes compared to others (Table 2.5). Despite coverage of 87.7% under mother and child Protection cards (MCP), under safe motherhood program (Janani Suraksha Yojana) the financial assistance under the scheme was given only for 20%. (Table 2.4).

Table 2.4 Births delivered at a Health facility and financial assistance					
Caste/tribe	Percentage of births delivered in a public health facility	Percentage of births delivered in a private health facility	Percentage of births delivered in a health facility	Percentage of deliveries assisted by health personnel	Percentage who received financial assistance under JSY
Scheduled caste	49.9	41.4	91.3	90.5	26.6
Scheduled tribe	46.1	31.7	77.8	84.1	20.8
Other backward class	36	55.4	91.4	92.3	15.1
Other	28.5	68.6	97.2	96.7	12.7
Total	38.3	53.3	91.5	92.2	17.4
Source: NFHS-4 2015-16					

Table 2.5		
Caste/tribe		Percentage of mothers given an MCP Card
Scheduled caste		95.3
Scheduled tribe		87.7
Other backward class		92.7
Other		90.6
Total		92.6
source:NFHS-4 2015-16		

The fertility rates are high for scheduled caste, since infant mortality of scheduled tribes are high at 68 per thousand live births, compared to 40 for rural areas and 35 for urban areas of Andhra Pradesh and 30 for India.

Table No. 2.6: Fertility rates by social groups				
Caste/tribe	Total Fertility rate	% of women currently pregnant	Mean no. children ever born to women 40-49 years	total wanted fertility rate
Scheduled caste	1.91	4.0	2.8	1.69
Scheduled tribe	2.05	3.8	3.0	1.86
Other backward class	1.83	3.2	2.6	1.65
Other	1.68	2.9	2.4	1.51
Total	1.83	3.3	2.6	1.64
Source: NFHS-4 (2015-16)				

Maternal mortality rates are high probably due to high teenage pregnancies. Pregnant women before the age of 19, with an existing child are more among scheduled tribes than other social groups (Table 2.7). The quality of service provided during pregnancy can be judged from the antenatal care received by them.

Table 2. 7			
Teenage pregnancy and motherhood			
	Women in the age groups of 15-19		
Caste/tribe	**Had live birth**	**pregnant with first child**	**Begun Child-bearing**
Scheduled caste	10.2	2.1	12.3
Scheduled tribe	6.2	6.6	12.8
Other backward class	9.4	3.3	12.7
Other	5.8	3.0	8.8
Total	8.6	3.2	11.8
Source: NFHS-4			

As can be seen from the table 2.8, only 25% of the scheduled tribe pregnant women received full antenatal care, while 73% of them visit the health facility in the first trimester of pregnancy. Compared to the other social groups care received by the scheduled tribe women appears to be the lowest.

Table 2.8 Antenatal care received across social groups					
Caste/tribe	**Percentage who had four or more ANC visits**	**Percentage with an ANC visit in the first trimester of pregnancy**	**Percentage Who Received two or more TT Injections during the Pregnancy**	**Percentage whose last live birth was protected against neonatal tetanus**	**Percentage who had full antenatal care**
Scheduled caste	76.6	78.3	91.3	95.8	40.9
Scheduled tribe	58.8	73.8	90.0	94.9	25.4
Other backward class	77.7	82.8	91.5	94.4	44.1
Other	78.7	89.4	93.3	95.8	53.7
Total	76.3	82.4	91.7	95.0	43.9
Source; NFHS-4					

All antenatal tests are not done in many government facilities, because many health facilities do not have equipment and trained personnel to provide complete antenatal check-up and required medicines such as iron folic acid tablets etc. in adequate quantities. Poor scheduled tribes get free medicines and free treatment. About 95% of the pregnant Scheduled tribe women received Tetanus injections as any other social group.

Primary Health care for tribal population of Andhra Pradesh

Most of the scheduled tribe population use the public health care facilities such as primary health centres, sub centres, govt. hospitals, Integrated child development (ICDS) centre known as Angan Wadi centre or AWCs, for treatment of any ailment. Some use the traditional system, but the percentage is very small. The data from NFHS-4 indicates that 57.5% of the scheduled tribe household members normally go to a public health care facility of some type or other for treatment (Table 2.9).

Maternal and child health care and attention to non-communicable diseases need a strong primary health care through public health services (Andhra Pradesh Health System Strengthening Project (APHSSP) 2019). Well-staffed and well-equipped community health centres, primary health centres and subcentres go a long way in strengthening the primary health care for the poor. Public health system has district hospitals and area hospitals and teaching Hospitals in addition to the Primary health centres, Sub centres and Community Health centres. However, many mushrooming private hospitals now dominate the landscape of health system in the state. Use of Private clinics and private hospitals is common.

Table 2.9: Where household Members generally go for treatment (%)						
Caste or tribe of the household head	SC	ST	OBC	Others	Unknown	Total
public: government/municipal Hospital	15.40	9.55	12.52	9.30	2.58	12.12
public: government dispensary	1.13	1.20	1.13	0.64	1.03	1.02
public: uhc/uhp/ufwc	1.90	1.58	2.20	1.60	0.00	1.96
public: Community HC/rural hospital	8.19	15.33	8.44	3.99	12.37	7.78
public: phc/additional	14.30	27.62	9.72	7.36	15.98	11.07
public: sub-centre	0.52	0.26	0.23	0.12	0.00	0.26
public: vaidya/hakim/	0.03	0.00	0.09	0.41	0.00	0.14
public: anganwadi/icds	0.04	0.00	0.00	0.00	0.00	0.01
public: asha	0.00	0.99	0.03	0.00	0.00	0.07
public: government mobile health centre	0.01	0.13	0.01	0.12	0.00	0.04
Other public sector	0.87	0.86	1.33	1.03	0.00	1.14
Total Public sector health facility	42.39	57.52	35.70	24.57	31.96	35.61

Table 2.9: Continued ….

Where household Members generally go for treatment (%) Caste or tribe of the household head	SC	ST	OBC	Other	Unknown	Total
ngo or trust hospital	0.70	0.26	0.70	0.55	0.00	0.64
private hospital	27.53	20.81	32.10	44.65	53.61	33.56
private doctor/clinic	15.31	9.12	17.28	19.24	5.67	16.85
private paramedic	1.82	0.51	1.53	0.97	0.00	1.39
private: vaidya/hakim	0.06	0.00	0.17	0.08	0.00	0.12
private: traditional	0.03	0.00	0.02	0.00	0.00	0.01
private: pharmacy/drug store	0.09	0.13	0.33	0.22	0.00	0.25
private: dai (tba)	0.00	0.00	0.02	0.00	0.00	0.01
Other private sector	10.85	10.96	11.39	8.83	8.76	10.67
Shop	0.10	0.00	0.05	0.06	0.00	0.06
home treatment	0.08	0.00	0.12	0.26	0.00	0.14
Other	1.04	0.69	0.62	0.57	0.00	0.69
Total Private health facility	57.61	42.48	64.33	75.43	68.04	64.39
Total public + private health facility	100.00	100.00	100.00	100.00	100.00	100.00
Source: NFHS-4						

Public health system through primary health centres, doctors and government hospitals has been deteriorating. There are 195 Community Health Centres and 1147 Primary health centres and 7507 sub centres, most of which are poorly equipped inadequately staffed and normally attend to Maternal and Childcare related tasks. Community Health centres are 30 bed hospitals providing secondary health care. About 82% of the scheduled tribe population was rural in Andhra Pradesh. There are 7 Integrated tribal development agency areas in seven districts of Andhra Pradesh. Earlier there were 5 areas in five districts but the present notification has 7 areas. Srisailam area of Kurnool district and Chintoor area of east Godavari district were added to the list in 2018.

