

# **Housing Condition in Kerala**

## **With special focus on Rural areas and Socially Disadvantaged Sections**

**Volume I  
Main Report**

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## Preface

This study on Housing Condition in Kerala is part of a larger collaborative project between the SR Sankaran Chair on Rural Labour Studies, National Institute of Rural Development and Panchayati Raj, Hyderabad and the Laurie Baker Centre for Habitat Studies, Thiruvananthapuram. The main objective of the collaborative effort is to analyse the condition of housing and related living amenities for the poor in the country with special focus on rural areas as well as the socially disadvantaged sections of the population. The first study report covered an assessment of the all India situation.

This second study focuses on the State of Kerala which is one of the leading states in the country with a high level of achievement in ensuring basic housing condition. This study examines the housing condition and related living amenities in the country and presents a comparative profile between 2001 and 2011 based on data from the Population Census reports. We have taken care to examine the condition of housing in rural areas and compare it with the situation in urban areas. In addition we have also focused on the Scheduled Tribes and Scheduled Castes separately to examine their position in relation to other sections of the population. The resulted are summarized in the introductory chapter. The study team consisted of K.P. Kannan (Team leader), Imran Khan (Research Associate). The team was assisted by Soumya Maria (Research Associates) and S. Dhanya (Research Assistant).

The study team would like to place on record the cooperation, support and advice received from Professor D. Narasimha Reddy, the first SR Sankaran Chair Professor at the NIRD as well as his successor Professor Kailas Sarap. The team also would like to thank their colleagues at the LBC especially P.B. Sajan, Member Secretary, V.K. Anilkumar, Chief Administrative and Programme Manager, and Shalini Rajesh for their administrative support.

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# Chapter 1

## Introduction and Summary of Findings

### 1.1. General introduction

The State of Kerala is well known for its high level of achievement in human development. The state not only had an early start but also maintains this lead to this day among the major Indian states. The most well-known indicators of human development are life expectancy, average enrolment in schools and per capita income. While these core indicators are quite capable of representing the overall achievement of a region or country in human development, it is important to assess other equally important basic needs. Shelter is one such basic need and this is something that is not usually examined and discussed in the discourse on human development.

This study therefore is intended to assess this important basic need that should be counted as an indicator of human development. The Kerala Human Development Report 2005 prepared by the Centre for Development Studies (see CDS 2006) brought out that the process of human development in Kerala has not yet lost its momentum and that it has now entered a stage where its intra-regional (i.e. district level) differences are being narrowed. It therefore makes sense to find out whether this trend applies to the issue of access to housing and related amenities.

Unlike the case of health and educational policies and programmes, Kerala does not have a long history of public intervention in the provision of housing facilities. A notable early public housing is the village housing scheme in early 1950s that was implemented through the Community Development Programme of the Government of India. However, a major turning point in public housing for the poor was the One Lakh Housing Scheme that was meant for the landless and houseless poor initiated in 1971 by the Government of Kerala under the Chief Ministership of C. Achutha Menon. From then there has been a stream of Schemes for public provisioning of housing to the poor as well as sections of the middle class. We have discussed the subsequent public policies and initiatives in Chapter 2.

## **1.2. Rationale for research**

The primary rationale for research is the inadequacy of studies based on quantitative data to assess the trend in the provision and creation of housing and related amenities to the people on a periodic basis. Studies focused on the housing condition are rather far and few unlike studies relating to education and health. In the Kerala context there are some studies but all of them cover a period not exceeding the Census of 2001. As this present study shows significant changes have taken place between 2001 and 2011. In addition to capturing the recent changes, this study has focused on two important aspects of the housing condition in Kerala. The first is the rural-urban disparities and the other to assess the social disparities by examining the housing condition of people belonging to SC and ST groups viz-a-viz others. As we shall see later, the rural-urban disparities in Kerala are not so significant as is the case in many other indicators of poverty and human development. But the social disparities continue to be significant and needs to be addressed as such.

An earlier report dealt with the condition of housing in India as a whole focusing on rural-urban differences as well as the social disparities.

## **1.3. Objectives of the study**

The specific objectives are as follows:

- To assess the overall housing condition in Kerala viz-a-viz all India with a view to assess the comparative performance of Kerala and to bring out any special features and characteristics of Kerala;
- To identify the core characteristics/indicators of housing condition and to assess the progress in Kerala between 2001 and 2011 with special focus on rural-urban disparities as well as social disparities;
- To assess the progress in housing condition across districts in Kerala; and
- To draw lessons and major policy implications with regards to improving housing conditions as well as moving towards a Green Habitat.

## **1.4. Data sources and Methodology**

There are two sources of data to assess the housing condition. One is the Population Census reports on housing that are available on a decadal basis and the other is the National Sample

Survey Organisation which conducts sample surveys on housing condition with a lag of 7 to 10 years. We have based our analysis on the Census data since district level data are available for the different states. Given the sample survey nature of NSS data collection, district level analysis is not possible due to inadequate sampling units at that level. Based on an analysis of data we have discussed the results in the context of housing policies and programmes of the Government of Kerala and the recent changes in its economy.

### **1.5. Summary of main findings**

Kerala being a state with a high density of population has also a high density of buildings per unit of land area. In 1961 this was three times the all India average and in 2011 it stood at 2.9 times.

The growth in residential buildings in Kerala during the last 50 years – 1961 to 2011 was xxx times while it was xx times at the all India level. This is understandable given the declining population growth in Kerala which during 2001 ad 2011 was only around five per cent as opposed to 16 per cent in all India.

The growth in non-residential buildings in Kerala was considerably higher than all India between 1961 and 2011. It was xxx times in Kerala compared to xx times in all India.

Taking seven core indicators of basic housing condition, Kerala is well ahead of India in terms of reducing housing deprivation. For example, houses without a private latrine facility in Kerala was around 5 per cent in Kerala compared to 53 per cent in all India in 2011. While 95 per cent of houses in Kerala was electrified by 2011 it was only 67 per cent in all India.

While rural-urban disparity in a number of indicators has come down in Kerala it increased in some others. However, this has to be interpreted cautiously given the fact that between 2001 and 2011 the increase in Kerala's urbanisation has been due to the transformation of rural areas into urban areas rather than an increase in population in the existing big urban cities. This means an increase in inequality could be due to the construction of better housing facilities by the richer sections of the population in the earlier rural areas or by moving from rural areas to nearby smaller towns.

To begin with, both SC and ST sections had significantly low levels of achievement compared to the other sections in 2001. The gap is being narrowed in most indicators. However, the gap to be narrowed is higher for the ST population than for the SC population.

The deprivation in housing condition is around five per cent for most indicators except access to drinking water (16%) and dependence on firewood for cooking (64%). Except cooking energy, Kerala is well placed to tackle the last mile problem.

Having attained basic housing condition for an overwhelming majority of the population, Kerala now faces a major challenge in terms of environmental resources for building construction. There is an urgent need to move away from high cost and environmentally-unsustainable resources to locally available, cost-effective and less energy-intensive resources for a climatically compatible and sustainable habitat.

This challenge to move towards a Green Habitat has become all the more urgent in view of the global concerns and national commitment to move towards a low carbon-emitting regime of resource use in the economy and society.

## Chapter 2

### Housing Condition in Kerala Well ahead of national achievement

#### 2.1 Introduction

Kerala has been known for its high level of social and human development indicators not only when compared to other Indian states but also to other similarly placed developing countries (see, e.g. Kannan 2000 in Parayil). While the Human Development Index developed and propagated by the UNDP has become a standard criterion for comparison across countries as well as provinces/regions within a country, housing is not part of this summary index. This is quite understandable given the focus on individual characteristics as well as the need for as few a number of foundational characteristics as possible for purposes of easy comparison.

However, housing condition is an important indicator of human welfare both from the point of individuals as well as communities. It has an instrumental value in so far as it affects the physical and mental health of the residents and through that in their ability to function in both economic and social spheres of life. It is also a symbol of dignity that affects in many social and economic interactions. For these reasons, housing has been considered as a basic necessity. That makes it one of the foundational characteristics in measuring the economic and social development of a country or its constituent parts.

In an earlier report, we dealt with the housing condition in India in terms of its constituent states with special focus on rural and urban differences as well as across three major social groups viz., Scheduled Castes, Scheduled Tribes and Others. In this study, we undertake a detailed examination and analysis of the housing condition in Kerala given its overall leading position in social and human development indicators including housing condition.

The main source of data is the Population Census Reports for the relevant years. We confine ourselves to a comparison of the situation between 2001 and 2011 and subsequently focus mainly on the 2011 Census Report for detailed analysis. The National Sample Survey

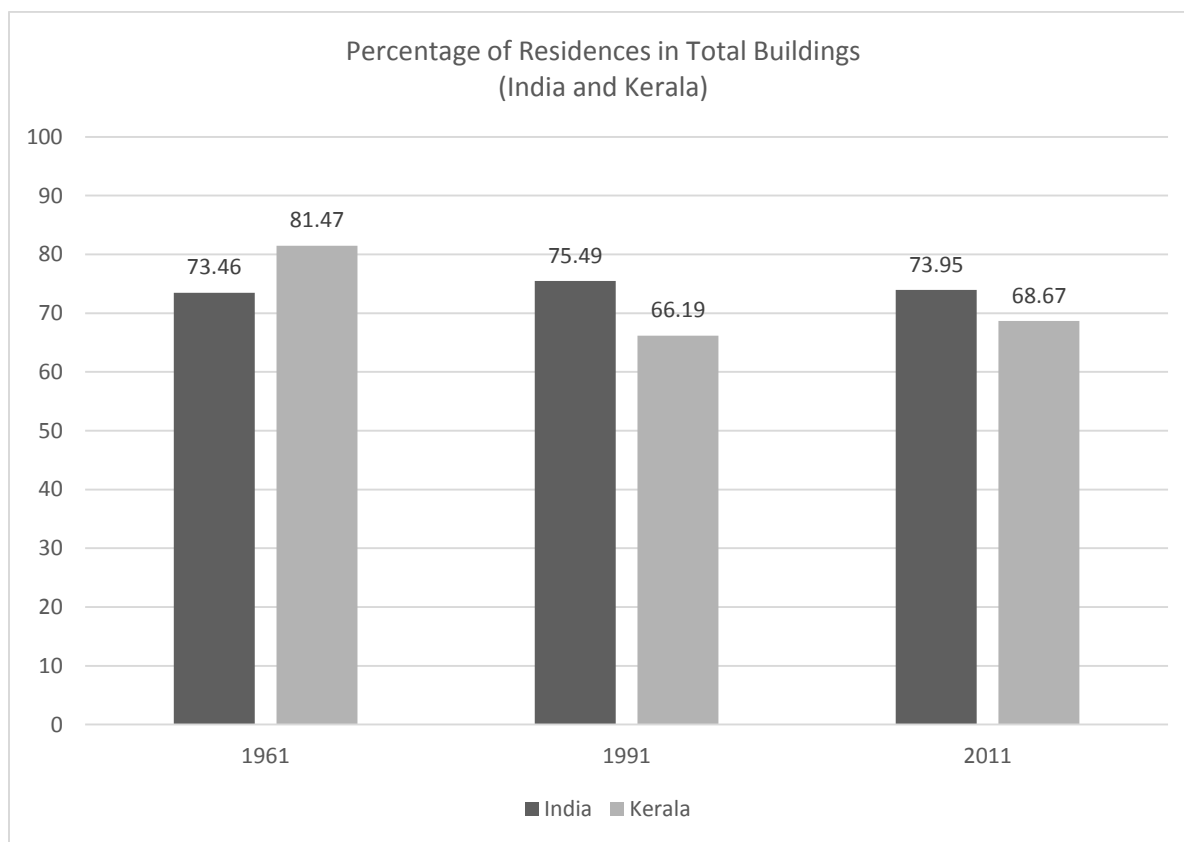
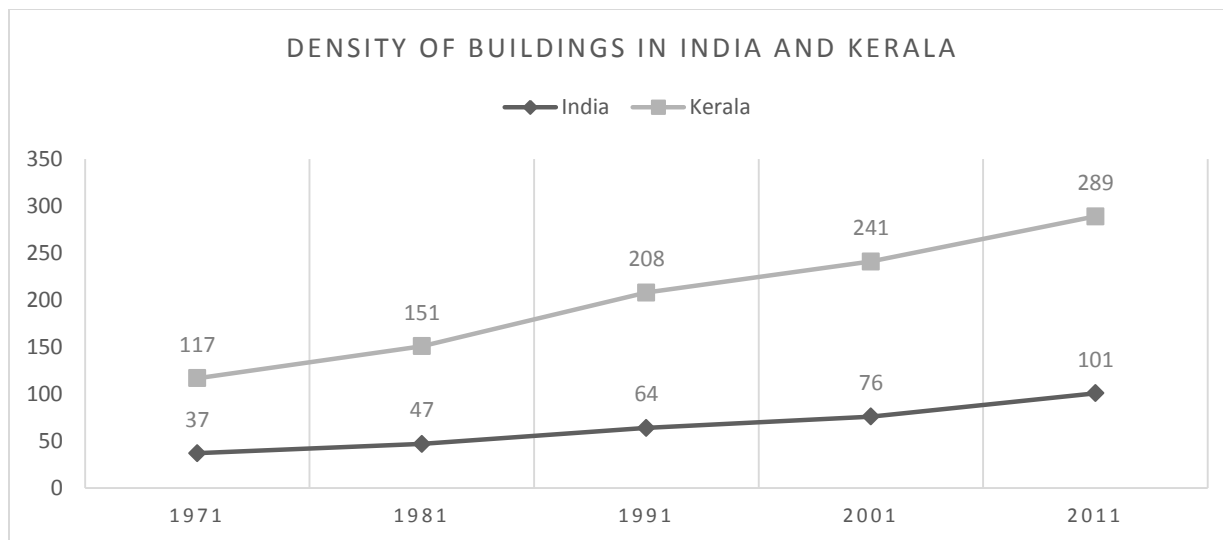


(which undertook a survey in 2008-09) is useful for obtaining further details that are not captured in Population Census but it does not permit district level analysis due to small sample size. The state level picture from this source has been compared with other states in our earlier report and hence we do not repeat them here except in highlighting achievements in the selected basic indicators.

## **2.2 Census Houses and Residential Houses**

Census houses are defined as building units used for any purpose. From this we need to find out those houses which are occupied for any purpose. Then there is a further classification that will give the number of residential houses (including those used partially for other purposes such as a grocery shop). As in most parts of India, there has been a construction boom in Kerala but perhaps in a more accelerated form. This shows that Kerala had 112.18 lakh building units in 2011 that was higher by 18.6 lakhs units compared to 2001. This comes to 3.4 per cent of the all India total compared to its population share of only 2.7 per cent. What is important to look at is the proportion of occupied census houses which was only 89.4 percent in Kerala compared to 92.5 per cent for all India. This means not an insignificant number of building units (i.e. 10.6 percent of census houses) – presumably residential units – are not occupied and left empty. In absolute terms this comes to 11.9 lakh for Kerala in 2011. Enquiries with builders and others knowledgeable in the sector has confirmed the popular impression that a number of newly constructed residential apartments and independent residential buildings are owned by Keralaites working abroad in anticipation of their eventual return for settlement. However, it should also be added that residential buildings/apartments are also being increasingly viewed as investments by the richer classes and the unoccupied status could be a transient phenomenon before it is being leased out or sold. If that is the case, there is an oversupply of housing. But at the same time, there is a deficiency in quality housing for the poor as we shall see later. Despite overall improvement in the economic condition of most sections of the population, this of course reflects the economic inequality which has been on the increase in Kerala as well since the 1990s.

Table 2.1: Total number of census houses by Use (Rural and Urban) in lakhs							
India							
Sl no		1961	1971	1981	1991	2001	2011
1	Total number of census houses	1078.57037	1228.58597	1510.01488	1950.24257	2490.95869	3308.86373
2	Census houses vacant at the time of house listing	62.59452	77.54926	80.46567	124.11900	158.11192	246.73289
3	Residence	772.21275	896.63937	1072.02355	1400.79652	1792.75605	2361.09682
4	Residences in combination with other uses	20.01582	27.94009	44.31081	71.38837	78.86567	85.79218
5	Total of 3+4	792.22857	924.57946	1116.33436	1472.18489	1871.62172	2446.88900
	Index	100	116.70615	140.91064	185.82830	236.24769	308.86149
6	Hotels, tourists homes, etc.	1.71771	1.77011	2.10654	3.18730	5.21598	7.20896
7	Shops excluding eating houses	23.01435	27.01610	36.98698	56.26875	133.90292	176.73199
8	Factories, workshops/worksheds	10.71730	15.98197	22.92849	34.33632	22.10912	24.96727
9	Others	188.29792	181.68907	251.19284	260.14631	299.99703	406.33362
10	Total of 6 to 9	223.74728	226.45725	313.21485	353.93868	461.22505	615.24184
	Index	100	101.21117	139.98599	158.18681	206.13661	274.97176
Kerala-Total							
		1961	1971	1981	1991	2001	2011
1	Total number of census houses	33.80469	45.61185	58.81075	80.71960	93.56874	112.17853
2	Census houses vacant at the time of houselisting	2.87973	3.25765	4.09550	6.84015	7.31823	11.89144
3	Residence	27.39867	33.32515	40.59540	52.12510	64.90580	76.58685
4	Residences in cumbination with other uses	0.14316	0.29365	1.35775	1.29795	0.49620	0.44931
5	Total of 3+4	27.54183	33.61880	41.95315	53.42305	65.40200	77.03616
	Index	100	122.0645	152.3252	193.9706	237.4642	279.7060
6	Hotels, dharamashalas, tourists homes, etc	0.02604	0.06220	0.07805	0.29365	0.42029	0.52509
7	Shops excluding eating houses	1.41682	2.03045	2.63175	3.66040	8.97251	9.64441
8	Factories, workshops/worksheds	0.54576	0.91185	1.52260	2.23775	1.51692	1.65901
9	Others	<b>1.39451</b>	<b>5.73090</b>	<b>8.52970</b>	<b>14.26460</b>	<b>9.93879</b>	<b>11.42242</b>
	Total of 6 to 9	3.38313	8.73540	12.76210	20.45640	20.84851	23.25093
10	Index	100	258.20468	377.2276	604.65900	616.2492	687.2609



The 2011 Census had noted that the continuing pace of urbanization of the country in which a few states including Kerala has registered a much higher rate than the rest of the country. As such the share of census houses in urban areas in Kerala has gone up to 48 per cent compared from just 26 per cent in 2001 while the all India increase is quite modest.

### 2.3 Housing Condition as a part of Basic Living Condition

While the Census Reports on Housing give a picture of the housing condition in the country (by states as well as districts) covering a large number of its physical characteristics and amenities, our objective in this report is to capture the basic housing condition that would include the physical characteristics such as current condition of the structure, space, etc. as well as basic amenities such as latrine facility, access to drinking water, etc. From this point of view we have identified seven indicators the satisfaction of which we reckon, would constitute the attainment of basic housing facility. The idea is to find out what proportion of the households in Kerala has satisfied these conditions. While so doing we extend the analysis to the broad social groups constituting the population i.e. the Scheduled Castes (SC) and Scheduled Tribes (ST) and the residual category of Others. The idea is to see to what extent the housing condition deprivation of the socially most disadvantaged have been reduced compared to the other groups. This we do with respect to two time points i.e. 2001 and 2011.

From among the large number of indicators available in the Census Reports, we have selected the following to assess the basic housing condition in Kerala.

- (i) *Condition of the housing structure*: Here the classification is in terms of (a) ‘good’, (b) ‘satisfactory’, and (c) ‘dilapidated’ as reported by the respondent. Dilapidated is taken as the characteristic of deprivation. It means that the housing structure is in need of serious repair.
- (ii) *Number of rooms*: Since the Census Report does not give the floor area of the house; we have taken the number of rooms as a relevant indicator. If a house has only two rooms or less, then it is an indication of basic deprivation.
- (iii) *Latrine Facility*: We examine the data on latrine facility with respect to having a private latrine facility or no latrine facility. If it is the latter, it is an indication of basic deprivation.
- (iv) *Separate kitchen facility*: We examine this as an indicator of better housing condition from the point of women for whom the availability of a space that can be called exclusively as kitchen is important from the point working freedom as well as overall housing facility.
- (v) *Access to drinking water within premises*: Access to drinking water is a critical basic amenity. If it is not available within the premises, it is treated as a basic deprivation.

- (vi) *Availability of electricity for domestic use:* Electricity has become a basic utility for households. However, there is still a backlog of electricity connection or an inability to afford an electricity connection. The absence of electricity for domestic use such as lighting is taken as a basic deprivation.
- (vii) *Type of cooking energy:* This is an essential item in the household expenditure. It also has implications for health of the women engaged in cooking. The absence of safe cooking energy could be taken as a basic deprivation.

## 2.4 Assessing Basic Housing Condition

The basic housing condition in terms of the above indicators in Kerala is one that is considerably far better than the country as a whole. We discuss the housing condition in terms of the above indicators one by one. Table 2.4 summarizes the information for Kerala and all India from the Census of 2011 while Table 2.5 summarizes the information computed from the National Sample Survey of 2008-09. We give the overall picture from the two sources in order to see whether they present a reasonably similar picture. They in fact do although in some cases (e.g. access to drinking water) the findings differ in some measure. What comes out unequivocally is that the State of Kerala reports considerable progress in improving the quality of the housing condition of its people compared to the country as a whole. In that respect, Kerala perhaps provides a roadmap for other states to achieve similar progress. As we shall however note later, Kerala has a small backlog in terms of improving the housing condition of a small segment of its population. Its further challenges seem to be of a second order type especially the need to move away from less environment-friendly housing and other building construction to a more environment-friendly one involving less carbon emission, climatic suitability and use of locally available materials.

We now discuss the basic indicators in the housing condition in Kerala and all India.

*Condition of housing structure:* When the condition of the housing structure is described as ‘good’ in the Population Census it means it does not need any repair at the time of the survey. In that respect two-thirds of houses in Kerala are in good condition while it is only 53 per cent for all India. The worst condition is described as ‘dilapidated’ whose share is the same for both Kerala and all India. ‘Livable’ indicates that only minor repairs are required. Another indicator is the strength of materials in terms of pucca, semi-pucca and katcha. Pucca refers to housing units whose wall and roof are built with permanent – rather durable – materials while semi-pucca

refers to only either wall or roof with such material. When both are constructed with temporary materials such as thatch, it is referred to as kacha. In this respect Kerala has a very high share of pucca houses at 80 per cent compared to 66 for all India. But the katcha housing is only about three percent while it is a high of nearly 13 per cent for all India.

*Number of living rooms:* It is not enough to have a good or livable house but also one with some space for the family members. If we take at least two rooms as a reasonable space, then almost 92 per cent in Kerala belong to that category as per the Census of 2011 but it is a mere 59 per cent for all India. Therefore the lack of reasonable space for a family of five in India is quite a major problem. We will see later that if such houses also lack a separate kitchen then the situation with regard to space is a much more serious problem than what the number of living rooms indicates.

*Private latrine facility :* We would consider this as one of the most basic requirements in a housing facility. This impinges directly on the dignity of the individual especially the women members of the household. In this respect Kerala's record is a commendable one having attained 95 per cent (according to both Census and NSS) although even the remaining five per cent should be deemed as an urgent issue to be addressed. At the all India level it is a massive 53 per cent that cannot be allowed to continue given the question of protecting the dignity of the individual.

*Availability of a separate kitchen:* A space that could be called a 'kitchen only' is not a luxury for family. For women, who mainly manage the kitchen, it gives them some private space as well as autonomy in daily chores. In Kerala 98 per cent of the households reported as having such a facility while the remaining do not have it. But for all India, nearly half the households do not have a space that they can call 'kitchen only'. Along with the absence of a private latrine facility this deficiency should also be marked as a national problem with regard to such a basic need as a reasonable housing facility.

*Access to drinking water:* It goes without saying how important it is to have easy access to drinking water facility within the household or in the premise. While close to 77 per cent of the households in Kerala report access to drinking water within the premise, this facility is available only for 51 per cent of the households at the all India level. Here again what we see is a huge gap that needs to be filled in with regard to basic housing condition. A similar, if not the

same, information is available from the NSS round on housing in 2008-09 given in Table 2.5. Here two-thirds of Kerala households reported exclusive use of drinking water facility while it is only 35 per cent for all India. The gap between Kerala and all India is quite considerable here.

*Electricity for lighting:* Access to electricity for lighting within the housing unit is another facility we have identified as part of basic housing condition. In this respect, as in the case of access to a private latrine, Kerala has achieved near universal coverage with 95 per cent of households reporting electricity connection. However there is significant gap of around 33 percent at the all India level.

*Type of cooking energy:* What type of cooking energy is used has a bearing on the health of women who are usually the ones who spent a good part of their time in the kitchen. Use of firewood has a health hazard while it is often, but not necessarily always, a less expensive commodity. Use of cow dung cake is also common in rural households.

In some respects the two sources - Census and NSS – findings are broadly similar but in some other respects there is some divergence. This could be due to the two time points of the field surveys although the gap between the two was only 2-3 years. But what is significant from the point of Kerala is its leading position in all basic indicators that we have selected. However, this does not mean that the deficiencies are negligible; even where it affects only a small segment of the population the fact is that they constitute the most vulnerable segments in the society. We will see this later when we examine the housing condition and its various indicators in terms of broad social groups with focus on ST and SC as well as spatial dimensions such as rural-urban and districts.

<b>Table 2.3: Percentage Distribution in selected indicators on Quality of Housing Condition in Kerala and India(Census 2011)</b>			
1. Condition of Structure			
	Good	Liveable	Dilapidated
Kerala	66.3	28.4	5.3
INDIA	53.1	41.5	5.4
2. No. of rooms			
	1 room*	2 rooms	3 and above
Kerala	8.4	25.1	66.5
INDIA	41.0	32.7	28.3
3. Latrine facility			
	Water Closet	Pit and Other	No latrine
Kerala	66.7	28.5	4.8
INDIA	36.4	10.5	53.1
4. Separate kitchen facility			
	With separate kitchen	No separate kitchen	
Kerala			
INDIA			
5. Access to drinking water			
	Within premises	0.2-1 km	1 km and more
Kerala	76.5	23.3	0.2
INDIA	50.7	48.9	0.5
6. Major source of lighting			
	Electricity	Kerosene	Others
Kerala	94.5	5.2	0.3
INDIA	67.2	31.4	1.4
7. Type of cooking energy			
	LPH/PNG	Firewood*	Other
Kerala	36.0	63.0	1.0
INDIA	28.5	65.8	5.7
*Inclusive. Crop residue and crowding cake.			



<b>Table 2.4: Percentage Distribution (NSSO 65th Round (July 2008- June2009))</b>			
1a. Condition of the Structure of Houses			
Region	Good	Satisfactory	Bad
Kerala	51.9	37.9	10.2
INDIA	37.9	46.9	15.3
1b. Type of Structure of Houses			
Region	Pucca	Semi –Pucca	Katcha
Kerala	80.3	16.8	2.9
INDIA	65.8	21.2	12.6
2. Number of living rooms			
Region	One room	Two rooms	Three and above
Kerala	8.8	17.6	71.8
INDIA	38.3	35.6	24.7
3. Latrine facility			
			No latrine
Kerala	66.7	28.3	4.8
INDIA			
4. Access to Drinking Water			
	Exclusive use	Common use in the building/Community use	Others
Kerala	66.4	19.5	14.2
INDIA	35.7	59.8	4.3
5. Type of Kitchen			
Region	With Water Tap	No Water Tap	No Separate Kitchen
Kerala	38.9	53.0	8.0
INDIA	12.4	38.2	49.6
6. Source of lighting			
	Electricity	Kerosene	Others
Kerala	94.4	5.6	0
INDIA			

## 2.5 Housing Policy in Kerala

Public policy on such an important basic need as housing has been central to taking care of the housing requirements of the poor and relatively poor especially those belonging to labour households. This has been the historical experience of both currently developed as well as developing countries. In India, public policy of an active type to meet the housing requirements of the poor and vulnerable is still a work in progress given the deficiency in housing with quality and reasonable amenities. In the case of Kerala, its housing policy as well as schemes till 1971 were in tandem with the Government of India; in fact the state mostly implemented the housing schemes that were quite limited in terms of requirements.

The turnaround in housing policy in Kerala came about in 1971 when the Government of Kerala led by a visionary Chief Minister C. Achutha Menon announced the One Lakh Housing Scheme for the landless poor. The scheme was a departure from the usual bureaucratic-led implementation mechanism since it was conceived as one based on social mobilization of beneficiaries as agents as well as resources. It was meant for poor landless agricultural labourers who did not get homestead lands under the then implemented Kerala Agriarian Relations Act. The poor beneficiaries received such houses almost free although the houses were quite small with bare minimum of materials and amenities. Plots of land were allotted with funds collected from the public and willing donors and labour mobilized from beneficiaries, students, civil society organizations and anyone willing to participate in the scheme. According to one estimate 60 thousand houses were thus constructed by 1976.

The importance of beneficiary participation and its success led to the designing of another scheme in 1983 known as Subsidized Aided Self Help Housing Scheme (SASH) for the economically weaker sections. While this resulted in constructing close to 30 thousand houses, a couple of other schemes such as the Cooperative Housing Scheme for the economically weaker sections and the houses constructed under the Central Government scheme of National Rural Employment Programme far exceeded this achievement. A number of schemes followed subsequently in which the State Government initiatives with imaginative provisions for assistance and implementation were quite conspicuous. During the government of C. Achutha Menon (1969-77), he took personal interest in promoting alternative architecture and building construction techniques that were cost effective and environment friendly and suited to the local

climatic and resource availability of Kerala. A committee of experts was appointed to provide guidelines for cost-effective approaches to building construction which submitted a report that was called “Performance Approach to Cost Reduction in Building Construction” in 1974. Foremost among them was the architecture and cost effective building construction approach propagated by Laurie Baker. Following the Laurie Baker approach, the Government of Kerala set up district level Nirmiti Kendras as autonomous bodies for propagating cost effective and environmentally-less energy intensive materials. This model was adopted at the national level and the Government of India empowered the Housing and Urban Development Corporation (HUDCO) to establish a similar network of ‘Building Centres’ throughout the country. At the national level, however, none of these made more than a symbolic impact given the absence of a firm political commitment backed by policies for an environmentally-compatible (less carbon emitting) and cost-effective architecture and building construction. Even in Kerala, such a paradigm-changing initiative got marginalized through the persistence of the official culture of building construction using concrete and similar energy-intensive and high cost materials and the emergence of a powerful real estate-cum-building construction lobby that catered to the rising middle and rich classes powered largely, if not only, by remittances from abroad to private households.

However, such an evolution of public policy on housing in Kerala became a basic tenet of the two political coalitions – the Left Democratic Front led by the Communist Party of India (Marxist) and the United Democratic Front led by the Indian National Congress – which came to power alternately. Special schemes for housing for the poor among the marginalized communities such as the Scheduled Tribes, Castes and the fisher folk were designed and implemented. Housing under cooperative schemes was also encouraged. This period from 1985 to 1995 marked another phase in the public policy on housing in Kerala.

A third phase perhaps accelerated this process of providing reasonable housing and related amenities for the poor and vulnerable sections emerged by the time Kerala embarked in a big way for implementing the new Panchayat Raj after the constitutional amendment on this subject during 1994 and 1994. By this time the Government of Kerala was also ready with its own state policy on housing in line with the national housing policy. The implementation of the new Panchayat Raj through a people’s plan campaign (PPC) mode greatly facilitated the further

enhancement of focus on improving the housing conditions for the weaker sections. In 1996 the Kerala State Housing Board (KSHB) launched a Maithri Housing Scheme with the objective of constructing 100 thousand housing units every year. This was largely for the economically weaker sections and the beneficiaries were to be selected by the newly constituted village panchayats. An official report recorded that within the next eight years i.e. by 2004, 2.82 lakh houses were constructed under this scheme.

While the KSHB proceeded with its own abovementioned housing scheme, the PPC for implementing the new panchayat raj was entrusted with a more ambitious housing scheme called Total Housing Scheme that aimed to meet the housing requirement of the poor. Three districts were first selected for implementing this scheme viz., Thiruvananthapuram, Kollam and Thrissur. This was because of the presence of three important organizations in the civil society that was engaged in promoting cost effective and environment friendly construction. These were: Habitat Technology Group in Thiruvananthapuram, Nirmithi Kendra in Kollam and the Centre for Science and Technology for Rural Development known as COSTFORD (founded by the late C. Achutha Menon, K.N. Raj and the famed architect Laurie Baker.

Subsequently this scheme was enlarged and called EMS Total Housing Scheme introduced in 2008 for a period of three years coinciding with the ending of the term of the LDF Government. The audit report of the Local Fund Audit reported that the achievement rate was around 22 per cent of the target of assisting 5.58 lakh families. Although the achievement rate was low, it was a commendable effort. However, the hiatus between intention and implementation is a significant one as in the case of most of the earlier schemes.

Another scheme implemented in 2008 was the renovation and reconstruction of the houses built under the One Lakh Housing scheme during the early 1970s associated with the name of M.N. Govindan Nair, a veteran politician in the cabinet of C. Achutha Menon.