As per the report of the APHSSP 2019, there is a shortage of doctors by 18%. The report of APHSSP made several recommendations with special reference to tribal areas. One tribal PHC/ CHC in each district was included in the proposed strengthening programme of the APHSSP. These centres are now to be equipped to treat other diseases as well. In tribal areas one subcentre for every 2000 population is the norm for public health system. (Andhra Pradesh Health System Strengthening Project (APHSSP 2019).

In the tribal areas the government has converted all 165 primary health centres as round the clock primary health centre and additional staff has been recruited. But most of the staff go on leave. Staff positions such as medical officers in health centres in tribal areas remain vacant due to the unwillingness of the staff to live in areas of limited infrastructure. Particularly vulnerable tribal groups (PvTGs) bear the brunt of a weak public health system and it results in high rates of maternal and

infant (before one year of birth) mortality and neonatal (before 28 days of birth) mortality among them. (AP perspective Plan 2017). Distribution of health facilities in the Integrated tribal development agency (ITDA) areas specified under schedule five of the constitution show that they have very little access to hospitals (Table 2.10).

	Districts	No ITDA Tribal Mandals	Primary Health centres	Health Sub-Centres	Area Hospitals	Community Health Centres
Table no. 2. 10: Health Facilities in Integrated Tribal development Agencies						
1	Seethampeta	13	27	156	2	3
2	Parvatipuram	8	20	119	1	4
3	Paderu	11	36	203	2	2
4	Rcvaram	7	18	94	1	2
5	Chintoor	4	8	47	0	2
6	K.R. Puram	3	10	66	0	2
7	Srisailam	19	31	67	1	5
	Total	65	150	752	7	20
	Source: Govt. of AP, Perspective Plan					

Presently in ITDA Paderu, PHC Ededulapalem Cheedipalem, Korukonda, Gemmili, Gomamngi, Lambasingi, Bheemavaram, RJ Palem and Sunkarametta are conducting more than 10 deliveries per month after July 2018. The task is being performed by the medical officers of the primary health centres. They place the drugs indents through online supply chain platform at appropriate time. The monitoring for the drugs availability is taken up by the Director, Health at the state level, District Medical & Health Officer (DM&HO) and Additional District Medical & Health Officer (Addl. DM&HO) at district level. Drug dispensing facilities are located in some primary health centers and sub centers.

Telemedicine for tribal areas

At present there are three Mukhyamantri Giri Aarogya kendrams at Paderu in Visakhapatnam district with 20 sub-centres, Parvatipuram in Vizianagaram District, with 10 sub centres and at Rampachodavaram in East Godavari district with 10 sub-centres. The telemedicine mode is to have a staff of 4 to 6 persons in the telecentre, without a qualified doctor. These centers are basically meant to avert the problem of shortage of doctors. There are two auxiliary Nurse Midwives, (ANM), one laboratory assistant and an information technology professional, probably a couple of helpers. The centers undertake medicine dispensation and keep a stock of medicines. Based on the initial examination, the ANM staff and the patients connect with a doctor, through video conferencing facilitated over internet and the medicine prescribed by the doctor is given to the patient. The lab tests necessary are done by the laboratory technician and the maintenance of patient records, and video conferencing are facilitated by the IT professional. While all the facilities, infrastructure and the medicines are provided by the government, the center itself is contracted to Private Corporate hospitals for doctor consultations and a private IT company for IT services required. The government makes yearly payments per center managed both to the Private Corporate Hospital and the IT company separately. When they were started by the previous government in 2018, Apollo Hospitals, and Dhanush Infotech were given contract. The state government was to end the private contract. The present situation about the private contracts is not clear, but the tribal centers are still operating and dispensing medicines to the tribal people who visit them. While the lab testing is free and medicines are free, the doctor consultation is chargeable to the patient, in the original model.

Recently as per the document put up on the website of the social welfare department, there is a strong intention of improving the health care system for tribal population. The salaries of ASHA workers, (Accredited Social Health activists) have been increased to Rs. 4000/-.

Incidence of Disease among scheduled tribes

The inadequacies of the system and non-affordability of nutritious food and prompt health care probably reflects in the health of the scheduled tribe population. Prevalence of Anaemia among women and men belonging to scheduled tribes is the highest in the state (Table 2.11 and 2.12).

Table No.2.11: Prevalence of Anaemia among women					
Caste/tribe	Mild (10.0-11.9 g/dl)1	Moderate (7.0-9.9 g/dl)	Severe (<7.0 g/dl)	Any anaemia (<12.0	Number of women
Scheduled caste	36.3	21.4	1.6	59.3	1,964
Scheduled tribe	50.2	19.1	2.5	71.8	552
Other backward class	39.5	18.5	2.1	60.1	4,953
Other	40.5	15.4	1.2	57.1	2,051
Don't know	25.3	23.8	6.3	55.5	36
Total age 15-49	39.6	18.5	1.9	60.0	9,555
Source: NFHS-4					

Due to a small sample size of children, NFHS-4 did not present distribution of anaemia among children by social groups. The incidence of acute respiratory infections, fever and diarrhoea are common among children under five. Children under five are vulnerable to mortality and morbidity and related aspects such as stunting, underweight etc.

Table No.2.12: Prevalence of Anaemia among Men					
Caste/tribe	Mild (10.0-11.9 g/dl)	Moderate (7.0-9.9 g/dl)	Severe (<7.0 g/dl)	Any anaemia (<12.0)	Number of Men
Scheduled caste	8.2	12.4	2.7	23.3	222
Scheduled tribe	23.9	22.6	5	51.5	84
Other backward class	11.1	13.2	1.5	25.9	656
Other	9.2	12.3	3.5	25	309
Total age 15-49	11	13.5	2.4	26.9	1,272
Age 50-54	17.1	21.9	3.9	42.9	134
Total age 15-54	11.5	14.3	2.6	28.4	1,407
Source: NFHS-4					

Scheduled tribe children appear to have highest incidence of neonatal mortality, and infant mortality and maternal mortality, compared to other social groups, though figures are not available in the NFHS-4 data. Diarrhoea incidence is high among scheduled tribe children, compared to other social groups, though acute respiratory infections are low (Table 2.13).

Table No.2. 13			
Children under the age of five with Acute respiratory Infections (ARI), fever and diarrhoea, in the previous two weeks			
Caste/tribe	Percentage with Symptoms of ARI	Percentage with fever	% with diarrhoea
Scheduled caste	0.5	7.2	8.1
Scheduled tribe	0.3	8.4	8.3
Other backward class	0.5	8.9	6.2
Other	0.7	7.8	5.1
Total	0.5	8.3	6.6
Source: NFHS-4			

Immunization against basic diseases such as Hepatitis B1, four shots, BCG, three shots of DPT, and a Booster shot and Measles, constitute the full basic vaccination. State total itself for immunization is 65% and only 55% of the scheduled tribe children received full immunization, showing the failure of the health system to achieve 100% immunization (Table 2.14).