### **Remittance Induced Construction Boom**

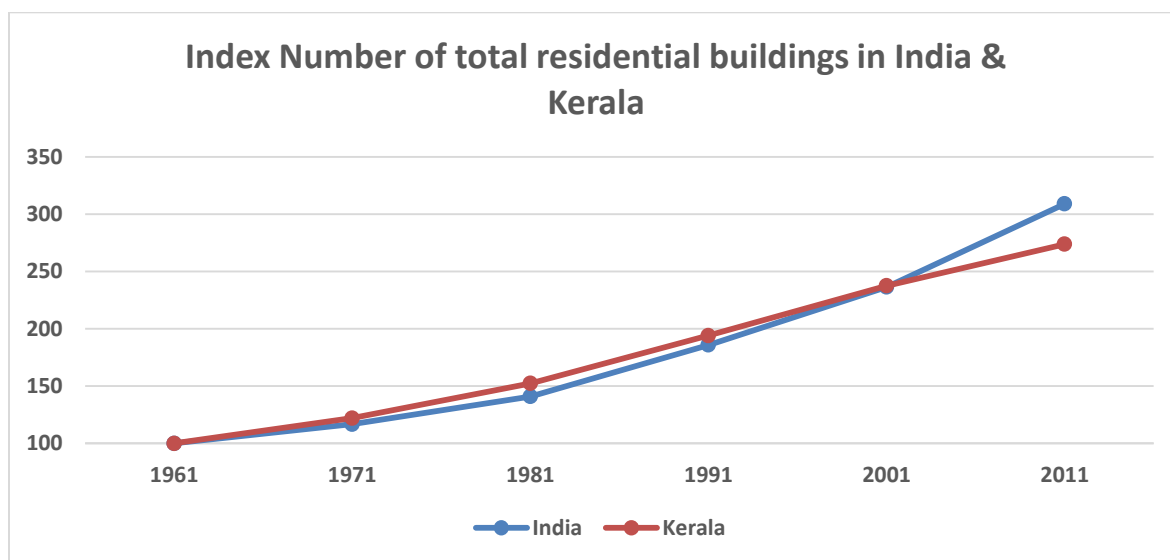
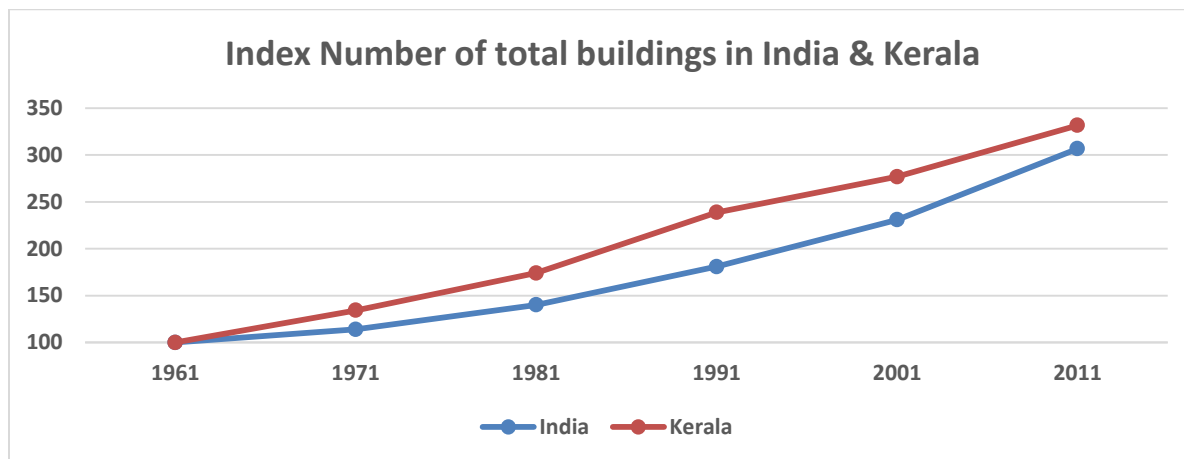
While public policy on housing and the resultant public schemes by and large focused on meeting the housing demands of the absolutely and relatively poorer sections of the population, Kerala began to witness a construction boom both in the house-building as well as non-house-building sectors arising primarily out of the flow of remittance income from its workers working

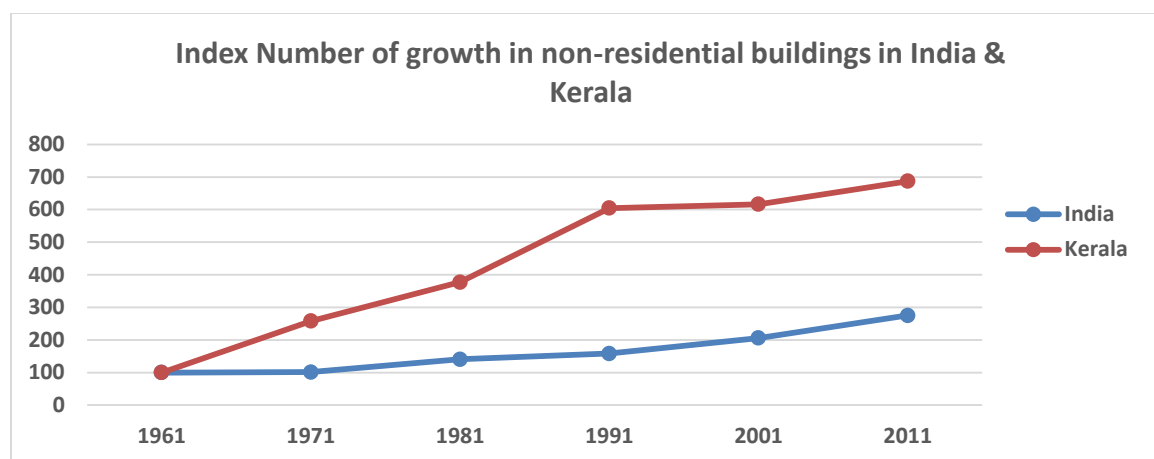
in Gulf countries and the multiplier effect that was created in the economy. Though the flow of international labour migration picked up slowly from 1973, the impact of the remittances began to affect the house-building sector in a significant way by the beginning of the 1980s. Given the skilled and semi-skilled nature of the background of a significant proportion of workers, their first priority was to build a modern house that would add to the social status of the family in a hierarchical society. But the educated and better paid segment of the people who were working in the Gulf also seemed to accord a high priority to house-building with modern facilities and amenities that they now could afford. The growth in housing units began to accelerate since the early 1980s. Along with it the characteristics of housing also changed as manifested in the size of the building with more rooms than before, modern toilets and bathrooms, with modern kitchen and appliances. Since housing constituted the largest segment in the construction sector, the growth in output in value terms in this sector provides an indication of the construction boom. Along with the series sector the construction sector also contributed significantly to the growth acceleration in the Kerala economy since early 1990's (see Kannan 2007)

By collating data from the six rounds of Population Census reports, we are in a position to get an overview of the growth in the building sector in Kerala comprising both the housing segment as well as non-housing segment. The important statistics are given in Tables xx while detailed statistics are given in the tables in the Appendix to this study.

Table 2.1 shows the growth in the number of all buildings referred as 'census houses' in the Census volumes. This consists of residences (those buildings used only as residences as well as those that are used as residence and other uses). A comparison with the all India scenario gives us an idea of the relative growth made in this sector in Kerala. The total number of building units in Kerala in 1961 was lakhs that increased to 112 lakhs in 2011 i.e. 3.3 fold or 330 per cent increase. Residential units increased from 27.5 to 77.0 lakhs registering an increase of 280 percent. What is important is the growth in Kerala for exceeded the growth in population. While at the all India the share of residences remained in the range of 74-75 per cent of all building units, it was as high as 81 per cent in Kerala in 1961 that steadily decreased to 68 per cent within the last fifty years. This means a greater rate of growth of non-residential buildings that is indicative of its economic and social change. It is well known that the density of educational (especially school) and health facilities in Kerala are quite high compared to the all

India situation. There is also a remarkable growth in the trading sector as indicated by the growth in 'shops excluding eating houses'. The increase was 6.8 times or 680 percent during the last 50 years.





The construction boom contributed to an income multiplier in the economy through employment since building activity construction is a non-traded sector. As far as materials are concerned, there was some local multiplier effect through the demand for sand, granite, baked bricks, tiles and wood. But over a period of time, the imported materials (both from other parts of India as well as from abroad) content increased with preference for Malaysian wood, marbles, new floor tiles, electricity and plumbing material apart from cement and steel. Wage increase in the construction sector led to a situation whereby rural wages were being determined by the demand from this sector since a lot of workers from agriculture and related activities migrated to this sector. Wage increase has been quite impressive leading to increasing purchasing power among the workers. With their newly acquired experience in the construction sector, a large number of skilled workers such as masons, carpenters, plumbers, electricians, specialists in flooring, tiling, etc. migrated to the booming construction sector in the Gulf countries. All these ultimately resulted in either improving the existing amenities of their housebuilding or in constructing new houses.

Therefore a combination of factors helped Kerala in improving its housing condition. If left to the market forces, Kerala would have certainly witnessed the construction boom but it would have bypassed the poorer and weaker sections. It is here public policy and its implementation in terms of a series of public housing schemes played a very significant role in improving the housing conditions of the poor. In fact, after the establishment of the new panchayat raj in 1995, housing has been an important area of activity of the panchayats (and municipalities) in implementing the various public housing schemes. This also includes

improving amenities such as drinking water, electrification, construction of toilets and related housing amenities.

It is in this background we analyse the housing condition in Kerala during 2001 and 2011. Given the sharp rural-urban division in many aspects of basic development, it is important to examine the rural condition and compare it with the urban situation. This we do in the next chapter. However, we have realized that the division is much deeper than mere spatial division. It often takes the form of a social division in terms of segments of population who are advantaged, less advantaged and disadvantaged. Our earlier analysis of poverty and related issues confirm such a sharp social dimension (see Kannan 2014). We have therefore subjected the data to an analysis of the housing condition in terms of Scheduled Castes, Scheduled Tribes and Others by relying on the data from the Census reports.

The second point to note is the use of highly energy-intensive materials in the construction of buildings in Kerala as in the case of the rest of the country. Despite the availability of more cost-effective and environmentally friendly architectural and construction approaches, the idea of a ‘modern building’ be it a house or other building has come to mean use of high cost materials and high expenditure for gadgets and fixtures. This however is a theme that is beyond the scope of this study but something that has to be pursued separately given the concerns over the adverse impact of environmental degradation ultimately resulting in increased carbon emission.



# Chapter 3

## Social and Spatial Dimensions

### 3.1 Introduction

There are two important differentiating features of the Indian economy and society relating to the social and spatial dimensions; the former referring to the rural-urban differences and the latter to social groups. While social groups can be listed according to different layers, we focus here on three aggregate groups namely ST, SC and Others. In this way we are in a position to examine the condition of the two important groups that are found to be at the bottom of the economy and society on a very large number of indicators.

We then examine the three groups in terms of the rural and urban areas. Rural is associated with mainly agriculture and related activities, lower income, seasonal employment and so on whereas urban is dominated non-agricultural activities, wage income, better infrastructure and so on. However the rural economy in Kerala has changed much faster than all India with a much higher share of workers in non-agricultural activities (especially agro-processing as well education and health)

As mentioned in Chapter 2, we have selected seven basic indicators as constituting the core of the housing and associated amenities. For short they are referred to as 'housing condition'. In addition we have also selected some of the additional indicators of housing and amenities other than basic indicators referred to as 'Additional facilities'.

Basic indicators of the housing condition have been identified by selecting from a whole range of housing characteristics used for the population census. By comparing 2001 and 2011 censuses we are in a position to capture the progress made in improving the housing condition in Kerala.

### 3.2. Performance in basic indicators

In this section we present the performance in the basic indicators (as mentioned above) of housing and amenities among SC, ST and other groups.

### ***Housing condition***

The following section presents the distribution of the condition of houses by categorizing them into good, livable and dilapidated. The houses are reported as ‘Good’ if such houses do not require any repair and are in fair good condition. Livable houses are defined as those which need minor repairs. The houses are recorded as dilapidated, if the house had shown the signs of decay or those breaking down or require major repair, and far from being in condition that can be repaired or restored.

Table 3.1 presents the data on housing conditions by social groups in year 2001 and 2011. In 2011 out of total houses in Kerala (76,58,685), 66 percent were in good condition, 28 percent livable and 5.2 percent dilapidated. From 2001 to 2011 data reveals an increase in good condition houses (11 percentage points), decrease in livable houses by 8 percent points and dilapidated by 3 percentage points.

In 2011, out of total houses (7,51,165) belonging to SC only, 45 percent houses were good condition, 43 livable and 11 percent dilapidated. A comparison with the census 2001, the good condition houses have increased by 11 percentage points and the reduction of the livable and dilapidated houses as evident from the declining percentages. The share of good condition houses among the total houses (136006) belonging to ST’s is only 38 percent much lower than the total average which is 66 percent in 2011. While the livable houses are 45 percent and dilapidated houses are 16 percent which is more than three times the average dilapidated houses in Kerala. There has been increase in the good condition houses among ST households with an increase of 9 percentage points from Census 2001 to Census 2011 and a similar percentage point reduction in livable houses in the same time period. Though, the share of dilapidated houses has reduced (less than one percentage points) from 2001 to 2011 but the absolute number of houses have shown an increase from 2001 to 2011. The Other group other than SC and ST, the share of good condition houses are 69 percent, 26 percent livable and 4 percent dilapidated out of total houses (67,71,514) in Census 2011. While comparing with census 2001 the good condition houses have increased by 10 percentage points and reduction of livable and dilapidated houses by 8 percent and 3 percentage points respectively.

Table 3.1 Percentage distribution and its change in condition of houses by social groups between 2001 and 2011						
Condition	All Population			SC		
	2011	2001	PPC*	2011	2001	PPC
Good	66.41	55.9	10.51	45.81	34.98	10.83
Livable	28.32	35.92	-7.6	43.07	49.04	-5.97
Dilapidated	5.26	8.17	-2.91	11.12	15.99	-4.87
Total	100	100		100	100	
Total Number of Houses	76,58,685	6553765		7,51,165	709143	
Condition	ST			Others		
	2011	2001	PPC*	2011	2001	PPC
Good	38.38	29.02	9.36	69.26	59.04	10.22
Livable	45.3	53.82	-8.52	26.35	33.94	-7.59
Dilapidated	16.32	17.16	-0.84	4.39	7.02	-2.63
Total	100	100		100	100	
Total Number of Houses	136006	116623		6771514	5727999	
*PPC stands for percentage point change						

***Rural urban differences in the housing condition.***

In rural areas the percentage share of households with good housing condition in 2011 was 61 percent, livable 33 percent and dilapidated 6 percent. In comparison to 2001 the percentage share of good condition houses have increased by 9 percentage points, livable houses by 5 percentage points and dilapidated have decreased by 14 percentage points. Although, in absolute number of houses have shown negative decadal growth rates from year 2001 to 2011. Among the social groups; of total (SC) households in rural areas, 42 percent households have good condition houses followed by livable houses (46 percent) and 12 percent dilapidated in 2011. While comparing to 2001 the percentage share of good condition houses have increased by 9 percentage points, livable houses and dilapidated decreased by 4 percentage points each. Similarly ST households 34 percent have good condition houses, 47 percent livable and 18 percent dilapidated houses which is highest among the social groups.

Table 3.2 Condition of census houses by sector, social groups and census year (2001 and 2011)

	Rural					Urban				
	2011		2001		PPC	2011		2001		PPC*
	Census houses	% share	Census houses	% share		Census houses	% share	Census houses	% share	
<b>All Population</b>										
Good	2482591	61.05	2590507	52.36	8.69	2626904	72.48	851472.8	51.47	21.01
Livable	1322015	32.51	1369466	27.68	4.83	854976.1	23.59	553035.5	33.43	-9.84
Dilapidated	261881.8	6.44	987519.4	19.96	-13.52	142435.6	3.93	249800.7	15.1	-11.17
Total	4066488	100	4947492	100		3624316	100	1654309	100	
<b>SC</b>										
Good	191941.1	42.21	197085.1	33.56	8.65	152190.2	51.34	50958.45	41.81	9.53
Livable	208720.6	45.9	294688.1	50.18	-4.28	114780	38.72	53042.61	43.52	-4.8
Dilapidated	54067.28	11.89	95488.8	16.26	-4.37	29465.74	9.94	17879.94	14.67	-4.73
Total	454729	100	587262	100		296436	100	121881	100	
<b>ST</b>										
Good	39684.22	34.32	29111	27.27	7.05	12512.9	61.41	4733.624	47.95	13.46
Livable	55132.38	47.68	58734.4	55.02	-7.34	6479.568	31.8	4038.635	40.91	-9.11
Dilapidated	20813.4	18	18916.28	17.72	0.28	1383.53	6.79	1098.754	11.13	-4.34
Total	115630	100	106751	100		20376	100	9872	100	
<b>Others</b>										
Good	2272587	64.39	2293901	53.93	10.46	2462767	74.46	789597.5	51.86	22.6
Livable	1067999	30.26	1098674	25.83	4.43	733273.6	22.17	502595.7	33.01	-10.84
Dilapidated	188823.4	5.35	860904.1	20.24	-14.89	111462.9	3.37	230362.7	15.13	-11.76
Total	3529410	100	4253479	100		3307504	100	1522556	100	
PPC stands for percentage point change										

The percentage share in good condition houses of schedule tribe (ST) households has increased by 7 percentage points and the share of livable houses has reduced by 7 percentage points. Of the total other group houses in rural areas, 64 percent of houses are in good conditions, 30 percent livable houses and only 5 percent dilapidated in 2011. While comparing with 2001, the percentage share of households belonging to the Other group other than SC and ST has shown greater improvement in the share of good condition houses (10 percentage points), the percentage share of livable houses increased by 4 percent and greater reduction in dilapidated houses by 15 percentage points. From 2001 to 2011, dilapidated houses have recorded the highest decline recorded the decadal growth rate of 78 percent.

In urban areas percentage share of households with good housing condition in 2011 was 72 percent, livable 24 percent and dilapidated 4 percent. In comparison to 2001 the percentage share of good condition houses has increased by 21 percentage points and absolute number of houses has increased by the decadal growth rate of 209 percent from 2001 to 2011. Livable houses and dilapidated have decreased by 9 and 11 percentage points from the same time period. Among the social groups; SC households in urban areas have, 51 percent households have good condition houses followed by 32 percent livable houses and 10 percent dilapidated. While comparing to 2001 the percentage share of good condition houses have increased by 10 percentage points, livable houses and dilapidated decreased by 5 and 5 percentage points respectively. Similarly for ST households 61 percent have good condition houses, 32 percent livable and 7 percent dilapidated houses in 2011. The percentage share in good condition houses of ST households has increased by 13 percentage points and the share of livable houses has reduced by 9 percentage points and dilapidated decreased by 4 percentage points from 2001 to 2011. Though the livable and dilapidated houses have recorded a reduction in the percentage share but in absolute numbers the households have increased by 60 percent livable houses and 26 percent dilapidated houses from the year 2001 to 2011. The other group household in urban areas has 74 percent of houses with good conditions, 22 percent livable houses and only 3 percent dilapidated in 2011. While comparing with 2001, the percentage share of households belonging to Other households other than SC and ST has shown greater improvement in the share of good condition houses (23 percentage points), the percentage share of livable houses increased by 12 percent and greater reduction in dilapidated houses by 15 percentage points with an absolute reduction of number of houses from 2001 to 2011.

### ***Availability of Space: Number of Rooms***

The following section presents the distribution of the households by the availability of rooms across social groups in Kerala. In 2011, 34 percent of the households have four rooms and above, 32 percent have three rooms, 25 percent have two rooms and 8 percent households do not have exclusive rooms or have only one room. In terms of increase in different categories of dwelling rooms in Kerala, from 2001 to 2011, there is an increase in one percentage point in four rooms

and above, 5 percentage points in three rooms and a reduction of two rooms by 2 percentage points in two rooms and 4 percent point decrease in no exclusive rooms/one room.

In 2011, out of a total number of 7,51,165 houses belonging to the SC category, 14 percent of the households have four rooms and above, 30 percent have three rooms, 40 percent have two rooms and 16 percent households do not have have only one room. In terms of increase in different categories of dwelling rooms in SC households in Kerala, from 2001 to 2011, there is one percentage point decrease in four rooms and above, 7 percentage points increase in three rooms, an increase in two rooms by 2 percentage points and a reduction of no exclusive rooms/one room by 7 percentage points.

Table 3.3 Availability of space by social groups and census year (2001 and 2011)					
<b>All Population</b>					
	2011		2001		
Number of rooms	No. of houses	%	No. of houses	%	PPC
no exclusive room/ one room	645066	8.36	825121	12.51	-4.15
two rooms	1937119	25.10	1756379	26.63	-1.53
three rooms	2484792	32.20	1801212	27.31	4.89
four rooms and above	2649393	34.33	2212494	33.55	0.79
Total	7716370	100	6595206	100	
<b>SC</b>					
	2011		2001		
no exclusive room/ one room	122242	16.27	167999	23.69	-7.42
two rooms	298352	39.72	271531	38.29	1.43
three rooms	226857	30.20	166625	23.50	6.70
four rooms and above	103714	13.81	102988	14.52	-0.72
Total	751165	100	709143	100	
<b>ST</b>					
no exclusive room/ one room	29307	21.55	36195	31.04	-9.49
two rooms	48111	35.37	41802	35.84	-0.47
three rooms	36241	26.65	21571	18.50	8.15
four rooms and above	22347	16.43	17055	14.62	1.81
Total	136006	100	116623	100	
<b>Others</b>					
no exclusive room/ one room	493517	7.23	620927	10.76	-3.54
two rooms	1590656	23.29	1443046	25.01	-1.72
three rooms	2221694	32.53	1613016	27.96	4.57
four rooms and above	2523332	36.95	2092451	36.27	0.68
Total	6829199	100	5769440	100	

The share of availability of rooms among the total houses (1,36,006) belonging to ST households, 16 percent of the households have four rooms and above, 27 percent has three rooms, 35 percent has two rooms and 22 percent households do not have only one room or a few

without an exclusive room in 2011. In terms of increase in different categories of dwelling rooms in ST households in Kerala, from 2001 to 2011, there is 2 percentage point decrease in four rooms and above, 8 percentage point increase in three rooms, decrease of two rooms by less than one percentage points and a reduction of 9 percentage points in housing units with one room (or those without an exclusive room) . The Others group – i.e. other than SC and ST , 37 percent of households have four rooms and above, 33 percent of households have three rooms, 23 percent have two rooms and 7 percent do not have exclusive rooms or one room in 2011. In terms of increase in different categories of dwelling rooms in ST households in Kerala, from 2001 to 2011, there is less than one percentage point increase in four rooms and above, 5 percentage points increase three rooms, and decrease of two rooms by 2 percentage points and a reduction of no exclusive rooms/one room by 4 percentage points.

### ***Rural urban differences in the availability of space***

In rural areas, 32 percent of the households have four rooms and above, 32 percent have three rooms, 27 percent have two rooms and 9 percent households do not have exclusive rooms or have only one room in 2011. In terms of increase in different categories of dwelling rooms in rural Kerala, from 2001 to 2011, then increase in four rooms and above has remained the same, 5 percentage points in three rooms and a reduction of one percentage points in two rooms and 4 percent point decrease in no exclusive rooms/one room. In 2011, out of total households belonging to SC in rural areas, 12 percent of the households have four rooms and above, 29 persons have three rooms, 42 percent have two rooms and 17 percent households do not have exclusive rooms or have only one room. In terms of increase in different categories of dwelling rooms in SC households in rural areas, from 2001 to 2011, there is one percentage point decrease in four rooms and above, 6 percentage points increase three rooms, an increase of two rooms by 2 percentage points and a reduction of no exclusive rooms/one room by 7 percentage points. The share of availability of rooms among the total houses (136006) belonging to ST households in rural areas, 15 percent of the households have four rooms and above, 26 percent has three rooms, 36 percent has two rooms and 23 percent households do not have exclusive rooms or one room in 2011. In terms of increase in different categories of dwelling rooms in ST households in rural areas, from 2001 to 2011, there is one percentage point increase in four rooms and above, 8 percentage point increase in three rooms and a reduction of no exclusive rooms/one room by 9



percentage points. The Other group other than SC and ST in rural areas, 35 percent of households has four rooms and above, 33 percent of households have three rooms, 24 percent have two rooms and 8 percent do not have exclusive rooms or one room in 2011. In terms of increase in different categories of dwelling rooms in Other households in rural areas, from 2001 to 2011, the percentage share of four rooms and above has remained same, 5 percentage points increase three rooms, and decrease of two rooms by 2 percentage points and a reduction of no exclusive rooms/one room by 3 percentage points.

In urban areas, 37 percent of the households have four rooms and above, 32 percent have three rooms, 23 percent have two rooms and 7 percent households do not have exclusive rooms or have only one room in 2011. In terms of increase in different categories of dwelling rooms in urban areas, from 2001 to 2011, there increase in four rooms and above has decreased by 2 percentage points and 3 percent point decrease in no exclusive rooms/one room. In 2011, out of total households belonging to SC in urban areas, 16 percent of the households have four rooms and above, 32 persons have three rooms, 37 percent have two rooms and 14 percent households do not have exclusive rooms or have only one room. In terms of increase in different categories of dwelling rooms in SC households in urban areas, from 2001 to 2011, there is a 3 percentage point decrease in four rooms and above, 6 percentage points increase three rooms, an increase of two rooms by 2 percentage points and a reduction of no exclusive rooms/one room by 7 percentage points. The share of availability of rooms among the total houses (1,36,006) belonging to ST households in urban areas, 26 percent of the households have four rooms and above, 29 percent has three rooms, 30 percent has two rooms and 15 percent households do not have exclusive rooms or one room in 2011. In terms of increase in different categories of dwelling rooms in ST households in urban areas, from 2001 to 2011, there is 2 percentage point increase in four rooms and above, 6 percentage point increase in three rooms and, a reduction of two rooms and no exclusive rooms/one room by one percentage point and 6 percentage points respectively.

The Other groups other than SC and ST in urban areas, 39 percent of households have four rooms and above, 32 percent of households have three rooms, 22 percent have two rooms and 7 percent do not have exclusive rooms or one room in 2011. In terms of increase in different

categories of dwelling rooms in Other households in urban areas, from 2001 to 2011, there is significant decline in four rooms and above by one percentage point, 4 percentage points increase three rooms and a reduction of no exclusive rooms/one room by 3 percentage points.

Table 3.4: Availability of space by sector, social groups and census year (2001 and 2011)

	<b>Rural</b>					<b>Urban</b>				
	2011		2001		PPC	2011		2001		PPC
number of rooms	census houses	%	census houses	%	PPC	census houses	%	census houses	%	PPC
<b>All Population</b>										
no exclusive room/ one room	384487	9.39	656865	13.29	-3.90	260579	7.20	168406	10.19	-2.99
two rooms	1091934	26.66	1370075	27.72	-1.06	845185	23.34	386226	23.37	-0.03
three rooms	1310280	31.99	1340420	27.12	4.87	1174512	32.44	460760	27.88	4.56
four rooms and above	1308973	31.96	1575191	31.87	0.09	1340420	37.02	637264	38.56	-1.54
Total	4095674	100	4942550	100		3620696	100	1652656	100	
<b>SC</b>										
no exclusive room/ one room	79444	17.47	142304	24.23	-6.76	42798	14.44	25695	21.08	-6.64
two rooms	188882	41.54	230094	39.18	2.36	109470	36.93	41437	34.00	2.93
three rooms	131281	28.87	135192	23.02	5.85	95576	32.24	31433	25.79	6.45
four rooms and above	55122	12.12	79672	13.57	-1.44	48592	16.39	23316	19.13	-2.74
Total	454729	100	587262	100		296436	100	121881	100	
<b>ST</b>										
no exclusive room/ one room	26339	22.78	34145	31.99	-9.21	2968	14.57	2050	20.77	-6.20
two rooms	41947	36.28	38686	36.24	0.04	6164	30.25	3116	31.56	-1.31
three rooms	30317	26.22	19245	18.03	8.19	5924	29.07	2326	23.56	5.51
four rooms and above	17027	14.73	14675	13.75	0.98	5320	26.11	2380	24.11	2.00
Total	115630	100	106751	100		20376	100	9872	100	
<b>Others</b>										
no exclusive room/ one room	278704	7.91	480415.9	11.31	-3.40	214813	6.50	140661	9.25	-2.75
two rooms	861105	24.43	1101295	25.92	-1.50	729551	22.08	341673	22.47	-0.38
three rooms	1148682	32.58	1185983	27.92	4.67	1073012	32.48	427001	28.08	4.40
four rooms and above	1236824	35.08	1480844	34.86	0.23	1286508	38.94	611568	40.21	-1.27
Total	3525315	100	4248537	100		3303884	100	1520903	100	

### *Latrine Facilities*

There are different types of latrine facilities within the houses defined by the census. These include water closet latrines, Pit latrine, other latrine and the houses with no-latrine facility. Water closet latrines are defined as those latrines which have water closets fitted with flushing cistern connected to a septic tank or underground sewerage and the faecal matter is removed without the need of manual scavenging. Pit latrines are attached to the pit that is dug into the ground for the reception of night soil. And the 'Other latrines' include latrines other than water closet and pit latrine types, and also consist of service latrines serviced by animals such as pigs. 'Other latrines' are dry type latrines where human excreta is dried and removed by scavengers. 'No latrine' constitutes the houses with no latrine facility of any kind available within the house. Table 3 presents the data on latrine facilities by social groups in year 2001 and 2011. In 2011 in Kerala out of total houses, 67 percent had water closet latrine within the house, 28 percent had pit latrine, less than half percent had 'other latrine' type and 5 percent of houses did not have any kind of latrine within the house. In comparison to census 2001 the houses with water closet latrines have recorded an increase of 2 percentage points and houses with pit latrines have shown an increase of 16 percentage points from the year 2001 to year 2011. There has been reduction of 'other latrines' by 6 percentage points and houses with no latrines have decreased 11 percentage points from the same time period.

In 2011 report houses belonging to SC report 50 percent of houses with water closet latrines, 36 percent reported pit latrines, less than half percent reported other latrines and 14 percent reported no latrines which is more than three times the percentage share at the state level. As compared to census 2001, the number of houses with water closet latrines has recorded an increase of 3 percentage points and the houses with 'pit latrines' have increased by 20 percentage points from year 2001 to 2011. While there is a reduction of 'Other latrines' and houses with 'no latrines' by 6 percentage points and 17 percentage points, respectively from year 2001 to 2011. Similarly, in 2011 houses belonging to ST report 45 percent of houses with water closet latrines, 27 percent with pit latrines, less than half percent reported other latrines and 28 percent reported no latrine which is higher with respect to all other groups. Interestingly, the number of houses with water closet latrines has almost doubled from 2001 to 2011 with an increase of 17 percentage points. As compared to census 2001, the houses with pit latrines have increased by 7

percentage points from 2011. There is a reduction of houses with ‘Other latrines’ and ‘no latrines’ by 5 percentage points and 18 percentage points, respectively from year 2001 to 2011.

In the ‘Others’ category households, the percentages of houses with water closet latrines are 69 percent, 28 percent of houses have pit latrine in 2011. In comparison to 2001 the percentage share in 2011 had remained almost similar with a slight increase of less than one percentage point from 2001 to 2011. In contrast, the houses with pit latrines had more than doubled from 2001 to 2011 with an increase of 16 percentage points. In 2011, less than one percent recorded other latrines and 3 percent of households with no latrines. While comparing with 2001, the houses with ‘other latrines’ and ‘no latrines’ had reduced by 6 percentage points and 13 percentage points, respectively from 2001 to 2011.

Table 3.5: Latrine Facilities by social groups and census year (2001 and 2011).

Table 3.5: Latrine Facilities by social groups and census year (2001 and 2011).										
Facilities	All Population					SC				
	2011		2001		PPC	2011		2001		PPC
	No. of houses	%	No. of houses	%		No. of houses	%	No. of houses	%	
Water Closet	5146819	66.7	4300074	65.13	1.57	376192	50.08	332859	46.94	3.14
Pit Latrine	2183733	28.3	817806	12.39	15.91	269602	35.89	110941	15.64	20.25
Other Latrine	15433	0.2	428688	6.49	-6.29	2720	0.36	42863	6.04	-5.68
No Latrine	370386	4.8	1055233	15.98	-11.18	102651	13.67	222480	31.37	-17.7
Total	7716371	100	6601801	100		751165	100	709143	100	
	ST					Others				
Water Closet	60685	44.62	32664	28.01	16.61	4709942	68.97	3934551	68.12	0.85
Pit Latrine	36019	26.48	22877	19.62	6.86	1878112	27.5	683988	11.84	15.66
Other Latrine	357	0.26	6250	5.36	-5.1	12356	0.18	379575	6.57	-6.39
No Latrine	38945	28.63	54832	47.02	-18.39	228790	3.35	777921	13.47	-10.12
Total	136006	100	116623	100		6829200	100	5776035	100	

### *Rural urban difference in latrine facilities*

In rural areas percentage share of households with water closet latrines in 2011 was 59 percent, pit latrines (34 percent), other latrines (0.2 percent) and no latrines (7 percent). In comparison to

2001 the percentage share of water closet latrines has reduced by 3 percentage points, other latrines by 6 percentage points and increase in the share of pit latrines by 21 percentage points. The reduction in percentage of houses with water closets is due to the classification of some rural areas (panchayats) in 2001 as Urban areas in the census of 2011. The share of houses with no latrines has decreased by 12 percentage points from 2001 to 2011. Among the social groups; of total Schedule caste (SC) households in rural areas, 44 percent households have water closet latrines followed by pit latrines (39 percent), no latrines (17 percent) and other latrines which is less than half percent of the households in 2011. While comparing to 2001 the percentage share of water closet latrines has slightly reduced by one percentage point, pit latrines has increased by 24 percentage points. The share of households with no latrines has reduced by

17 percentage points and a 6 percentage point decline in 'other latrines' from 2001 to 2011. Similarly, of total schedule tribe (ST) households, 40 percent have water closet latrines, 27 percent pit latrines and 33 percent of households do not have latrines within the premises of their houses in 2011. The percentage share in water closet latrines of schedule tribe (ST) households has increased by 15 percentage points and the share of pit latrines has increased by 7 percentage points. There has been reduction of 'other latrines' and houses with 'no latrines' from year 2001 to 2011. The household with 'no latrines' has reduced by 17 percentage points from 2001 to 2011. The number of households with closet latrines in other category households in 2011 is 62 percent and the percentage share has declined by 4 percentage points from 2001 to 2011. The percentage share of pit latrines has increased by 21 percentage points in rural areas from 12 percent in 2001 to 34 percent in 2011. Meanwhile there is reduction of households with no latrines by 11 percentage points from 16 percent in 2001 to 5 percent in 2011.

In urban areas percentage share of households with water closet latrines in 2011 was 75 percent, pit latrines (21 percent), other latrines (0.3 percent) and no latrines (3 percent). In comparison to 2001, the percentage share of water closet latrines has remained more or less the same. Households with pit latrines are 22 percent, less than half percent use 'other latrines' and only 3 percent of total households do not have latrines in urban areas in 2011. The percentage share of pit latrines has increased by 11 percentage points and the share of 'no latrines' has decreased by 5 percentage points from the year 2001 to 2011.