Table 2.14		
Immunization for children from 12 to 24 months		
Caste/tribe	All basic vaccinations	No vaccinations
Scheduled caste	63.5	3.5
Scheduled tribe	55.4	3
Other backward class	67.4	1.3
Other	64.0	3.5
Total	65.2	2.3
Source: NFHS-4		

Incidence of lifestyle diseases such as diabetes, heart disease, thyroid, cancer etc., among the tribal women in the age group of 15-49 is lower, but the tribal men show higher incidence of heart diseases (Tables 2.15 and 2.16).

Table no.2.15: Incidence of disease among women by social groups (No. of women /100000)						
Age group 15-49 Caste/tribe	Diabetes	Asthma	Goitre or any other thyroid disorder	Any heart disease	Cancer	Sample Number of Women
Scheduled caste	2,554	2,390	4,171	1,780	157	2,122
Scheduled tribe	1,990	2,084	2,851	808	0	596
Other backward class	2,044	3,232	3,378	1,433	111	5,390
Other	3,113	3,186	4,750	1,263	24	2,280
Don't know	5,583	0	7,700	0	0	40
15-49	2,392	2,973	3,826	1,425	95	10,428
Source: NFHS-4						

Table no.2.16: Incidence of disease among Men by social groups (No. of men /100000)						
Age group 15-49 Caste/tribe	Diabetes	Asthma	Goitre or any other thyroid disorder	Any heart disease	Cancer	Sample Number of Men
Scheduled caste	2,000	2,094	872	1,517	0	243
Scheduled tribe	2,819	2,051	816	2,369	0	94
Other backward class	3,449	1,411	576	1,795	0	724
Other	3,472	1,422	407	0	807	335
15-49	3,157	1574	602	1353	193	1398
50-59	12,793	5,014	631	2,495	0	143
Source: NFHS -4						

Assessment of Public Health Service Delivery Gaps

About 82% of all tribal population according to 2011 census live in rural areas. The schedule five areas are more important as their access is limited. To calculate the population per Primary Health Centers in scheduled V areas, we have divided the projected population of these areas by the present number of primary health centers. The projected population of these areas is calculated by applying the annual compound rate of 1.8% to 2011 population for 9 years to get 2020 population. Since the fertility rates are high for scheduled tribes, we assumed an arbitrarily rate of 1.8%. The 2011 population of the five scheduled five areas was 960245 (Table 3.1). Population in 2020 works out to 1127327. The number of primary health centers (Table 2.10) plus three Mukhyamantri Girijan Aarogya Kendrams (MAKs) come to 114 in five out of the 7 ITDA areas given in the table. The population per Primary health center works out to 9888 or roughly ten thousand per primary health center.

There are 6 Area hospitals and 13 community centers in the schedule V areas of Andhra Pradesh. On the whole total doctor availability should be 10 or more. However, it was stated that most of the doctors posted here go on leave and there is always a shortage of doctors. This excludes the private medical facilities, which prove to be expensive to the poor among the scheduled tribes. It is a well-known fact that in India, rural areas do not have doctors due to low affordability and the urban areas have more doctors and large number of private hospitals. Primary Health centers and community centers and area hospitals are the most important (43%) health care facilities available for the medical needs of scheduled tribes (Table 2.9). The use of sub-centers was less than 1%, showing the inability of these sub-centers to cater to the needs of the tribal people.

Primary health center is expected to have a labour room, laboratory, in-patient beds, medicines dispensing facility, waste disposal system, toilets, and sewerage connection, round the clock, water supply, electricity, availability of a vehicle/ambulance. The staff of a Primary Health center ideally consists of three medical officers and three auxiliary nurse / midwife (ANM) staff, laboratory technician, a clerk, two or three helpers. One of the medical officers should be a lady. Perspective plan mentioned that the norm for subcenter in tribal areas is one for a population of 2000. Since sub centers do not cater to the needs, people come to the primary health center. The World health Organization norm is one doctor per 1000 population.

As per the report of the APHSS project, the distance to a primary health center in tribal areas is 20 to 40 kilometers. In tribal areas due to difficult terrain accessibility to health facility is not good. Most of the patients coming to tribal PHCs come either by walk or overcrowded shared three-wheeler auto, due to poor transportation

facilities. In tribal areas due to difficult terrain accessibility to health facility is not good. Govt has arranged two-wheeler feeder (Bike) ambulances (108) on emergency situations. Average footfall of patients daily in outpatient department was about 150-200 per day in tribal areas. The report further points to the short comings such as lack of hygiene, waste segregation, waste disposal and lack of sewerage treatment plants for wastewater etc. The main suggestion of the APHSS report was to strengthen the primary health centers and enable them to treat mother and child as they are doing now and add the ability to treat non communicable diseases. They also recommend use of telemedicine as in MAKs to be extended to all sub centers.

Seethampet tribal habitations in Srikakulam district, situated in the hilly terrain do not have road connectivity. Habitations are connected by walking paths. Patients from these areas are carried in palinquins or dolly to the PHCs or hospitals at Seethampet. The government made provision to pay the people who carry the Patients to Seethampet Primary health centre or the area Hospital. The habitations without road connectivity are the most vulnerable.

The indicators appropriate to public health services include access indicators, cleanliness indicators, efficiency indicators, and performance indicators. The qualitative and quantitative data are taken from the 1. Perspective plan of Tribal Welfare Department, 2017; 2. World bank sponsored report on Andhra Pradesh Health System Strengthening Project (APHSS) documents volume one and two of 2019, and 3. National Family Health Survey four of 2015-18.

In the case of qualitative indicators, score zero means non availability or non-existence, score one means 50% availability and score 2 means expected availability. When indicators are in percentage, we apply the same scoring as in the previous Index. It varies between 1 to 10, one being less than 10% and 10 being 100%. The short fall expressed as proportions of expected levels illustrate the gaps in the four aspects of Service delivery.

Access Indicators / Need Assessment

Basic health facility with buildings, equipment, and competent personnel within the reach of the target population in terms of number of facilities in relation to population shows access

1. Access to PHC (Population per PHC in tribal areas) 10,000 - desirable 2,000. On a scale of 1-10 the score is 2 and desirable is 10

2. Time taken to reach a health facility – one to two hours (to cover a distance of 20-30 kilometers) – desirable is ¼ to ½ hour, Hence the desirable score is half an hour gets score 2 and existing score is 1 hour or score 1

3. % population using the public health facility- 43% -100% need exists

4. % covered by Insurance: 76.5% desirable is 100%

Cleanliness Indicators

1. Existence of Waste disposal mechanism in PHCs score = 0 desirable score 2

2. Sewerage connections Sewage treatment plants score =0 desirable =2

3. Water supply, electricity, - score 2 desirable score 2

Efficiency and competence

1. Maintenance of Electronic records: score 1 desirable score =2

2. Qualified laboratory assistant and Lab equipment score 2 desirable 2

3. Dispensation of medicines score 1 desirable 2

4. Qualified Staff score 2 desirable score 2

5. Qualified doctor available in relation to the target population score 1 desirable score 2

Performance Indicators in terms of services rendered

1. Percentage of women of 15-49 who had a health check up 29% desirable 100%

2. Percentage of pregnant women having complete ante natal check-up: 25.4% desirable 100%

3. Percentage of deliveries supervised by qualified heath personnel: 84% desirable 100%

4. Percentage of children under the age of five fully immunized: 55.4% desirable 100%

Table 2.17 presents the Public health service delivery gaps. The gap index in each of the four health service aspects, is expressed as the proportion of the magnitude

of the gap scores aggregated to the target scores. It is given next to the title of each aspect.