Table 3.6: Latrine Facilities by sector, social groups and census year (2001 and 2011)										
	Rural					Urban				
	2011		2001			2011		2001		
	census houses	%	census houses	%	PPC	census houses	%	census houses	%	PPC
All Population										
Water Closet	2420543	59.04	3064381	61.94	-2.9	2726384	75.22	1236187	74.73	0.49
Pit Latrine	1392529	33.97	632646	12.79	21.18	792932	21.88	183445	11.09	10.79
Other Latrine	8191	0.2	326208	6.59	-6.39	10862	0.3	102465	6.19	-5.89
No Latrine	278506	6.79	924257	18.68	-11.89	94138	2.6	132212	7.99	-5.39
Total	4099769	100	4947492	100		3624316	100	1654309	100	
SC										
Water Closet	201600	44.33	265902	45.28	-0.95	174592	58.9	66957	54.94	3.96
Pit Latrine	175914	38.69	88697	15.1	23.59	93688	31.6	22244	18.25	13.35
Other Latrine	1380	0.3	35231	6	-5.7	1340	0.45	7632	6.26	-5.81
No Latrine	75835	16.68	197432	33.62	-16.94	26816	9.05	25048	20.55	-11.5
Total	454729	100	587262	100		296436	100	121881	100	
ST										
Water Closet	46017	39.8	26872	25.17	14.63	14668	71.99	5792	58.67	13.32
Pit Latrine	31617	27.34	21266	19.92	7.42	4402	21.6	1611	16.32	5.28
Other Latrine	283	0.24	5213	4.88	-4.64	74.0	0.36	1037	10.5	-
No Latrine	37713	32.62	53400	50.02	-17.4	1232	6.05	1432	14.51	-8.46
Total	115630	100	106751	100		20376	100	9872	100	
Others										
Water Closet	2172926	61.57	2771607	65.16	-3.59	2537124	76.71	1163438	76.41	0.3
Pit Latrine	1184998	33.57	522683	12.29	21.28	694842	21.01	159590	10.48	10.53
Other Latrine	6528	0.18	285764	6.72	-6.54	9448	0.29	93796	6.16	-5.87
No Latrine	164958	4.67	673425	15.83	-11.16	66090	2	105732	6.94	-4.94
Total	3529410	100	4253479	100		3307504	100	1522556	100	

Among the social groups; of the total SC households in rural areas, 59 percent households have water closet latrines followed by pit latrines (31 percent), no latrines (9 percent)

and ‘other latrines’ which is less than half percent of the households in 2011. While comparing to 2001 the percentage share of water closet latrines has increased by 4 percentage points, pit latrines has increased by 13 percentage points. The share of households with no latrines has reduced by 12 percentage points but in absolute terms the number of households having no latrines have recorded a decadal growth rate of 7 percent from 2001 to 2011. Similarly, of the total ST households, 72 percent have water closet latrines, 22 percent have pit latrines and 6 percent of households do not have latrines within the premises of their houses in 2011. The percentage share in water closet latrines of ST households has decreased by 13 percentage points and the share of pit latrines has decreased by 5 percentage points and the reduction of other latrines by 10 percentage points from year 2001 to 2011. The household with no latrines has reduced by 8 percentage points from 2001 to 2011. The number of households with water closet latrines in other category households in 2011 was 77 percent and the percentage share has remained same but in absolute terms the total number of houses with water closet latrines has increased by 118 percent from 2001 to 2011. The percentage share of pit latrines has increased by 11 percentage points from 10 percent in 2001 to 21 percent in 2011 with a decadal growth rate of 335 percent in the same time period. Moreover there is reduction of households with no latrines by 5 percentage points from 7 percent in 2001 to 2 percent in 2011.

### ***Source of Drinking Water***

The present section will examine the main sources of drinking water available to the households in Kerala across social groups during 2001 and 2011. Well water is the major source of drinking water in Kerala which accounts for 62 percent of total households followed by tap water (29 percent); though the share of well water as a source of drinking water has reduced by 10 percentage points from 2001 to 2011. In contrast, the share of tap water as a source of drinking water has increased by 9 percentage points from 2001 to 2011. Hand pump is used by 4 percent of households and the remaining 4 percent use ‘Other sources’ as a source of drinking water in 2011. In comparison to 2001, the percentage share of hand pump increased by 1 percentage point and slight reduction of percentage share of ‘Other sources’.

In 2011, of the total SC households, 57 percent use well water, 38 percent use tap water, 2 percent use hand pump and 3 percent use ‘Other sources’ as the main source of drinking water.

The use of well water has reduced by 13 percentage points and tap water as a source of drinking water has increased by 13 percentage points from census year 2001 to year 2011. Similarly, of the total ST households, 50 percent use well water as the main source of drinking water followed by hand pump (22 percent), tap water (16 percent) and 'Other sources' (3 percent) in 2011. While comparing with 2001, the share of households using well water has reduced by 6 percentage points, hand pump by 3 percentage points and 'Other sources' by a slightly positive change in percentage share. It is the tap water as a source that has increased by 9 percentage points from year 2001 to 2011.

For the Other households other than SC and ST in Kerala, 63 percent use well water, 29 percent use tap water, 4 percent use hand pump and another 4 percent use 'Other sources' as a source of drinking water in 2011. While comparing with 2001, tap water had gained significance as a source of drinking water with an increase of 9 percentage points and the well water had shown a reduction of 10 percentage points.

Sources	All Population					SC				
	2011		2001		PPC	2011		2001		PPC
	No. of houses	%	No. of houses	%		No. of houses	%	No. of houses	%	
Tap	2260896	29.33	1345422	20.38	8.95	271625	37.92	170153	25.34	12.58
Well	4784149	62.06	4741953	71.83	-9.77	408960	57.09	470353	70.04	-12.95
Hand pump	324088	4.2	197856	3.0	1.2	5220	0.73	11106	1.65	-0.92
Other Sources	339520	4.4	316570	4.8	-0.4	30524	4.26	19941	2.97	1.29
Total	7708653	100	6601801	100		716329	100	671553	100	
	ST					Others				
Tap	33528	24.75	18315	15.91	8.84	1955743	28.52	1156954	19.9	28.52
Well	68193	50.33	65226	56.65	-6.32	4306996	62.81	4206374	72.34	62.81
Hand pump	29329	21.65	28318	24.6	-2.95	289539	4.22	158432	2.72	4.22
Other Sources	4433	3.27	3275	2.84	0.43	304563	4.44	293354	5.04	4.44
Total	135483	100	115134	100		6856841	100	5815114	100	



***Rural urban difference in sources of drinking water***

In rural areas percentage share of households with tap water as a source of drinking water in 2011 was 27 percent, well water (70 percent) which is the major source of drinking water in Kerala. Hand pump and other sources together has been reported as the main source of drinking water by 3 percent of the household in 2011. The percentage share of tap water has increased by 12 percentage points and well water as the source has reduced by 12 percentage points from 2001 to 2011. Among the social groups; of the total SC households in rural areas, 59 percent use well water followed by tap water (35 percent), 5 percent use other sources and only half a percent use hand pump as a source of drinking water in 2011. While comparing with 2001 the percentage share of tap water has increased by 14 percentage point with a similar decline of well water as a source of drinking water. For ST households in rural areas, well water (50 percent) is the major source of drinking water, followed by hand pump (25 percent) and tap water (22 percent) in 2011. The percentage share of tap water of ST households has increased by 9 percentage points and the share of well water and hand pump has decreased by 7 percentage points and 2 percentage points respectively from 2001 to 2011. For Other category households in rural areas, well water (72 percent) is the major source of drinking water followed by tap water (26 percent) in year 2011. The rest have reported hand pump (0.46 percent) and other sources (3 percent) as the main source of drinking water in 2011. While comparing with 2001, the percentage share of tap water has increased by 12 percentage points and a reduction of well water by 13 percentage points as a source of drinking water in rural areas.

In urban areas percentage share of households with tap water as the main source of drinking water is well water (61 percent) followed by tap water(36 percent) in 2011. Hand pump and other sources together has been reported as the main source of drinking water by 3 percent of the household in 2011. The percentage share of tap water has decreased by 4 percentage points and well water as the source has increased by 4 percentage points from 2001 to 2011. Among the social groups; of total SC households in urban areas, 54 percent of use well water followed by tap water (43 percent) and rest 3 percent use other sources and hand pump together as a source of drinking water in 2011.

Table 3.8: sources of drinking water by sector, social groups and census year (2001 and 2011)										
	Rural					Urban				
	2011		2001			2011		2001		
sources	No. of houses	%	No. of houses	%	PPC	No. of houses	%	No. of houses	%	PPC
<b>All Population</b>										
Tap	1003440	26.52	647474	14.06	12.46	1263623	36.43	659410	40.8	-4.37
Well	2653997	70.13	3815649	82.83	-12.7	2132590	61.48	925487	57.26	4.22
Hand pump	16383	0.43	54368	1.18	-0.75	21724	0.63	16527	1.02	-0.39
Other Sources	110583	2.92	88966	1.93	0.99	50690	1.46	14874	0.92	0.54
Total	3784403	100	4606457	100		3468627	100	1616298	100	
<b>SC</b>										
Tap water	149227	34.81	116821	21.16	13.65	122398	42.55	53332	44.66	-2.11
Well water	254511	59.38	407792	73.86	-14.48	154449	53.69	62561	52.39	1.3
Hand pump	2814	0.66	9578	1.73	-1.07	2406	0.84	1528	1.28	-0.44
Other sources	22087	5.15	17945	3.25	1.9	8437	2.93	1996	1.67	1.26
Total	428639	100	552136	100		287690	100	119417	100	
<b>ST</b>										
Tap water	25147	21.82	13681	12.98	8.84	8381	41.44	4634	47.75	-6.31
Well water	57762	50.11	60573	57.45	-7.34	10431	51.58	4653	47.95	3.63
Hand pump	28343	24.59	28015	26.57	-1.98	986	4.88	303	3.12	1.76
Other sources	4009	3.48	3161	3	0.48	424	2.1	114	1.17	0.93
Total	115261	100	105430	100		20222	100	9704	100	
<b>Others</b>										
Tap water	829066	25.58	516972	13.09	12.49	1132844	35.84	601444	40.44	-4.6
Well water	2341724	72.26	3347284	84.77	-12.51	1967710	62.26	858273	57.71	4.55
Hand pump	14774	0.46	16775	0.42	0.04	18332	0.58	14696	0.99	-0.41
Other sources	84487	2.61	67860	1.72	0.89	41829	1.32	12764	0.86	0.46
Total	3240503	100	3948891	100		3160715	100	1487177	100	

While comparing with 2001 the percentage share of tap water has decreased by 2 percentage point with an increase of use of well water by 1 percent as a source of drinking water.

For ST households in urban areas, well water (52 percent) is the major source of drinking water, followed by hand pump (41 percent), tap water (5 percent) and other sources (2 percent) in 2011. The percentage share of tap water of ST households has decreased by 6 percentage points and the share of well water and hand pump has increased by 4 percentage points and 2 percentage points respectively from 2001 to 2011. For Other category households in urban areas, the major source of drinking water is well water (62 percent) followed by tap water (35 percent) in year 2011. The rest have reported hand pump (0.58 percent) and other sources (1 percent) as a source of drinking water in 2011. While comparing with 2001, the percentage share of tap water has decreased by 4 percentage points and well water increased of by 5 percentage points as a source of drinking water in urban areas.

### ***Availability of Separate Kitchen***

The following section presents the distribution of the households by the availability of separate kitchen across social groups in Kerala. In 2011, 97 percent of the households have a separate kitchen that increased by 4 percentage points from 2001 to 2011. Among the social groups in 2011, 93 percent of SC households, 90 percent of ST households and 97 percent 'Other' households have separate kitchen. In terms of increase in households with separate kitchen in Kerala, from 2001 to 2011, there is 9 percentage point increase in SC households, 7 percentage points increase in ST households and an increase of 3 percentage points in other households.

Separate kitchen	All Population				SC					
	2011		2001		2011		2001			
	No. of houses	%	No. of houses	%	PPC	No. of houses	%	No. of houses	%	PPC
Yes	7463375	96.72	6118547	92.77	3.95	699979	93.19	599431	84.53	8.66
Total households	7716370	100	6595206	100		751165	100	709143	100	
	ST				Others					
Yes	121817	89.57	96450	82.7	6.86	6641579	97.25	5422666	93.99	3.26
Total households	136006	100	116623	100		6829199	100	5769440	100	

***Rural urban differences in the availability of separate kitchen***

In rural areas in 2011, 96 percent of the households have separate which has increased by 4 percentage points by 2011. Among the social groups in 2011, 93 percent of SC households, 88 percent of ST households and 96 percent 'Other' households have separate kitchen. In terms of increase in households with separate kitchen in rural areas, from 2001 to 2011, there is 9 percentage point increase in SC households, 6 percentage points increase in ST households and an increase of 3 percentage points in other households.

In urban areas in 2011, 98 percent of the households have separate kitchen that increased by 3 percentage points from 2001 to 2011. Among the social groups in 2011, 92 percent of SC households, 96 percent of ST households and 98 percent 'Other' households have separate kitchen. In terms of increase in households with separate kitchen in urban areas, from 2001 to 2011, there is 3 percentage point increase in SC households, 8 percentage points increase in ST households and an increase of 2 percentage points in other households.

Table 3.10: availability of separate kitchen by sector, social groups and census year (2001 and 2011)										
	Rural					Urban				
	2011		2001		PPC	2011		2001		PPC
No. of houses	%	No. of houses	%	No. of houses		%	No. of houses	%		
Availability of separate kitchen	3912037	95.52	4542383	91.90	3.61	3551338	98.08	1576164	95.37	2.71
Total	4095674	100	4942550	100		3620696	100	1652656	100	
<b>SC</b>										
Availability of separate kitchen	699979	93.19	599431	84.53	8.66	418258	91.98	491925	83.77	8.21
Total	454729	100	587262	100		454729	100	587262	100	
<b>ST</b>										
Availability of separate kitchen	102249	88.43	87643	82.10	6.33	19568	96.03	8,807	89.21	6.82
Total	115630	100	106751	100		20376	100	9872	100	
<b>Others</b>										
Availability of separate kitchen	3391530	96.21	3962815	93.27	2.93	3250049	98.37	1459851	95.99	2.38
Total	4248537	100	3525315	100		1520903		3303884	100	

In rural areas in 2011, 96 percent of the households have separate kitchen that increased by 4 percentage points from 2001 to 2011. Among the social groups in 2011, 93 percent of SC households, 88 percent of ST households and 96 percent 'Other' households have separate kitchen. In terms of increase in households with separate kitchen in rural areas, from 2001 to 2011, there is 9 percentage point increase in SC households, 6 percentage points increase in ST households and an increase of 3 percentage points in other households.

In urban areas in 2011, 98 percent of the households have separate kitchen that increased by 3 percentage points from 2001 to 2011. Among the social groups in 2011, 92 percent of SC households, 96 percent of ST households and 98 percent 'other' households have separate kitchen. In terms of increase in households with separate kitchen in urban areas, from 2001 to 2011, there is 3 percentage point increase in SC households, 8 percentage points increase in ST households and an increase of 2 percentage points in other households.

### ***Sources of Lighting***

The source of lighting which was used for the major part of the preceding year was recorded by Census. The main source of lighting is categorized as electricity, kerosene and 'other sources'.

In 2011, 94 percent of the total households in Kerala used electricity as the main source of lighting followed by kerosene (5 percent) and rest less than one percent by other sources. There has been significant change since 2001 where electricity has replaced kerosene as the main source of lighting, which has reduced by 24 percentage points from 2001 to 2011 and the similar percentage point increase in the usage of electricity as the main source of lighting. The percentage of households with kerosene as the main source of lighting has decreased by 24 percentage points and 'other sources' have also declined slightly from 2001 to 2011.

For SC households, 86 percent use electricity and 13 percent use kerosene as the main source of lighting in 2011. As compared to 2001 electricity has increased by 33 percentage points with a corresponding decline in the usage of kerosene by 34 percentage points. The percentage share of ST households with electricity as the main source of lighting is much lower

(63 percent) as compared to other social groups and state average but the number of households have doubled since 2001 with an increase of 26 percentage points from 2001 to 2011. The ‘Others’ other than SC and ST households, have electricity as the main source for 96 percent of the households in 2011 which has increased by 23 percentage points with a corresponding decline in the usage of kerosene by 23 percentage points from 2001 to 2011.

sources	All Population					SC				
	2011		2001		PPC	2011		2001		PPC
	No. of houses	%	No. of houses	%		No. of houses	%	No. of houses	%	
Electricity	7284253	94.49	4629835	70.27	24.22	648804	86.44	374110	53.11	33.33
Kerosene	401251	5.21	1919205	29.13	-23.92	98476	13.12	329542	46.78	-33.66
Other Sources	23149	0.3	39571	0.6	-0.3	3305	0.44	740	0.11	0.33
Total	7708653	100	6588611	100		750585	100	704392	100	
	ST					Others				
Electricity	85377	62.82	43069	36.96	25.86	6550072	96.01	4212656	73.04	22.97
Kerosene	46959	34.55	72338	62.08	-27.53	255816	3.75	1517325	26.31	-22.56
Other Sources	3571	2.63	1122	0.96	1.67	16273	0.24	37709	0.65	-0.41
Total	135907	100	116529	100		6822161	100	5767690	100	

### ***Rural urban difference in sources of lighting***

In 2011, 92 percent of rural households use electricity as the main source of lighting followed by kerosene which accounts for 7 percent of households. There is a shift of usage of kerosene to electricity as the main source of lighting from 2001 to 2011. The percentage share of electricity has increased by 27 percentage points with corresponding decline kerosene by 26 percent from 2001 to 2011. For SC households in rural areas, electricity (84 percent) is the major source of lighting, followed by kerosene (16 percent) in 2011. For ST households, the percentage share of electricity (58 percent) used as a major source of lighting is less as compared to other social groups in 2011. Kerosene is the second major source of electricity accounts for 39 percent of ST households and the rest 3 percent use other sources in 2011. It follows the similar trend as in case of SC households where we saw the replacement of kerosene with electricity from year 2001 to

2011 as a source of lighting in rural areas. For other category households in rural areas, the major source of lighting is electricity (94 percent) followed by kerosene (5 percent) in year 2011. While comparing with 2001, the percentage share of electricity has increased by 26 percentage points and a reduction of kerosene by 31 percentage points as a source of lighting in rural areas.