Table 2.17: Gap Index of Public Health Service Delivery			
Access = 0.54*	Score Achieved	Score Desirable	Gap Magnitude
1 No. of people per PHC (Scaled score)	2	10	8
2 Time taken to reach the PHC	1	2	1
3 Need met by the PHCs and CHcs	4	10	6
4 Coverage of Health Insurance	7.6	10	2.4
Cleanliness, Hygiene =0.67*		32	17.4
1 Waste disposal in PHCs	0	2	2
2 sewerage connection STP	0	2	2
3 Water Supply, Electricity in PHC	2	2	0
Cleanliness, Hygiene		6	4
Efficiency and competence =0.40*			
1 Electronic patient records at PHC	0	2	2
2 Labs and lab equipment in PHC	2	2	0
3 Dispensation of medicines	1	2	1
4 Qualified staff	2	2	0
5 Qualified doctor per 1000 pop	1	2	1
Efficiency and competence Gap		10	4
Performance =0.51*			
1 % of women (15-4) who had gynic check-up	3	10	7
2 % pregnant women with full antenatal care	2.5	10	7.5
3 % of deliveries by qualified health personnel	8.5	10	1.5
4 % children immunised	5.5	10	4.5
Performance Gap		40	20.5
Note: * the average gap			

Hygiene gap is the highest at 0.67 followed by performance gap at 0.51 and access gap at 0.54 and competence gap at 0.40. Hygiene gap would be higher if we examine the cleanliness of toilets, and the frequency of water supply in the Primary health centers. The target should be to reduce all the gaps at least by 25% as soon as possible. It is not an ambitious goal. Strengthening of the health care system in the state should be the top priority. While we did not get data to examine the monitoring system in place, the monitoring system appears weak, with respect to primary health centers. Sub centers seem to be almost dysfunctional, judging from their utilization from NFHS-4 data.

The major issue with the public health services is the neglect of the norms laid out for the health facilities, in terms of cleanliness, basic equipment, staff, material, medicines and the quality of patient care. Strict monitoring of all aspects of Primary health centres is lacking.

Monitoring is restricted to "Dash-board Information" on the number of patients, number of deliveries, dispersion of medicines etc, based on outpatient records. This is important, but in no way helpful to improve quality. Monitoring must include confirmation of existence of equipment in working condition, availability of medicines and lab chemicals for tests, cleanliness, hygiene, staff competence, staff attendance, patient need assessment, and patient care assessment. Such a system is missing.

2.3 Gaps in Public provisioning of food and supplementary nutrition

India has put, two systems in place for food security and supplementary nutrition. They are public distribution system and Integrated child development services (ICDS centres also known as Angan wadi (AW) centres). How well they function and how effective they are in protecting the vulnerable from food insecurity and malnutrition is not known, as there are no evaluation studies in recent times. Since 2008, food price hike and use of food and cash transfers to gain electoral populism, staples have been distributed to all who hold 'Below Poverty' (BPL) cards. As per the NFHS-4, survey, 92.4% of the scheduled tribe households hold BPL cards as against only 88% in the rest of the state in the NFHS sample. It is because poverty levels among ST population stands at 31% compared to the state poverty level of 11.6 %. (Table -2.18).

Table no. 2.18						
Household has a BPL Card (%)						
Caste/tribe	SC	ST	OBC	Others	Unknown	Total
No	10.24	7.54	10.72	17.66	13.4	12.04
YES	89.76	92.46	89.28	82.34	86.6	87.96
Total	100	100	100	100	100	100
Source: NFHS-4						

Integrated child development (Angan Wadi) Centres provide supplementary food to preschool children and pregnant and lactating mothers. When health centres are not functional, these centres perform some of the health services such as immunization, antenatal and postnatal counselling and so on. They also look after the children of the poor mothers who go for work and run preschools. Multiple functions were added to them over time (Table 2.19 and 2.20).

Table 2. 19				
Percentage of children age 0-71 months who receivedfrom AWC				
Caste/tribe	Any benefits1	Supplementary food2	Any immunizations	Health check-ups
Scheduled caste	79	77.7	61.6	68.4
Scheduled tribe	83.6	83.2	68.6	76.7
Other backward class	69.3	68.1	55.6	59.4
Other	59.4	58.6	45.0	46.0
Total	70.5	69.3	55.7	59.9
Source: NFHs-4 2015-16				

Larger percentage of Scheduled tribe population seem to depend upon these centres, more due to lack of other facilities. How good and effective the services have been is not clear. AW centres do not have trained doctors and nurses. ICDS workers were low paid honorary workers getting Rs. 400/- for many years. Recently their (salary) honorarium has been increased to 4000/- per month. They report to the officials of the Department of Women and Child welfare. Despite large percentage of people holding BPL cards, and using integrated child service, it is sad to note that child and women undernutrition is highest and infant and neonatal mortality rates are high among scheduled tribes. What is important is to note is that that holding a card or availing ICDS services is not enough. Ensuring the quality of the service and meeting the needs on time, go a long way in making the service effective. Unfortunately, we do not have any data on the need assessment and quality of service delivery. We may consider this as a research gap.

Table 2. 20: Utilization of AW centres		
	Children 0-59 Months	Children 36-71 Months
Caste/tribe	Percentage of children who were weighed at an AWC	Percentage who went for early childhood care/preschool to an AWC
Scheduled caste	73.6	62.0
Scheduled tribe	78.8	74.3
Other backward class	65.4	49.2
Other	55.1	36.0
Total	66.1	50.8
source: NFHS-4		

2.4 Gaps in the Educational services in tribal areas

School access, utilization (enrollments) and educational achievements together determine the quality of educational services. Education achievement as an outcome indicator has been included in the outcome Index and an aspect of access viz., number of habitations without a primary school became a part of the public infrastructure. This section looks at other aspects of educational services. School attendance data according to social groups indicates lower attendance for scheduled tribes compared to other social groups. NFHS-4 as well as the Ministry of Human resource development provides the data. For the scheduled tribes in the age group of 6-17, urban enrollments are lower than rural enrollments according to NFHS-4 data. This is more due to higher drop out ratios at higher educational levels of youth who migrate to urban areas after primary or middle

school. NFHS -4 sample for scheduled tribes in Andhra Pradesh was too small to give reliable details about the gender break-up. Scheduled tribes show lowest attendance rates compared to other social groups (Table 2.21).

Table 2.21			
Percentage of 6-17 age group attending school			
Caste/tribe	Urban	Rural	Total
Scheduled caste	87.3	85.4	85.9
Scheduled tribe	74.3	79.9	79.2
Other backward class	88.8	85.8	86.9
Other	93.5	89.9	91.2
Source: NFHS-4 2015-16			

Ministry of Human Resource Development gives information on gross enrollment ratios. Gross Enrolment Ratio (GER) is the total enrolment within a given region in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education. This is a commonly used measure of school enrollments. GER can exceed hundred percent. It means that enrollments in that class or grade is more than the number of children who are in the age group appropriate for that class or grade. There can be children with higher age in a lower class, or children with lower age in a higher class. It is more likely to have children with higher age than children who are underage. It is because schools normally do not admit children into the primary school unless the official minimum age is reached. Hence the gross enrollment ratios tend to be high. Primary refers to first grade to fifth grade (I-V). Upper Primary refers to refers to sixth to eighth (VI- VIII) and elementary refers to (I- VIII). Ministry of Human

Resource development gives classification into SC, ST, and others, but doesnot give separate figures for backward classes and other castes (Table 2.22).