Table 3.12: Sources of Lighting by sector, social groups and census year (2001 and 2011)										
	Rural					Urban				
	2011		2001		PPC	2011		2001		
sources	No. of houses	%	No. of houses	%	PPC	No. of houses	%	No. of houses	%	PPC
<b>All Population</b>										
Electricity	3772116	92.1	3237370	65.5	26.6	3512075	97.19	1393189	84.38	12.81
Kerosene	303080	7.4	1670582	33.8	-26.4	101379	2.81	249551	15.12	-12.31
Other Sources	20478	0.5	34598	0.7	-0.2	0.0	0.0	8263	0.5	-0.5
Total	4095674	100	4942550	100		3613454	100	1651003	100	
<b>SC</b>										
Electricity	380851	83.82	292287	50.1	33.72	267953	90.46	81823	67.62	22.84
Kerosene	71160	15.66	290546	49.8	-34.14	27316	9.22	38996	32.23	-23.01
Other Sources	2350	0.52	549	0.09	0.43	955	0.32	191	0.16	0.16
Total	454361	100	583382	100		296224	100	121010	100	
<b>ST</b>										
Electricity	66857	57.86	35960	33.71	24.15	18520	90.97	7109	72.06	18.91
Kerosene	45218	39.13	69694	65.34	-26.21	1741	8.55	2644	26.8	-18.25
Other Sources	3473	3.01	1009	0.95	2.06	98	0.48	113	1.15	-0.67
Total	115548	100	106663	100		20359	100	9866	100	
<b>Others</b>										
Electricity	3324408	94.29	2909123	68.41	25.88	3225602	97.84	1304257	85.8	12.04
Kerosene	186702	5.3	1310342	30.81	-25.51	72322	2.19	207911	13.68	-11.49
Other Sources	14655	0.42	33040	0.78	-0.36	-1053	-0.03	7959	0.52	-0.55
Total	3525765	100	4252505	100		3296871	100	1520127	100	

For urban households in 2011, 97 percent use electricity as the main source of lighting followed by kerosene which accounts for 3 percent of households. The percentage share of

electricity has increased by 13 percentage points with corresponding decline kerosene by 12 percent from 2001 to 2011. For SC households in urban areas, electricity (90 percent) is the major source of lighting, followed by kerosene (9 percent) in 2011. The percentage share of electricity has increased by 13 percentage points and 12 percentage point reduction in the usage of kerosene as the main source of lighting from 2001 to 2011. Similarly for ST households in urban areas electricity (91 percent) is the major source and 9 percent households use kerosene as the main source of lighting in 2011. In comparison with 2001, electricity increases by 19 percentage points and a reduction of 18 percentage points. For other category households in urban areas, the major source of lighting is electricity (97 percent) followed by kerosene (2 percent) in year 2011. While comparing with 2001, the percentage share of electricity has increased by 12 percentage points and a reduction of kerosene by 11 percentage points as a source of lighting in urban areas.

### ***Type of cooking energy***

This section provides an overview of the households classified by different types of cooking energy used in Kerala across social groups in census year 2001 and 2011. The different type of cooking energy is defined by census the keeping in mind the mostly used fuel in the household. In case of multiple sources of fuel used for cooking, the predominant one was recorded. The fuel was categorized as firewood, crop residue, kerosene and LPG/PNG. In 2011, 63 percent of total households in Kerala used firewood as the main source of cooking energy followed by LPG/PNG (36 percent) both of these taken together account for 99 percent of fuel used for cooking and the rest one percent includes crop residue and kerosene. The number of households using LPG/PNG has more than doubled since 2001 reporting an increase of 18 percentage points from 2001 to 2011 while firewood has reduced as a source with a decline of 16 percentage points from the same time period.

For SC households in 2011, firewood is the main source of cooking energy which accounts for 83 percent of total households followed by LPG/PNG (15 percent) and rest two percent households use kerosene and crop residue as a source of cooking energy. While comparing with year 2001, firewood as a source of energy has declined by 9 percentage points



from 2001 to 2011. LPG/PNG seems to be substituting firewood as a source of cooking energy which has increased by 11 percentage points in the same time period.

For ST households in 2011, firewood is the main source cooking energy which accounts for 88 percent of total households followed by LPG/PNG (10 percent) and rest more than one percent of households use kerosene and crop residue as a source of cooking energy. While comparing with year 2001, firewood as a source of energy has declined by 4 percentage points from 2001 to 2011. Similar to that of SC households, ST households seem to be substituting LPG/PNG to firewood as a source of cooking energy which has increased by 6 percentage points in the same time period. For 'Others' other than SC and ST households, 59 percent of households use firewood as a source of cooking energy followed by LPG/PNG (39 percent) in 2011. In comparison to 2001 firewood as a source of cooking has reduced by 17 percentage points and a corresponding increase in the usage of LPG/PNG as a source of cooking fuel with an increase of 19 percentage points.

Table 3.13: Type of cooking energy by social groups and census year (2001 and 2011)

	All Population					SC				
	2011		2001		PPC	2011		2001		PPC
	No. of houses	%	No. of houses	%		No. of houses	%	No. of houses	%	
Firewood	4777867	62.6	5107552	78.49	-15.89	619231	83.07	647520	92	-8.93
Crop Residue	61816	0.81	116947	1.8	-0.99	8837	1.19	18408	2.62	-1.43
Kerosene	27346	0.36	113890	1.75	-1.39	2568	0.34	7482	1.06	-0.72
LPG/PNG	2765913	36.24	1168536	17.96	18.28	114809	15.4	30428	4.32	11.08
Total	7632942	100	6506925	100		745445	100	703838	100	
	ST					Others				
Firewood	119155	88.38	106806	92.28	-3.9	4039481	59.82	4353226	76.54	-16.72
Crop Residue	1478	1.1	3139	2.71	-1.61	51501	0.76	95400	1.68	-0.92
Kerosene	297	0.22	977	0.84	-0.62	24481	0.36	105431	1.85	-1.49
LPG/PNG	13892	10.3	4821	4.17	6.13	2637212	39.05	1133287	19.93	19.12
Total	134822	100	115743	100		6752675	100	5687344	100	

***Rural urban difference in the types of cooking energy***

In rural areas, 74 percent of households use firewood and 25 percent of households use LPG/PNG as the source of fuel for cooking in 2011. Crop residue and kerosene constitute together 1 percent of the households in rural areas. The percentage share of firewood has reduced by 11 percentage points and LPG/PNG as the source has increased by 13 percentage points from 2001 to 2011. Among the social groups, SC households in rural areas, 90 percent of them use firewood followed by LPG/PNG (9 percent) and more than one percent use crop residue and kerosene together as a source of cooking in 2011. While comparing with 2001, the percentage share of firewood has decreased by 5 percentage point and a 6 percentage point increase in LPG/PNG. For ST households in rural areas, firewood (94 percent) is the major source of cooking energy, followed by LPG/PNG (5 percent) and other sources such as kerosene and crop residue is used by 1 percent of households 2011. The percentage share of firewood has reduced slightly by 1 percentage point and 2 percentage point increase in the usage of LPG/PNG from 2001 to 2011. For Other category households in rural areas, the firewood constitutes the main source of energy which caters to 71 percent of the households and LPG/PNG is the main source of cooking energy to 28 percent of the households in 2011. While comparing with 2001, the percentage share of firewood has decreased by 12 percentage points and an increase in LPG/PNG by 14 percentage points as a source of cooking energy in rural areas.

In urban areas 50 percent of households use firewood and 49 percent of households use LPG/PNG as the source of fuel for cooking in 2011. Crop residue and kerosene constitute together 1 percent of the households in urban areas. The percentage share of firewood has reduced by 9 percentage points and LPG/PNG as the source has increased by 13 percentage points from 2001 to 2011. Among the social groups, SC households in urban areas, 73 percent of them use firewood followed by LPG/PNG (25 percent) and more than one percent use crop residue and kerosene together as a source of cooking in 2011. While comparing with 2001, the percentage share of firewood has decreased by 9 percentage point and 13 percentage point increase in LPG/PNG. For ST households in urban areas, firewood (48 percent) is the major source of cooking energy, followed by LPG/PNG (41 percent) and other sources such as kerosene and crop residue is used by 2 percent of households 2011. The percentage share of firewood has reduced by 8 percentage point and 15 percentage point increase in the usage of

LPG/PNG from 2001 to 2011. For Other category households in urban areas, the LPG/PNG constitutes the major source of cooking energy which caters to 51 percent of the households followed by firewood (48 percent) percent of the households in 2011. While comparing with 2001, the percentage share of firewood has decreased by 9 percentage points and an increase in LPG/PNG by 13 percentage points as a source of cooking energy in urban areas.

Table 3.14: Type of cooking energy by sector, social groups and census year (2001 and 2011)										
	Rural					Urban				
	2011		2001			2011		2001		
sources	No. of houses	%	No. of houses	%	PPC	No. of houses	%	No. of houses	%	PPC
<b>All Population</b>										
Firewood	2990953	73.84	4153466	85.09	-11.25	1786914	49.88	954086	58.68	-8.8
Crop Residue	37732	0.93	91654	1.88	-0.95	24084	0.67	25293	1.56	-0.89
Kerosene	8486	0.21	46828	0.96	-0.75	18860	0.53	67062	4.12	-3.59
LPG/PNG	1013198	25.01	589189	12.07	12.94	1752715	48.92	579347	35.63	13.29
Total	4050369	100	4881137	100		3582573	100	1625788	100	
<b>SC</b>										
Fire-wood	404375	89.52	548764	94.09	-4.57	214856	73.15	98756	81.89	-8.74
Crop residue	5879	1.3	15438	2.65	-1.35	2958	1.01	2970	2.46	-1.45
Kerosene	800	0.18	2917	0.5	-0.32	1768	0.6	4565	3.79	-3.19
LPG/PNG	40671	9	16122	2.76	6.24	74138	25.24	14306	11.86	13.38
Total	451725	100	583241	100		293720	100	120597	100	
<b>ST</b>										
Fire-wood	107685	93.81	100534	94.77	-0.96	11470	57.27	6272	64.91	-7.64
Crop residue	1197	1.04	2808	2.65	-1.61	281	1.4	331	3.43	-2.03
Kerosene	138	0.12	363	0.34	-0.22	159	0.79	614	6.35	-5.56
LPG/PNG	5775	5.03	2375	2.24	2.79	8117	40.53	2446	25.31	15.22
Total	114795	100	106080	100		20027	100	9663	100	
<b>Others</b>										
Fire-wood	2478893	71.15	3504168	83.6	-12.45	1560588	47.74	849058	56.77	-9.03
Crop residue	30656	0.88	73408	1.75	-0.87	20845	0.64	21992	1.47	-0.83
Kerosene	7548	0.22	43548	1.04	-0.82	16933	0.52	61883	4.14	-3.62
LPG/PNG	966752	27.75	570692	13.61	14.14	1670460	51.1	562595	37.62	13.48
Total	3483849	100	4191816	100		3268826	100	1495528	100	

### 3.3 Attainment rate

It is widely accepted that SC's and ST's lag behind in many developmental indicators with respect to the general population at the national level. The present section attempts to examine if the gap between SC/ST and Other population in case of housing conditions and amenities in Kerala. To understand the status of SC/ST households with respect to other households in case of housing conditions and amenities, we constructed an attainment rate index of different indicators of housing conditions and amenities of the best outcomes. To construct the index we used the following formula;

$$ATR = \left\{ \frac{gr(x)}{gr(y)} \right\} * 100$$

ATR is the attainment rate which measures the gap of incidence in different indicators between SC or ST households with respect to other households other than SC and ST,  $gr(x)$  is the percentage share of SC/ST households in different housing condition and amenity indicators,  $gr(y)$  is the percentage share of referral group (other households) in different housing condition and amenity indicators. Attainment rate ranges from zero to 100 where zero means complete inequality and 100 means complete equality between the socially disadvantageous groups to that of other households. In other words, it means that the SC's and ST's share of houses in best outcomes in different indicators is same to the share other population in the best outcomes in different housing indicators is completely equal. Attainment rate calculated only in best housing indicators. We have calculated attainment rate separately for rural and urban areas for the census year 2001 and 2011.

Table 3.15 presents the attainment rate of SC population for both in rural and urban areas for year 2001 and 2011. In 2011 the attainment rate of SC households in good condition houses is 66 percent which means that the share of SC population having good conditions houses is only sixty percent to that of share of other households having the same housing conditions. The gap between SC and other groups seem to have reduced from 2001 with the increase in the attainment rate by 7 percentage points. There does not seem to have a rural and urban difference in the gap between the SC households and Other households in 2011. But with respect to urban areas the attainment rate has reduced from 2001 to 2011, which implies that the growth rate of

good conditions houses has been faster among other households than SC households in the same time period. The attainment rate of SC households with respect to the availability of space (measured by having four rooms and above) seem to have improved from 2001 to 2011 with a smaller difference between rural and urban areas. In case of latrine facilities we have taken the water closet latrines as the best indicator to compare between SC and Other households. The data reveals that the attainment rate in 2011 is 73 percent which has increased from the year 2001 by 4 percentage points. The attainment rate remains more or less similar across rural and urban areas and has shown improvement over the year 2001.

To calculate the attainment rate of sources of drinking water by SC households with respect to the referral group i.e. Other group, we have taken Tap water and well water as the best outcomes. Among SC households both in rural and urban areas the attainment rate is more than hundred percent which implies that the share of households using tap water as the main source of drinking water among SC in 2011 is higher than the share of households among Other households. The difference remains same across rural and urban areas. The attainment rate is increased overall from 2001 to 2011 but rural urban differences exist. In rural areas the attainment rate has decreased by 26 percentage points and had increased in urban areas by 8 percentage points from 2001 to 2011. The attainment rate of Well water in 2011 is 90 percent in general and 82 percent in rural and 86 percent in urban areas. The attainment rate is closer to hundred which indicates that there is less gap between the share SC households using well water as a main source of drinking water to that of the share of Other households using the same. While comparing the attainment rate in case of usage of well water with 2001, the attainment rate has decreased not only in general but also in rural and urban areas. The availability of Kitchen seem to be same as between SC households and Other households in 2001 as the attainment rate is more than 95 percent both in rural and urban areas.

The attainment rate in electricity as the main source of lighting generally reflects the outreach of electrification in SC households with respect to Other households in Kerala. The attainment rate of SC households in case of electricity is 90 percent in general, 89 percent in rural areas and 92 percent in urban areas. The attainment rate is closer to hundred and does not have a significant difference between rural and urban areas. The attainment rate has increased by

17 percentage points in general, 16 percentage point increase in rural areas and 14 percentage point increase in urban areas from 2001 to 2011.

The LPG/PNG as the best indicator of the cooking energy has the lowest attainment among all indicators. In 2011, the attainment rate is 39 percent in general, 32 percent in rural areas and 49 percent in urban areas. Though the attainment rate is lower but it had improved from 2001 to 2011 with an increase of 18 percentage point in general, 12 percentage point in rural areas and 18 percentage points in urban areas.

**Table 3.15: Attainment rate of Schedule caste (SC) by sector and year**

	Rural + Urban		Rural		Urban	
	2011	2001	2011	2001	2011	2001
<b>A. Basic indicators</b>						
1. Condition of census houses						
Good Condition houses	66.14	59.25	65.55	62.23	68.95	80.62
2. availability of space						
Four rooms and above	37.37	40.04	34.55	38.92	42.10	47.57
3. Latrine Facilities						
Water Closet latrines	72.61	68.91	72.00	69.49	76.78	71.90
4. Source of Drinking Water						
Tap water	132.96	127.34	136.08	161.65	118.72	110.44
Well water	90.89	96.82	82.18	87.13	86.24	90.78
5. Availability of Separate Kitchen						
With separate kitchen	95.83	88.63	96.86	90.63	97.62	92.94
6. Sources of Lighting						
Electricity	90.03	72.71	88.90	73.23	92.46	78.81
7. Type of cooking energy						
LPG/PNG	39.44	21.68	32.43	20.28	49.39	31.53

The attainment rate calculated for the additional indicators as presented in table 9 panelB, which include closed drainage system and households with bathing facilities. In 2011, the share SC household's having closed drainage facility is 43 percent of the share of other households having closed drainage facility. For rural areas the attainment rate is 41 percent and 48 percent in urban areas in 2011. The attainment rate of SC households in terms of closed drainage facilities has reduced in general and both in rural and urban areas from 2001 to 2011. The attainment rate in case of bathroom facilities reveals that the share of SC households having

bathroom facilities is 74 percent of the share of other households having bathroom facilities. The figures for rural areas are 70 percent and 84 percent in urban areas. The difference between SC households and Other households in concrete roof and stone walls do not differ between rural and urban areas and the SC households seem to be catching up with the Other households which is evident in the increasing attainment rate from 2001 to 2011. The attainment rate in the type of floor-mosaic/floor tiles is very low at 26 in general and 19 percent in rural and 35 percent in urban areas. The SC households seem to be catching up from 2001 to 2011.

Table 3.16 presents the attainment rate of ST population for both in rural and urban areas. In 2011 the attainment rate in good condition houses is 55 percent which means that the share of ST population having good conditions houses is only 55 percent to the share of others population having the same facilities. The gap between ST's and other groups seem to have reduced from 2001 with the increase in the attainment rate by 6 percentage points. There seem to have a significant rural (53 percent) and urban (82 percent) difference in the gap between the SC households and Other households in 2011. The attainment rate has increased in rural areas from 2001 to 2011 but in urban areas the attainment has reduced which implies that the growth rate of good conditions houses has been faster among Other households than SC households in urban areas in the same time period. The attainment rate of ST households in terms of the availability of space while considering four rooms and above, is low in general(44 percent) and the gap is less in urban areas than in rural areas. The gap is because the sample size of ST households in urban areas is very less which might be a selective group and majority of them live in rural areas. In case of latrine facilities we have taken the water closet latrines as the best indicator to compare the share of SC households and Other households in the respective category. The data reveals that the attainment rate in 2011 is 65 percent which has increased from the year 2001 by 24 percentage points. There is stark difference in rural and urban areas in the attainment rate. The attainment rate in rural areas is 65 percent while in urban areas the attainment rate is 94 percent which is much closer to equality between the ST households and Other households. While comparing between 2001 and 2011 the attainment rate has increase which implies that the ST households are catching up with the other groups in terms of the usage of water closet latrine as a latrine facility.

**Table 3.16: Attainment rate of Schedule tribe (ST) by sector and year**

index	Rural + Urban		Rural		Urban	
	2011	2001	2011	2001	2011	2001
<b>A. Basic indicators</b>						
1. Condition of census houses						
Good Condition houses	55.41	49.15	53.30	50.57	82.47	92.46
2. availability of space						
Four rooms and above	44.47	40.32	41.97	39.44	67.05	59.96
3. Latrine Facilities						
Water Closet latrines	64.69	41.12	64.64	38.63	93.85	76.78
4. Source of Drinking Water						
Tap water	86.78	79.95	85.30	99.16	115.63	118.08
Well water	80.13	78.31	69.35	67.77	82.85	83.09
5. Availability of Separate Kitchen						
With separate kitchen	92.10	87.99	91.91	88.02	97.62	92.94
6. Sources of Lighting						
Electricity	65.43	50.60	61.36	49.28	92.98	83.99
7.Type of cooking energy						
LPG/PNG	26.38	20.92	18.13	16.46	79.32	67.28

To calculate the attainment rate of sources of drinking water by ST households with respect to the referral group i.e. Other group, we have taken Tap water and well water as the best outcomes. Among ST households both in rural and urban areas the attainment rate is closer to hundred percent in general and in rural areas but the attainment rate is more than hundred in urban areas which implies that the share of households using tap water as the main source of drinking water among ST in 2011 in urban areas is higher than the share of households among Other households.

The attainment rate of ST households in using Well water as the main source of drinking water in 2011 was 80 percent in general and 85 percent in rural and 116 percent in urban areas. The attainment rate is closer to hundred which indicates that there is less gap between the share ST households using well water as a main source of drinking water to that of the share of Other



households in the same category. While comparing the attainment rate in case of usage of well water with 2001, the attainment rate has increased in general and in rural areas but has shown a slight decline in urban areas from 2001 to 2011. The gap in terms of the availability of kitchen in ST households with respect to Other households is low with more than 90 percent attainment rate in both rural and urban areas.

The attainment rate of ST households in case of electricity is 65 percent in general, 61 percent in rural areas and 93 percent in urban areas. The attainment rate is closer to hundred in urban areas and does reveal a sharp difference between rural and urban areas. The attainment rate has increased by 15 percentage points in general, 12 percentage point increase in rural areas and 9 percentage point increase in urban areas from 2001 to 2011.

The LPG/PNG as the best indicator of the cooking energy has the lowest attainment rate among ST households particularly in rural areas even lower than the attainment rate of SC households. In 2011, the attainment rate is 26 percent in general, 18 percent in rural areas and 79 percent in urban areas. Though the attainment rate is lower but it had improved from 2001 to 2011 with an increase of 5 percentage points in general, 2 percentage point in rural areas and 12 percentage points in the attainment rate in urban areas.

# Chapter 4

## Some Additional Amenities and Facilities

### 4.1 Introduction

Apart from the core indicators of the housing condition that we have selected, we now examine two additional amenities. These are (a) drainage and bathroom facilities across sector and social groups in year 2001 and 2011.

### 4.2 Drainage Facilities

The section gives the overview of the type of drainage connectivity for waste water outlet in Kerala. The drainage is either closed, open or no drainage. Kerala's 54 percent of households have no drainage facility, 21 percent has open drainage facility and only 25 percent has closed drainage system. The situation seems to have improved since 2001 where the households with closed drainage facility has increased by 17 percentage points, open drainage facility increased by 10 percentage points and there is a reduction of 27 percentage points in the households with no drainage facility from 2001 to 2011. Disaggregating the population into social groups; SC, ST and Others the trend is more or less the same.

In 2011, 12 percent of SC households have closed drainage system facility, 18 percent open and majority (77 percent) of the households do not have any drainage facility in 2011. Similarly among ST, 77 percent of households do not have any kind of drainage facility; only 9 percent have closed drainage facility and rest 14 percent have open drainage facility in 2011. However among 'Other' households 51 percent do not have drainage facility but the conditions are better than SC and ST households. In comparison to 2001, the improvement in the drainage system varies across social groups. The number of households without drainage system had decreased by 16 percentage points among SC households. ST households have reduced by 10 percentage points and Other Households have reported drastic reduction by 28 percentage points from 2001 to 2011.

Table 4.1: Drainage facilities by social groups and census year (2001 and 2011)										
Drainage facility	All Population					SC				
	2011		2001		PPC	2011		2001		PPC
	No. of houses	%	No. of houses	%		No. of houses	%	No. of houses	%	
Closed	1948041	25.25	530486	8.04	17.21	87510	11.65	28472	4.01	7.64
Open	1634514	21.18	770183	11.68	9.50	142482	18.97	72876	10.28	8.69
None	4133815	53.57	5294537	80.28	-26.71	521173	69.38	607795	85.71	-16.33
Total	7716370	100	6595206	100		751165	100	709143	100	
	ST					Others				
Closed	12484	9.18	4783	4.1	5.08	1848047	27.06	497231	8.62	18.44
Open	19117	14.06	10897	9.34	4.72	1472915	21.57	686410	11.9	9.67
None	104405	76.76	100943	86.55	-9.79	3508237	51.37	4585799	79.48	-28.11
Total	136006	100	116623	100		6829199	100	5769440	100	

### Rural urban difference in drainage facilities

In 2011, 18 percent of rural households have closed drainage facilities, 21 percent has open drainage facility and majority of households (61 percent) in rural areas do not have drainage facilities. The percentage share of closed drainage system has increased by 12 percentage points and open drainage system has increased by 11 percentage points with corresponding decline no drainage facility by 23 percent from 2001 to 2011.

For SC households in rural areas majority of households (73 percent) do not have drainage electricity, 18 percent have open drainage and 8 percent have closed drainage facility in 2011. The percentage share of closed drainage increased by 5 percentage points, open drainage increased by 9 percentage points and households with no drainage decreased by 14 percentage points from 2001 to 2011 in rural areas. Similarly, among ST household's 82 percent households do not have drainage system and only 5 percent of them have closed drainage and 13 percent have open drainage system in 2011. The change in the percentage share from 2001 to 2011 is slower than the SC households though the percentage share of the households with no drainage have decreased by 7 percentage points with a corresponding increase in open and closed drainage facility. For other category households in rural areas, 58 percent of households do not have

drainage facility and rest around 40 percent have either open drainage (22) or closed drainage (20 percent) in 2011. While comparing with 2001, the percentage share of households without drainage has decreased by 25 percentage points and a corresponding increase in closed drainage(13 percentage points) and open drainage (12 percentage points) from 2001 to 2011.

In 2011, 34 percent of urban households have closed drainage facilities, 21 percent has open drainage facility and majority of households (45 percent) in urban areas do not have drainage facilities which is lower than that of rural households. The percentage share of closed drainage system has increased by 19 percentage points and open drainage system increased by 5 percentage points with corresponding decline no drainage facility by 24 percent from 2001 to 2011.

For SC households in urban areas, majority of households (63 percent) do not have drainage facility, 20 percent have open drainage and 17 percent have closed drainage facility in 2011. The percentage share of closed drainage in urban areas increased by 9 percentage points, open drainage increased by 7 percentage points and households with no drainage decreased by 16 percentage points from 2001 to 2011. Similarly, among ST household's, 48 percent do not have drainage system and only 30 percent of them have closed drainage and 22 percent have open drainage system in 2011. The percentage share of the households with no drainage have decreased by 18 percentage points with a corresponding increase in open ( 5 percentage points) and closed(13 percentage points) drainage facility from 2001 to 2011. For other category households in urban areas, 44 percent of households do not have drainage facility and 22 percent have open drainage and 35 percent have closed drainage in 2011. While comparing with 2001, the percentage share of households without drainage has decreased by 25 percentage points and a corresponding increase in closed drainage by 20 percentage points and open drainage by 5 percentage points from 2001 to 2011.

Table 4.2: Drainage facilities by sector, social groups and census year (2001 and 2011)										
	Rural					Urban				
	2011		2001			2011		2001		
sources	No. of houses	%	No. of houses	%	PPC	No. of houses	%	No. of houses	%	PPC
<b>All Population</b>										
Closed	733491	17.91	285001	5.77	12.14	1214550	33.54	245485	14.85	18.69
Open	874009	21.34	505104	10.22	11.12	760505	21	265079	16.04	4.96
None	2488174	60.75	4152455	84.01	-23.26	1645641	45.45	1142092	69.11	-23.66
Total	4095674	100	4942560	100		3620696	100	1652656	100	
<b>SC</b>										
Closed	37321	8.21	18384	3.13	5.08	50189	16.93	10088	8.28	8.65
Open	83694	18.41	57120	9.73	8.68	58788	19.83	15756	12.93	6.9
No drainage	333714	73.39	511758	87.14	-13.75	187459	63.24	96037	78.8	-15.56
Total	454729	100	587262	100		296436	100	121881	100	
<b>ST</b>										
Closed	6334	5.48	3081	2.89	2.59	6150	30.18	1702	17.24	12.94
Open	14662	12.68	9209	8.63	4.05	4455	21.86	1688	17.1	4.76
No drainage	94634	81.84	94461	88.49	-6.65	9771	47.95	6482	65.66	-17.71
Total	115630	100	106751	100		20376	100	9872	100	
<b>Others</b>										
Closed	689836	19.57	263536	6.2	13.37	1158211	35.06	233695	15.37	19.69
Open	775653	22	438775	10.33	11.67	697262	21.1	247635	16.28	4.82
No drainage	2059826	58.43	3546236	83.47	-25.04	1448411	43.84	1039573	68.35	-24.51
Total	3525315	100	4248547	100		3303884	100	1520903	100	

### 4.3 Bathing Facility

In 2011, 86 percent of total households have bathing facilities and the rest 14 do not have bathing facilities in their houses. From 2001 to 2011, households with bathing facilities have increased by 24 percentage points. In 2011, Among SC households only 66 percent have bathing facility while the corresponding figure for ST's is 48 percent which is lowest among all groups. The bathing facility of 'Other' groups is 89 percent in 2011 which is higher than the state average. From 2001 to 2011, the number of SC and ST households with bathing facility has increased by 32 percentage points and 24 percentage points respectively.

Table 4.3: bathing facility by social groups and census year (2001 and 2011)										
	All Population					SC				
	2011		2001		PPC	2011		2001		
Bath room	census houses	%	census houses	%	PPC	census houses	%	census houses	%	PPC
Yes	6618914	85.78	4096714	62.12	23.66	496229	66.06	244246	34.44	31.62
Total	7716370	100	6595206	100		751165	100	709143	100	
	ST					Others				
Yes	65326	48.03	27411	23.5	24.53	6057359	88.7	3825057	66.3	22.4
Total	136006	100	116623	100		6829199	100	5769440	100	

### *Rural urban difference in bathing facilities*

In rural areas, 78 percent of total households have bathing facilities and 93 percent of urban households in 2011. From 2001 to 2011, the percentage share of households with bathing facilities has increased by 22 percentage points in rural areas and 13 percentage points in urban areas. In rural areas, among SC households only 58 percent have bathing facility while the corresponding figure for urban areas is 79 percent in 2011. From 2001 to 2011, the percentage share of SC households with bathing facility has increased by 27 percentage points in rural areas and 26 percentage points in urban areas. Among ST in rural areas, 44 percent of households have bathing facility and for urban ST households the figures are 86 percent in 2011. From 2001 to 2011, the percentage share of ST households has increased by 22 percentage points in rural areas and 21 percentage points in urban areas. For other group, the rural urban gap is smaller than SC and ST households. In 2011 among Other households, 83 percent households in rural areas and 94 percent households in urban areas have bathroom facility within the premises in 2011. The percentage share of households with bathroom facility has increased more in rural areas by 22 percentage points than in urban areas which has increased by 13 percentage points from 2001 to 2011.

Table 4.4: Bathing facility by sector, social groups and census year (2001 and 2011)										
	Rural					Urban				
	2011		2001			2011		2001		
sources	No. of houses	%	No. of houses	%	PPC	No. of houses	%	No. of houses	%	PPC
<b>All Population</b>										
With	3052699	78.44	2792551	56.5	21.94	3214669	92.57	1304163	78.91	13.66
Total	3891977	100	4942550	100		3472847	100	1652656	100	
<b>SC</b>										
With	263442	57.93	179844	30.62	27.31	232787	78.53	64402	52.84	25.69
Total	454729	100	587262	100		296436	100	121881	100	
<b>ST</b>										
With	47884	41.41	21012	19.68	21.73	17442	85.6	6399	64.82	20.78
Total	115630	100	106751	100		20376	100	9872	100	
<b>Others</b>										
With	2741373	82.53	2591695	61	21.53	2964440	93.93	1233362	81.09	12.84
Total	3321618	100	4248537	100		3156035	100	1520903	100	

#### 4.4 Type of roof

In 2011, 48 percent of total households in Kerala have concrete roof, 38 percent use tiles, 9 percent use G.I./Metal/Asbestos sheets and 3 percent have roof made up of Grass/thatch/Bamboo/Wood/Mud. Among social groups; SC, ST and Others, majority of them households use tiles as the predominant material for roof in 2011. From 2001 to 2011, the percentage share of roof types such as G.I./Metal/ Asbestos sheets and concrete has increased in percentage points in general and across social groups and the corresponding decline in Grass/thatch/Bamboo/Wood/Mud and tiles.

Table 4.5: type of roof by social groups and census year (2001 and 2011)										
	All Population					SC				
	2011		2001		PPC	2011		2001		PPC
	No. of houses	%	No. of houses	%	PPC	No. of houses	%	No. of houses	%	PPC
Grass/thatch/ Bamboo/Wood/ Mud	205567	2.66	676394	10.26	-7.59	47953	6.38	145639	20.54	-14.15
Tiles	2957668	38.33	3764851	57.08	-18.75	337706	44.96	424885	59.92	-14.96
G.I./Metal/ Asbestos sheets	697932	9.04	286516	4.34	4.70	101997	13.58	44486	6.27	7.31
Concrete	3701357	47.97	1745121	26.46	21.51	238754	31.78	78697	11.10	20.69
Total	7716370	100	6595206	100.00		751165	100.00	709143	100.00	
	ST					Others				
Grass/thatch /Bamboo/Wood/ Mud	13640	10.03	24946	21.39	-11.36	143974	2.11	505809	8.77	-6.66
Tiles	58624	43.10	68874	59.06	-15.95	2561338	37.51	3271092	56.70	-19.19
G.I./Metal/ Asbestos sheets	18933	13.92	8719	7.48	6.44	577002	8.45	233311	4.04	4.41
Concrete	39183	28.81	10225	8.77	20.04	3423420	50.13	1656199	28.71	21.42
Total	136006	100.00	116623	100.00		6829199	100.00	5769440	100.00	

### ***Rural urban difference in predominant material used in roof***

In rural areas, majority of the households (43 percent) use tiles in 2011 and in urban areas majority of the households (58 percent) use concrete material for roof. Similarly SC and ST households use tiles predominantly in rural areas and concrete material roof in urban areas in 2011. From 2001 to 2011 there is a decline in the usage of Grass/thatch/Bamboo /Wood/Mud and tiles as a roof material and an increase in G.I./Metal/ Asbestos sheets and concrete. Similar trend is across social groups and sector with varying magnitudes.