Table 2.22			
Gross enrolments by educational level (AP)			
2015-16			
Primary			
	Boys	**Girls**	**Total**
All students	84.88	84.05	84.48
ST Students	78.97	80.02	79.47
SC Students	91.88	90.95	91.42
Upper Primary			
	Boys	**Girls**	**Total**
All students	81.12	81.56	81.33
ST Students	91.88	90.95	91.42
SC Students	84.73	83.75	84.24
Elementary			
	Boys	**Girls**	**Total**
All students	83.46	83.11	83.29
ST Students	91.13	92.21	91.65
SC Students	89.15	88.18	88.67
Source: Educational statistics at a Glance			

With respect to scheduled tribes, primary (I -V), enrolment rates are lowest for scheduled tribe children. However, in upper primary (VI-VIII) the gross enrolments are high for scheduled tribes compared to others. This could be due to students of

higher age group studying in that age group. It could also be due to residential schools acting as incentives for school attendance from class VI, where children get free food, clothing, medical care, along with free education (Table 2. 22).

Table 2.23			
Gross enrolments by educational level (AP)			
2015-16			
Secondary			
	Boys	**Girls**	**Total**
All students	74.63	76.48	75.51
ST Students	64.74	67.17	65.9
SC Students	76.57	78.63	77.58
Senior Secondary			
	Boys	**Girls**	**Total**
All students	58.28	62.27	60.16
ST Students	54.94	55.91	55.4
SC Students	64.86	70.78	67.69
	Boys	**Girls**	**Total**
Higher Education			
All students	34.7	26.9	30.0
ST Students	27.4	19.8	23.4
SC Students	28.6	22.4	25.5
Source: Educational statistics at a Glance			

Classes nine and ten (IX- X) come under secondary education and eleven and twelve (XI-XII) come under senior secondary education as per the Ministry of Education. Higher education starts from college level. Scheduled tribe enrollments start dropping more for ST children compared to others from class nine One of the

reasons could be more demanding curriculum. Another reason could be the interest in taking up a remunerative activity to earn. The enrollments into higher education at college level fall drastically for all groups and more so for scheduled tribe girls. Enrollment ratios are also low for scheduled tribe boys compared to others. Scheduled tribe students get scholarships for higher education as well as overseas education. Students get Scholarships for coaching for civil service examinations, and other competitive examinations. YSR Vidyonnati scheme gives scholarships for higher education. Tribal areas have three types of residential schools. Residential schools, Ashram Schools and Ekalavya model Residential schools, in addition to Primary schools. There are 154 post-metric hostels. Pre-metric hostels are converted into residential schools (Table 2.24).

Table no. 2. 24	
Schools in Tribal Areas in AP	
Ashram Schools	361
Residential schools	192
Hostels	127
Primary schools	1815
Source: Perspective Plan 2017	

Most of the tribal children go to Government schools. Out of the total school going scheduled tribe children in the state, 33% are in residential schools. They have a have low literacy rate and high dropout rates (Table 2.25).

Table No. 2.25: Literacy rates and dropout rates (%)			
	General	STs	Gap/ target
Literacy rate	67.41%	48.63%	18.78%
Dropout rate		60.37	33.54
Pect. of ST Children in Residential schools		33%	60%
Source: Perspective Plan 2017			

The enrolments are good, but the quality of education is not up to the mark. Basic skills in language and Mathematics are not achieved by the students. The Department of tribal welfare is aware of the problem. The Perspective plan proposed inspection for academic achievements, once a year through a panel of experts. The schools must help the first-generation learners to do well, right from the day they join school. No amount of mid-course corrections and change in teaching methods and remedial classes at secondary level and higher secondary level can compensate for the maintaining of the standard in elementary education. The continuous and comprehensive assessment and the monitoring system followed, involve series of tests and examinations. It leaves no time for the teachers to take teaching seriously or helping the weak students. The time goes away in conducting the tests, awarding marks, and maintaining the records of marks. Teachers are often engaged in administrative work, of monitoring school meals and other extra-curricular activities. Marks are awarded for noncognitive skills and cognitive skills together. All schools award high percentage of marks to students, to show the school in good light, defeating the purpose of quality education.

Policy of Information and communication technology in school education envisions and provides for the development of holistic framework of ICT support in the school system. It is not clear as to how many tribal schools have an uninterrupted electricity and internet connection and competent Information Technology support staff.

There is a high level of unemployment and unrest. Awareness about the private jobs is low. High aspiration for government jobs exists. To overcome these problems, the Tribal Welfare Department of AP has formulated Skill Development Initiative from 2014-15 with vision "To convert non-literate, school drop-out, unskilled unemployed youth into productive workforce by building their skills." There are 24 youth training centers to train

youth. ITDA locations of Seethampeta, Parvatipuram, Paderu, Chintapalli, Araku, Rampachodavaram, K.R.Puram, Srisailam also have youth training centres. However, we could not find any evaluation and effectiveness reports on the program.

2.5 Financial services

All the towns in ITDA areas such as Seethampet, Parvatipuram Paderu, Araku, rampachodavaram, chintoor, K.R puram and Srisailam are covered by Bank network. Most of the tribal people (93%) possess Adhrar cards (Table 2.25). Many scheduled tribe households (92%) have a Bank account. About 8%, the largest percentage of scheduled tribe households do not have bank accounts compared to other social groups.

Table No. 2. 26: Persons who have an Adhar Card (%)						
Has Adhar Card	SC	ST	OBC	Others	unknown	Total
No	6.09	6.68	4.90	4.31	5.67	5.09
Yes	93.88	93.28	95.09	95.65	94.33	94.89
don't know	0.03	0.04	0.01	0.03	0.00	0.02
Total	100.00	100.00	100.00	100.00	100.00	100.00
Source: NFHS-4						

It is not clear as to how many take a loan from a bank. The Bank accounts are useful to receive any cash transfer benefits given by the government to the poor.

Table 2. 27: Persons who have a bank Account (%) By social group						
Has bank account	SC	ST	OBC	Others	Un known	Total
no	5.93	7.88	3.75	4.10	8.76	4.49
yes	94.02	92.12	96.25	95.90	91.24	95.50
Unknown	0.05	0.00	0.00	0.00	0.00	0.01
Total	100.00	100.00	100.00	100.00	100.00	100.00
Source: NFHS-4						

About 31% of women take micro credit and about 60% operate a bank account. Though the drive of accounts for the poor was popular, they hardly perform any banking operations apart from with drawing the money that is disbursed by the government. Savings accumulated or loans availed are minimal.

Table 2.28			
Women's Access to financial services -Money, Banking and credit			
Pect. of Women aged 15-49 with access to money, banking and credit			
Caste/tribe	Use Money	Operate Bank a/c	Taken micro credit
Scheduled cates	29.1	64.7	29.6
Scheduled tribe	18.4	60.4	30.8
Other backward class	24	68.1	30.8
Other	23.1	65.1	26.8
Total	24.5	66.3	29.7
NFHS -4: 2015-16			

In addition to the cash transfers available to all the poor under the schemes such as Amma void (education allowance to one child in the family), pension schemes etc., the banks give loans to the tribal entrepreneurs. Loans are also available from Non-banking sources such as National Scheduled Tribes Co-operative Finance Corporation. It is known as "Tribal Corporation" for short popularly known as with the acronym "TRICOR" the first three letters of tribal and corporation. Tribal people get a subsidy of 60% of the cost of the start-up small projects between 1-8 lakhs. They also get loans at 6% interest rates. The scheme covers all enterprises including agriculture animal husbandry, transport equipment land purchase. To enable application processing staring from applying, approval of subsidy, sanction of loan and monitoring the assets and repayments etc., Andhra Pradesh government deployed Online Beneficiary Management & Monitoring System (OBMMS), for the implementation of Self Employment loans / Economic Support Schemes in Andhra

Pradesh. The financial support also applies to particularly vulnerable and tribal groups (PvTGs). Priority is given to unemployed youth to get loans for self-employment, subject to a minimum of 1,00,000/-. Bank linked self-help groups are also eligible for the loans. This system could exclude the poor and micro enterprises, as it is not possible for the poor to apply online, due to several limitations. Further agricultural loans are difficult to get due to problems of ownership documents (pattas) with majority of land (CESS 2018).

Budget gaps

Tribal sub plan (TSP) is mandatory under the 2013 Act elaborated earlier. The Nodal Agency, was set up for the purpose of executing and monitoring the TSP. The nodal agency, commissioner for tribal affairs, with finance secretary, finalizes departmental allocation to scheduled tribes, every year and monitors every three months the work done as well as expenditure utilised for Scheduled tribes. Departmental allocations are in addition to the Central government funds and the funds allotted to the tribal welfare department. Given the enhancement of funding, one would expect considerable improvement in the wellbeing of the scheduled tribes.

Though Tribal sub plan has a monitoring system in place, the nodal agency and Tribal welfare department do not have an authority over other departments and hence co-ordination and implementation at the ground level suffer. For example some habitations without road connectivity suffer, despite specific allocation for roads in the tribal areas every year. Out of the 10 years only 3 years are left. Yet the tribal subplan center was not established. Technical support to address specific problems

of hilly regions, and administrative support in terms of co-ordination at the ground level appear to be weak at present. We find expenditure short fall over budget allocation in some years (Table 2. 29). The Tribal subplan may suffer further as recession and decline in government revenues deepen with Covid-19 lock down.

Table No. 2.29.

GAPS in Estimated budget and actual expenditure			
Year	Budget estimate	Expenditure	GAP
2013- 14	3666	2030	55.39%
2014-15	1500	1442	96.15%
2015-16	1904	1711	90.00%
2017-18	3099	1981	63.93%
2018-19	1658		
2019-20	2153		
Source: Ap Govt. Dept. of Tribal welfare			

The recent gaps are not available.

2.6 Agricultural and Forest Produce Market Services

Many tribal households traditionally depend upon farming and collection of non-timber minor forest produce. As has been mentioned earlier, as per the National Sample Survey 2011-12 data 82% of the tribal people in Andhra Pradesh depend upon agriculture. According to the National family Health survey in 2015-16, about 45% of the tribal households own usable agricultural land, while 55% do not own any land and depend upon other occupations. According to NFHS-4 in 2015-16, only 7.62% of the scheduled tribe households own all irrigated Land. About 5.4% own both irrigated and unirrigated land and about 31% own non irrigated land. About 50% of the tribal population own livestock (Appendix tables 2 to 4). About 54% of the tribal farmers are small and marginal farmers. The yields are low, the land in

hilly areas are undulated and details of crop pattern are not available (Perspective plan 2017).

About 14.46 lakh acres of land is currently with scheduled tribes (Perspective Plan 2017). According to the department of tribal welfare, there are (1,54,838) individual claims and (12,549) community claims involving an extent of 1,47600 acres, pending under recognition of forest rights Act of 2008. Putting the two figures together, it appears that that entire land of the tribal population has not yet been settled. Transfer of tribal land to non-tribal population goes on under the principle of under the "Principal of Eminent Domain". Principle of Eminent domain is the right of the central or state governments to take away private property for public purposes. Authorities find ways of circumventing the tribal land protection laws. (CESS 2018)

Tribal farmers grow both plantation crops and field crops. The tribal produce is of high value, consists of commercial items such as jack fruit, pineapple, vegetables, turmeric, coffee, cashew, pepper, honey, tamarind, tendu leaves, and a variety of medicinal products of importance. The problems seem to be the distance to the markets, lack of transportation, distress sales due to the trader monopoly. Seasonal production of horticultural items such as vegetables, jack fruit and pineapple go waste due to lack of transport and storage facilities

Girijan Cooperative Corporation was started in 1956, to help Tribal farmers and tribal people in selling their produce. GCC purchases the tribal produce does processing as well as retailing. It provides marketing services to all sorts of product of forest and tribal origin. However, the working of the GCC has several lacunae

and GCC is not able provide efficient market services. All the same in recent years it is actively involved in coffee auctioning.

Some of the complaints include ineffectiveness of the Girijan cooperative Corporation (GCC) in ensuring remunerative returns. Part payments, delayed payment and changed price by GCC poses problem to the sellers. There are complaints that trader collusion with officials of GCC, results in good quality products being sold to traders for low price and GCC getting the second quality. It was estimated that about 80% of what consumer pays goes to the middle-men making production crops and collection of forest produce highly unprofitable for the tribal, though the product sold are scarce commodities and command a high price in the market (CESS2018).

Chapter Three

Tribes, Environmental and Livelihood sustainability

We do not have any quantitative data to assess the environmental and livelihood sustainability gaps. Hence this chapter is mostly descriptive and puts together well-known issues dotted with review of literature on some aspects

3.1 Tribes and particularly vulnerable tribal groups

There are geo ethnic variations among the tribes. There are variations in the occupations, living conditions, habitat, environment etc. Therefore, area specific strategy has been evolved for scheduled tribes. For the purpose of taking up appropriate programs, the tribal areas under the Tribal Sub Plan have been categorized into various areas. Integrated Tribal Development areas, Modified Area Development Approach, in plains, where 50% population belongs to scheduled

tribes, subject to a minimum of 10 thousand people. Clusters of smaller areas with 50% concentration of tribal population have identified. Individual community benefit programs help these clusters and block development officers take care of them. Further, Micro level projects are taken for primitive tribal communities. The primitive tribes have some peculiar characteristic features. The schemes that are being introduced for the development of the other tribes will not be applicable to them. Based on their cultural specialties, ecosystem and aptitude, core programmes have been identified for different primitive groups. Finally Dispersed tribal development program covers the other scheduled tribe population dispersed across the state (Ravinder 2014). There are 5 constitutionally notified schedule V areas and 7 Integrated tribal development areas in Andhra Pradesh.

S.No.	Name of the ITDA and the District	Area in Sq. km	Total Dst. area	Scheduled Village	% of sch. Area	No. of villages	Total ST pop	% of ST pop.
	Table No. 3.1: Schedule V areas in the State of Andhra Pradesh							
1	Seethampeta / Srikakulam	1289.32	5837	108	22.09	240	74280	78
2	Parvathipuram / Vizianagaram	1740.98	6539	302	26.62	181	153897	81
3	Paderu / Visakhapatnam	5904.51	11161	3373	52.9	91	524914	88
4	Rampachodavaram / East Godavari	4191.65	10807	809	38.79	40	154562	67
5	Kotaramachandrapur West Godavari	1006.1	7742	145	13	1	52592	47
	Total	14132.56		4737			960245	
	Source: Department of Tribal Welfare, AP based on Census 2011							

In addition to the above five Scheduled five ITDAs, areas the bifurcated state of Andhra Pradesh has 3 more ITDA areas in Srisailam in Kurnool district and in

Nellore. The ITDA for Chenchu, is at Srisailam covers the Chenchus of other districts and ITDA for Yanadis at Nellore covers the Yanadis of Four Districts (Ravinder 2014). Chintoor in East Godavari district is on the banks of Sabari, a tributary of the river Godavari, and among the mandals of Khammam district of Telangana transferred to Andhra Pradesh during bifurcation is an additional ITDA, added recently.

Table 3.2: List of ITDA areas of residual Andhra Pradesh

SNo	Web Site URL	Name of ITDA
1	ITDA- Srisailam	ITDA, Srisailam, Kurnool District, Andhra Pradesh
2	ITDA- K.R. Puram	ITDA, K.R. Puram, West Godavari District, Andhra Pradesh
3	ITDA- R.C.Varam	ITDA, Rampachodavaram, East Godavari District, Andhra Pradesh
4	ITDA-Chintoor	ITDA, chintoor , East Godavari district , Andhra Pradesh
5	ITDA- Seethampeta	ITDA, Seethampeta, Srikakulam District, Andhra Pradesh
6	ITDA- Paderu	ITDA, Paderu, Visakhapatnam District, Andhra Pradesh
7	ITDA- Nellore	ITDA, S.P.S. Nellore District, Andhra Pradesh
8	ITDA- Parvathipuram	ITDA, Parvathipuram, vizianagaram District, Andhra Pradesh

There are 34 tribes in Andhra Pradesh. Out of these some tribes have been notified as particularly vulnerable tribal groups (PvTGs). They were called primitive vulnerable groups, earlier and the name was changed in 2006, as primitive could be an offensive adjective. A Centrally Sponsored Scheme (CCDP) supported by Ministry of Tribal affairs (MOTA) of the Government of India (GOI) aims at planning the socio-economic development of PvTGs by adopting habitat development approach and intervening in all spheres of their social and economic life to enhance the quality of life. The main components under CCDP are providing nutritional support, support to education activities to prevent dropouts, promoting

livelihoods through micro projects & Community level Infrastructure etc. (Ravinder 2014).

List of 'Particularly Vulnerable Tribal Group' (PvTGs) as notified by Government of India given in the AP government department of tribal welfare web site is as follows:

(i)   Konda Savara
(ii)   BondoPorja, ParangiPorja, Khondporja
(iii) Gadaba, Bodo Gadaba, GutobGadaba
(iv)   Dongria khond, Kutialkhond
(v)   Konda Reddy
(vi)   Chenchu

Government of Andhra Pradesh added Yanadis to the other vulnerable groups and created ITDA area in Nellore. Two of the tribes mentioned in the PvTGs in the annual report 2018-19 in the website of the Ministry of Tribal Affairs of the central Government (see Appendix Table -4) are not found in the list given above by the state government. Probably their numbers are too small in Andhra Districts. The central government list was common to Andhra and Telangana. Census 2011, tables on tribes bunch the sub-tribes in some districts. It is not possible to get the exact number of sub-tribes mentioned as vulnerable groups, among Gadaba, Porja, Savara and Khond tribes in some districts. More field work is necessary by the anthropologists and sociologist working with tribal groups and historical compilation of data on numbers of vulnerable tribes is necessary. The tribal welfare departments should keep the records and track their progress over years. There is no system of monitoring the welfare of the PvTGs.

The table below (Table 3.3) gives the ITDA areas and the predominant tribes in each of them. All the vulnerable tribes are found in various ITDA areas as well as non

ITDA areas. These tribes and sub-tribes may have been dispersed across districts and not restricted to ITDA areas. The schemes and benefits meant for vulnerable tribes extend to all districts and areas, wherever the PvTGs reside. The economic support to the vulnerable groups essentially involves giving loans and subsidies to purchase assets. Self-employment ventures get loans at low interest rates.

Table 3.3: Integrated Tribal Development Agencies and the predominant tribes inhabiting them		
S.No.	Name of the ITDA and the District	Major Tribes
1	Seethampeta / Srikakulam	Savara Jatapu
2	Parvathipuram / Vizianagaram	Jatapu, Kondadora Savara, Gadaba
3	Paderu / Visakhapatnam	Konda Dora, Bagata Kondh,Valmiki, Porja
4	Rampachodavaram / East Godavari	Konda Dora Koya
5	Chintoor East Godavari District	Koya
6	Kotaramachandrapur West Godavari	Koya, Yarukula Konda Reddi
7	Srisailam Kurnool District	Chenchus
8	Nellore Nellore District	Yanadies
Source: AP Scheduled Tribe Cooperative Finance Corporation Limited Action Plan for 2018-19		

3.2 Livelihood sustainability – Implications

Environmental sustainability is closely related to harmony and lack of conflict between nature and humans, conflict between land and humans, and conflict between communities of humans. Resolution of all conflict and promotion of justice is the basic guiding principle. To begin with   Environmental sustainability of tribal areas lies in protecting the livelihoods of tribal population on their native land. It is because, they know the landscape, water sources, fauna, and flora of forest areas. If their livelihoods are sustained, the environment will be sustained. Livelihood sustainability is related to creation of basic infrastructure, establishing connectivity and extension of public services to all, and creating awareness of the livelihood opportunities.

Underutilization of public services occurs due to unreliable supply of service (in terms of need, time, frequency, and quality) or due to lack of knowledge. Sen (1992) also points to the reduction of the gap between the availability of the public service and its utilization by the deprived sections of the population, with an increase in public awareness and increased educational levels. Economically backward regions also tend to have a concentration of less educated people and lower levels of utilization. Sometimes public services of education coupled with services of ICDS/AW workers and Asha workers, may create an awareness about health and nutrition, though the service delivery is poor especially among thr vulnerable tribes.

It is increasingly obvious that the tribal population of Andhra Pradesh are getting modernized and the youngsters entertain urban aspirations and less interested in settling in the traditional roles. Protecting livelihoods does not necessarily mean

going back to traditional occupations, but to go along the modernization route to find jobs in modern sector of the tribal areas in providing backward and forward linkages. Tribal youth would find opportunities in trade, transportation, and processing, if they could breach monopolies of the traders and vested interests.

Left wing Extremism

The delicate balance of welfare and extremism in the case of agency areas at present seem to depend up on proper deployment of funds and avoiding acts of injustice. Any let up in the welfare measures and deterioration of public provisioning would lead to malnourishment bordering on starvation and disillusionment and distrust with the welfare measures taken. Deployment of resources to maintain food security must continue to wean away youth from joining extremists.

As has been pointed out, extremism in Visakhapatnam district, known for largest number of extremist related deaths has been curtailed to some extent after civilian attack of the local politicians in September 2018. Tribal people came to vote in the recent elections in many agency areas due to the perception that they are benefiting from welfare measures. Cancelling all bauxite mining leases and supporting livelihoods through plantation crops, along with continuous assault on extremists by security forces, probably helped, though, we cannot say that extremism ended in Andhra Orissa boarder areas. There were reports of people being threatened and prevented from voting in two polling booths in Araku area on April 11, 2019 and tribals asking the district collector for protection in September 2019 (Naik, D.K, 2019). Any reduction in security forces surveillance, and lapse in investment in social sector due to recession will see the emergence of extremism.

Environmental sustainability

De-forestation, soil erosion and loss of biodiversity, reduction in the availability of minor forest produce are common problems in all tribal areas. Destruction of forest normally leads to disturbance of natural balance of the ecosystem. Biodiversity provides ecosystem services such as formation and protection of soil, conservation and purification of water and the maintenance of hydrological cycles. Human mismanagement of biological resources deprives us of these ecological services. Tribal areas are subject to water problems in summer. Irrigation issues in uplands and lowlands accentuate. Biodiversity loss, species extinction, occur due to anthropogenic activity. The Nallamalais region of Andhra Pradesh (Srisailam area of Kurnool district) is being exploited in an unregulated manner for its natural wealth and the rich and diverse heritage of traditional indigenous plant wealth which needs to be conserved. In this bleak scenario, conservation and sustainable development of forests are the only solutions to save, not only the germplasm of trees and shrubs but also tiny herbs with medicinal properties.

Development displaced and loss of forest lands

Development projects harmed the tribal communities more than anybody else and created the 'development disposed'. Large scale displacement and land alienation are still the major issues (Cess2018). Polavaram project is the case in point. The Polavaram dam on the Godavari could displace 400,000 people and submerge nearly 4,000 hectares of forestland and several hectares of fertile farmland (Down to earth 2015). It has been estimated that the back waters of the project during the floods could submerge several villages and parts of Bhadrachalam town (Amarnath et.al, 2020). The back waters threat during floods has been a contentious point for Orissa

tribal areas as well (Amarnath 2020). The original name of the project in the fifties was "Ramapada sagar," meaning that the flood waters will come up to the feet of Lord Rama in Bhadrachalam. Telangana government foresees a threat to 270 villages if the floods are severe and back water is likely to enter tributaries of the river Godvari, spreading the floods to other areas. Most of them are tribal areas.

The displaced population whose lands have been acquired so far, for the project lost their land. It has been alleged that rehabilitation and resettlement has been a neglected area. Lands given in exchange for fertile farmlands were dry lands. Houses constructed were one room houses, whereas triable houses were typically spacious. Though hefty amounts are paid towards compensation, there are allegations of irregularities in the payment of compensation to original owners of land. AP government made payments of over Rs 1,000 crore in April and May of 2018. Yet the fate of the displaced has not improved, raising doubts about the efficiency of the system.

Further, seven Mandals, which were with Khammam district were transferred to Andhra Pradesh are all recognized tribal areas. Nellipapaka, Kunavaram, Chintoor and V.R.Puram were transferred to East Godavari district and Burgampad, Kukunoor and Valaipadu were transferred to West Godavari district. The people in these seven Mandals have been protesting transfer to Andhra Pradesh. They are all condemned to be submerged under Polavaram Project catchment area. They are schedule V areas with protection under forest rights Act. One of the problems of Tribal protection acts is their conflict with other development acts and the other acts override the tribal acts making a mockery of protection to tribal population.

Recommendations

Short-term recommendations

First, since the government machinery and health professionals are busy in covid-19 hotspots, the health care system in tribal areas may fall short of health care professionals, making the already vulnerable situation worse in the coming months, depriving them of medical help, medicines and doctors. Health system should not be allowed to collapse in tribal areas.

Second, spread awareness about covid-19, ahead of its spread, to prevent possible infection. Spread some key messages given by WHO such as hand washing, social distancing and covering their nose and mouth with layers of cloth or face masks. Limited lock down and preventing tourists, and non-locals in the tribal areas will be helpful.

Third, when the economy slows down, and recession sets in, scheduled tribes being the poorest of all social groups may face loss of incomes and may face a situation of starvation or acute malnourishment. Special attention is required to make cash transfers, to the land less and small and marginal farmers. According to the NFHS-4 data about 8% of the tribal households are without BPL cards. About 7% are without Adhar cards, and 8% are without Bank accounts. If they belong to the poverty groups, they may face starvation as economic situation deteriorates. It is imperative that GCC buys their produce at remunerative prices; Public distribution gives grain without BPL card, Integrated Child Development workers continue to give supplementary nutrition to pregnant women preschool children, and adolescents continue to get their midday meal.

Fourth nothing much could be done to alleviate the massive financial constraint in the coming years. Hence the Tribal Sub Plan and proportional allocation of resource Act of 2013 should be extended by another ten years.

Long term recommendations

1. Strengthen the public health services and Primary health care.

2. Ensure 100% road connectivity and public transport facility even if it is loss making praposition

3. Resolve land ownership issues and prevent land alienation of local tribes that would cause unrest.

4. Rehabilitate and resettle all the tribes displaced by Polvaram project by allotting land

5. Strengthen Girijan Cooperative corporation, to promote professionalism, participation of tribal community, and commitment to tribal economy

6. Improve the Quality of education, right from primary level in tribal schools, and in residential schools.

7. Ensure self-employment of Tribal youth in forest conservation, water conservation, transport, storage, processing, retailing and so on to prevent them from joining the extremist organizations

8. Provide generous Bank credit to all activities without collateral and loan repayments could be differed

9. Stop mining in Forest areas permanently.

10. Take up large scale reforestation to compensate for the forest areas submerged by the Polavam project

11. Protect hill slopes from land erosion. Take all the measures for water, land, and forest conservation

12. Close the research gaps with more data and a more systematic analysis

13. For all the activities test the monitoring capacity of the government.

Appendix 1

Appendix table 1	
% of ST households with own houses	
State Total	5.71%
11 - Srikakulam	6.12%
12 - Vizianagaram	10.79%
13 - Visakhapatnam	19.09%
14 – East Godavari	5.94%
15 – West Godavari	3.26%
16 - Krishna	2.82%
17 - Guntur	4.95%
18 - Prakasam	3.93%
19 - SriPottiSriramulu Nellore	10.06%
20 – YSR cuddapah	2.05%
21 - Kurnool	1.92%
22 - Anantapur	3.68%
23 - Chittoor	4.03%
Source: Census 2011	

Appendix Table 2					
Ownership of Usable Agricultural Land					
	SC	ST	OBC	Others	Total
No	76.39	54.78	66.86	62.55	67.06
Yes	23.61	45.22	33.14	37.45	32.94
Total	100	100	100	100	100
Source: NFHS-4 (2015-16)					

Appendix table 3 : Ownership of livestock					
	SC	ST	OBC	Others	Total
No	70.45	49.89	67.94	70.77	68.1
Yes	29.55	50.11	32.06	29.23	31.9
Total	100	100	100	100	100
Source: NFHS-4 (2015-16)					

Appendix Table -4						
Status of Agricultural land	SC	ST	OBC	Others	Unknown	Total
No agricultural land	76.39	54.78	66.86	62.55	81.44	67.06
Irrigated agricultural Land only	7.91	7.62	11.36	12.8	15.98	10.86
Non-irrigated agricultural land	13.76	31.26	17.87	19.59	2.58	18.17
Both irrigated and not irrigated	1.49	5.4	3.46	4.37	0	3.39
Ag land- Irrigation status not clear	0.45	0.94	0.45	0.69	0	0.53
Total	100	100	100	100	100	100
Source: NFHS-4 (2015-16)						

Appendix Table -5
Particularly Vulnerable Tribal Groups
1. Bodo Gadaba
2. Bondo Porja
3. Chenchu
4. Dongria Khond
5. Gutob Gadaba
6. Khond Porja
7. Kolam
8. Konda Reddi
9. Konda Savara
10. Kutia Khond
11. Parengi Porja
12. Thoti
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