Table 4.6: Type of roof by sector, social groups and census year (2001 and 2011)

Table 4.6: Type of roof by sector, social groups and census year (2001 and 2011)										
	Rural					Urban				
	2011		2001			2011		2001		
Type of roof	census houses	%	census houses	%	PPC	census houses	%	census houses	%	PPC
<b>All Population</b>										
Grass/thatch/ Bamboo /Wood/Mud	128035	3.13	568052	11.49	-8.37	77532	2.14	108342	6.56	-4.41
Tiles	1775453	43.35	2935300	59.39	-16.04	1182215	32.65	829551	50.20	-17.54
G.I./Metal/ Asbestos sheets	499390	12.19	235203	4.76	7.43	198542	5.48	51313	3.10	2.38
Concrete	1600213	39.07	1113393	22.53	16.54	2101144	58.03	631728	38.23	19.81
Total	4095674	100.00	4942550	100.00		3620696	100.00	1652656	100.00	
<b>SC</b>										
Grass/thatch/ Bamboo /Wood/Mud	28778	6.33	123077	20.96	-14.63	19175	6.47	22562	18.51	-12.04
Tiles	221756	48.77	360219	61.34	-12.57	115950	39.11	64666	53.06	-13.94
G.I./Metal/ Asbestos sheets	77590	17.06	39531	6.73	10.33	24407	8.23	4955	4.07	4.17
Concrete	110500	24.30	52651	8.97	15.33	128254	43.27	26046	21.37	21.90
Total	454729	100.00	587262	100.00		296436	100.00	121881	100.00	
<b>ST</b>										
Grass/thatch/ Bamboo/Wood/ Mud	12876	11.14	23851	22.34	-11.21	764	3.75	1095	11.09	-7.34
Tiles	51568	44.60	63933	59.89	-15.29	7056	34.63	4941	50.05	-15.42
G.I./Metal/ Asbestos sheets	17316	14.98	8087	7.58	7.40	1617	7.94	632	6.40	1.53
Concrete	28811	24.92	7459	6.99	17.93	10372	50.90	2766	28.02	22.88
Total	115630	100.00	106751	100.00		20376	100.00	9872	100.00	
<b>Others</b>										
Grass/thatch/ Bamboo/Wood/ Mud	86381	2.45	421124	9.91	-7.46	57593	1.74	84685	5.57	-3.82
Tiles	1502129	42.61	2511148	59.11	-16.50	1059209	32.06	759944	49.97	-17.91
G.I./Metal/ Asbestos sheets	404484	11.47	187585	4.42	7.06	172518	5.22	45726	3.01	2.22
Concrete	1460902	41.44	1053283	24.79	16.65	1962518	59.40	602916	39.64	19.76
Total	3525315	100.00	4248537	100.00		3303884	100.00	1520903	100.00	

#### 4.5 Type of wall

In 2011, 57 percent of total households in Kerala have stone packed with/ without mortar as a predominant material used for wall, 25 percent use burnt bricks and 13 percent of households use grass/thatch/bamboo, mud or unburnt brick. Among social groups; SC, ST and Others, follow the similar trend but among ST households, 27 percent of households have walls made of grass/thatch/bamboo, mud or unburnt brick followed by SC households (21 percent) in 2011. From 2001 to 2011, the percentage share of wall predominantly made of Stone packed with/without Mortar has increased across social groups and the decline in other type of walls in terms of percentage points.

Type of wall	All Population					SC				
	2011		2001		PPC	2011		2001		PPC
	No. of houses	%	No. of houses	%		No. of houses	%	No. of houses	%	
Grass/Thatch/Bamboo	130314	1.69	321952	4.88	-3.19	30631	4.08	74574	10.52	-6.44
Mud/Unburnt brick	889634	11.53	1568558	23.78	-12.25	126321	16.82	239572	33.78	-16.97
Stone packed with/without mortar	4387640	56.86	2209364	33.50	23.36	399817	53.23	196755	27.75	25.48
Burnt brick	1890204	24.50	2087317	31.65	-7.15	143097	19.05	157736	22.24	-3.19
total	7716370	100	6595206	100		751165	100	709143	100	
	ST					Others				
Grass/Thatch/Bamboo	11137	8.19	15144	12.99	-4.80	88546	1.30	232234	4.03	-2.73
Mud/Unburnt brick	25218	18.54	40629	34.84	-16.30	738095	10.81	1288357	22.33	-11.52
Stone packed with/without mortar	51999	38.23	15390	13.20	25.04	3935824	57.63	1997219	34.62	23.02
Burnt brick	37043	27.24	36176	31.02	-3.78	1710064	25.04	1893405	32.82	-7.78
total	136006	100	116623	100		6829199	100	5769440	100	

#### *Rural urban difference in predominant material used in wall*

In 2011, 54 percent of the households in rural areas and 61 percent in urban areas have walls predominantly made of stone. Similarly, schedule caste and schedule tribe households majority

of them use stone as a material for wall both in rural as well as in urban areas. Though, the percentage of households using Grass/thatch/Bamboo /Wood/Mud for wall is highest among SC households (29 percent) in rural areas followed by SC households (24 percent) in rural areas. From 2001 to 2011 there is a decline in the usage of Grass/thatch/Bamboo /Wood/Mud and burnt as a wall material and an increase in the use of Stone with/without mortar. Similar trend can be seen across social groups both in rural as well as in urban areas with varying magnitudes.

Table 4.8: Type of wall by sector, social groups and census year (2001 and 2011)					
	<b>Rural</b>				
	<b>2011</b>		<b>2001</b>		
	census houses	%	census houses	%	PPC
<b>Type of wall</b>	<b>All Population</b>				
Grass/Thatch/Bamboo	83645	2.04	260683	5.27	-3.23
Mud/Unburnt brick	616639	15.06	1337147	27.05	-12.00
Stone packed with/without mortar	2192868	53.54	1631616	33.01	20.53
Burnt brick	963203	23.52	1402837	28.38	-4.87
total	4095674	100	4942550	100	
<b>SC</b>					
Grass/Thatch/Bamboo	18233	4.01	61997	10.56	-6.55
Mud/Unburnt brick	89228	19.62	208686	35.54	-15.91
Stone packed with/without mortar	232544	51.14	164359	27.99	23.15
Burnt brick	82822	18.21	120021	20.44	-2.22
total	454729	100	587262	100	
<b>ST</b>					
Grass/Thatch/Bamboo	10689	9.24	14554	13.63	-4.39
Mud/Unburnt brick	23260	20.12	38924	36.46	-16.35
Stone packed with/without mortar	40338	34.89	12786	11.98	22.91
Burnt brick	31968	27.65	32118	30.09	-2.44
total	115630	100	106751	100	
<b>Others</b>					
Grass/Thatch/Bamboo	54723	1.55	184132	4.33	-2.78
Mud/Unburnt brick	504151	14.30	1089537	25.64	-11.34
Stone packed with/without mortar	1919986	54.46	1454471	34.23	20.23
Burnt brick	848413	24.07	1250698	29.44	-5.37
total	3525315	100	4248537	100	

Table 4.9: Type of wall by sector, social groups and census year (2001 and 2011)					
	Urban				
	2011		2001		
	census houses	%	census houses	%	PPC
Type of wall	All Population				
Grass/Thatch/Bamboo	46669	1.29	61269	3.71	-2.42
Mud/Unburnt brick	272995	7.54	231411	14.00	-6.46
Stone packed with/without mortar	2194772	60.62	577748	34.96	25.66
Burnt brick	927001	25.60	684480	41.42	-15.81
total	3620696	100	1652656	100	
SC					
Grass/Thatch/Bamboo	12398	4.18	12577	10.32	-6.14
Mud/Unburnt brick	37093	12.51	30886	25.34	-12.83
Stone packed with/without mortar	167273	56.43	32396	26.58	29.85
Burnt brick	60275	20.33	37715	30.94	-10.61
total	296436	100	121881	100	
ST					
Grass/Thatch/Bamboo	448	2.20	590	5.98	-3.78
Mud/Unburnt brick	1958	9.61	1705	17.27	-7.66
Stone packed with/without mortar	11661	57.23	2604	26.38	30.85
Burnt brick	5075	24.91	4058	41.11	-16.20
total	20376	100	9872	100	
Others					
Grass/Thatch/Bamboo	33823	1.02	48102	3.16	-2.14
Mud/Unburnt brick	233944	7.08	198820	13.07	-5.99
Stone packed with/without mortar	2015838	61.01	542748	35.69	25.33
Burnt brick	861651	26.08	642707	42.26	-16.18
total	3303884	100	1520903	100	

#### 4.6 Type of floor

In 2011, 61 percent of total households in Kerala have cemented floor, 23 percent use mosaic/floor tiles and 10 percent of households use mud. Among social groups; among SC

households 65 percent use cement for floor and 24 percent have mud floor, ST households, 47 percent use cement and 44 percent use mud as a material for floor. From 2001 to 2011, the percentage share of floor predominantly made of mud or cement has decreased in general and among other households but among SC and ST households Mud floor has shown a sharp decline in terms of percentage points and an increase cemented floor and mosaic/floor tiles in the same time period.

Table 4.10: Type of floor by social groups and census year (2001 and 2011)

Type of floor	All Population					SC				
	2011		2001		PPC	2011		2001		PPC
	No. of houses	%	No. of houses	%		No. of houses	%	No. of houses	%	
Mud	747339	9.69	1606927	24.37	-14.68	183862	24.48	354891	50.05	-25.57
Cement	4735079	61.36	4158498	63.05	-1.69	489936	65.22	321187	45.29	19.93
Mosaic/floor tiles	1768412	22.92	644790	9.78	13.14	49287	6.56	13685	1.93	4.63
total	7716370	100	6595206	100		751165	100.00	709143	100	
	ST					Others				
Mud	59985	44.10	75480	64.72	-20.62	503492	7.37	1176556	20.39	-13.02
Cement	64223	47.22	36188	31.03	16.19	4180920	61.22	3801123	65.88	-4.66
Mosaic/floor tiles	8041	5.91	2384	2.04	3.87	1711084	25.06	628721	10.90	14.16
total	136006	100	116623	100		6829199	100	5769440	100	

### ***Rural urban difference in predominant material used in floor***

In 2011, 65 percent of the households in rural areas and 57 percent in urban areas have floor predominantly made of cement. The percentage of households with mud floor is 14 percent in rural areas and 5 percent in urban areas in 2011. Consequently there are more mosaic floor or of floor tiles in urban areas than in rural areas. Similarly, in case of schedule caste, majority of them have cemented floor both in rural as well as in urban areas. But among the schedule tribe households, 50 percent have mud floor in rural areas where the majority of them reside. From 2001 to 2011 there is a decline in mud floors in general and across social groups which has shown sharper decline than at state level. The data also reveals that there is a corresponding increase in the use of cement and mosaic/floor tiles as a predominant material for floor from 2001 to 2011.

Table 4.11 Type of floor by sector, social groups and census year (2001 and 2011)					
	<b>Rural</b>				
	<b>2011</b>		<b>2001</b>		
	census houses	%	census houses	%	PPC
<b>All Population</b>					
Mud	559960	13.67	1412213	28.57	-14.90
Cement	2655615	64.84	3056043	61.83	3.01
Mosaic/floor tiles	698956	17.07	345880	7.00	10.07
Total	4095674	100	4942550	100	
<b>SC</b>					
Mud	134926	29.67	314937	53.63	-23.96
Cement	288950	63.54	250023	42.57	20.97
Mosaic/floor tiles	16718	3.68	6887	1.17	2.50
Total	454729	100	587262	100	
<b>ST</b>					
Mud	57623	49.83	73228	68.60	-18.76
Cement	51935	44.91	30052	28.15	16.76
Mosaic/floor tiles	3608	3.12	1314	1.23	1.89
total	115630	100	106751	100	
<b>Others</b>					
Mud	367411	10.42	1024048	24.10	-13.68
Cement	2314730	65.66	2775968	65.34	0.32
Mosaic/floor tiles	678630	19.25	337679	7.95	11.30
total	3525315	100	4248537	100	

Table 4.12: Type of floor by sector, social groups and census year (2001 and 2011)					
	<b>Urban</b>				
	<b>2011</b>		<b>2001</b>		
	census houses	%	census houses	%	PPC
<b>All Population</b>					
Mud	187379	5.18	194714	11.78	-6.61
Cement	2079464	57.43	1102455	66.71	-9.28
Mosaic/floor tiles	1069456	29.54	298910	18.09	11.45
Total	3620696	100	1652656	100	
<b>SC</b>					
Mud	48936	16.51	39954	32.78	-16.27
Cement	200986	67.80	71164	58.39	9.41
Mosaic/floor tiles	32569	10.99	6798	5.58	5.41
Total	296436	100	121881	100	
<b>ST</b>					
Mud	2362	11.59	2252	22.81	-11.22
Cement	12288	60.31	6136	62.16	-1.85
Mosaic/floor tiles	4433	21.76	1070	10.84	10.92
total	20376	100	9872	100	
<b>Others</b>					
Mud	136081	4.12	152508	10.03	-5.91
Cement	1866190	56.48	1025155	67.40	-10.92
Mosaic/floor tiles	1032454	31.25	291042	19.14	12.11
total	3303884	100	1520903	100	

#### 4.7 Attainment Rate of SC and ST in Additional Facilities

The attainment rate calculated for the additional indicators as presented in table 9 panelB, which include closed drainage system and households with bathing facilities. In 2011, the share SC household's having closed drainage facility is 43 percent of the share of other households having closed drainage facility. For rural areas the attainment rate is 41 percent and 48 percent in urban areas in 2011. The attainment rate of SC households in terms of closed drainage facilities has reduced in general and both in rural and urban areas from 2001 to 2011. The attainment rate in case of bathroom facilities reveals that the share of SC households having

bathroom facilities is 74 percent of the share of other households having bathroom facilities. The figures for rural areas are 70 percent and 84 percent in urban areas. The difference between SC households and Other households in concrete roof and stone walls do not differ between rural and urban areas and the SC households seem to be catching up with the Other households which is evident in the increasing attainment rate from 2001 to 2011. The attainment rate in the type of floor-mosaic/floor tiles is very low at 26 in general and 19 percent in rural and 35 percent in urban areas. The SC households seem to be catching up from 2001 to 2011.

**Table 4.13: Attainment rate of Schedule caste (SC) in additional facilities by sector and year**

	Rural + Urban		Rural		Urban	
	2011	2001	2011	2001	2011	2001
<b>1. Drainage Facilities</b>						
Closed drainage system	43.05	46.52	41.95	50.48	48.29	53.87
<b>2. Bathroom Facilities</b>						
With Bathroom Facilities	74.48	51.95	70.19	50.20	83.60	65.16
<b>3. type of roof</b>						
Concrete roof	63.41	38.66	58.64	36.16	72.84	53.91
<b>4. type of wall</b>						
Stone packed with/without mortar	92.35	80.15	93.90	81.75	92.48	74.48
<b>5. type of floor</b>						
Mosaic/floor tiles	26.19	17.71	19.10	14.75	35.16	29.15

The attainment rate calculated for the additional indicators as presented in table 10 panel B, which include closed drainage system and households with bathing facilities. In 2011, the share ST household's having closed drainage facility is 34 percent of the share of other households having closed drainage facility. For rural areas the attainment rate is 28 percent and 86 percent in urban areas in 2011. The attainment rate of ST households in closed drainage



facilities has reduced in general and both in rural and urban areas from 2001 to 2011. The attainment rate in case of bathroom facilities reveals that the share of ST households having bathroom facilities is 54 percent of the share of other households having bathroom facilities in 2011. The figures for rural areas are 50 percent and 91 percent in urban areas. The difference between ST households and Other households in concrete roof and stone walls significantly difference between rural and urban areas. The reason which we had stated earlier is the small number of ST households in urban areas. ST households seem to be catching up faster with the Other households which is evident in the increasing attainment rate from 2001 to 2011. The attainment rate in the type of floor-mosaic/floor tiles is very low at 23 in general and 16 percent in rural areas and 70 percent in urban areas which is lower than SC households in Kerala. But the conditions seem to have improved from 2001 to 2011 in rural as well as in urban areas.

**Table 4.14: Attainment rate of Schedule tribe (ST) by sector and year**

index	Rural + Urban		Rural		Urban	
	2011	2001	2011	2001	2011	2001
1.Drainage Facilities						
Closed drainage system	33.92	47.56	28.00	46.61	86.08	112.17
2. Bathroom Facilities						
With Bathroom Facilities	54.15	35.44	50.18	32.26	91.13	79.94
3. type of roof						
Concrete roof	57.47	30.54	58.64	28.18	85.69	70.68
4. type of wall						
Stone packed with/without mortar	66.34	38.12	93.90	34.99	93.80	73.92
5.type of floor						
Mosaic/floor tiles	23.60	18.76	16.21	15.49	69.62	56.64

# Chapter 5

## District Level Scenario A Comparative Analysis

### 5.1 Introduction

The idea of a detailed analysis of the housing conditions and amenities at the district level is that it would then reveal the extent of the geographical spread of the improvement that has taken place in the state. The chapter analyzes the housing condition on the basis of selected indicators including basic and additional housing conditions and amenities as mentioned in the earlier chapter.

We are not differentiating between rural and urban since the difference between them is quite small as we saw in the earlier chapter, unlike the India's overall scenario where the difference is quite significant. The chapter examines the performance of districts in terms of housing conditions and amenities by using the following three measures. One is to measure the rate of change we have calculated the percentage point change between census 2001 and census 2011 and the second is the ranking of districts to see if there are any changes from 2001 to 2011. Finally, we measure the inter-district inequality in housing conditions and amenities across by computing Krtscha index. Krtscha index is a well-known inequality, which is the product of Coefficient of Variation (as a relative measure of inequality) and Standard Deviation (as an absolute measure inequality) (see Subramanian). The inequality is calculated for both the years to judge if inter-district inequality has increased or decreased from the year 2001 to 2011.

### 5.2 Housing condition

#### *Condition of the residential structure*

In 2011 Kerala reported 66 percent of houses in good condition while the percentage of good condition houses vary across districts. Kozhikode (74 percent) has highest percentage of houses in good condition closely followed by Kannur (72.7 percent) and Malappuram (72 percent). Idukki (49 percent) had the lowest proportion of households living in 'good condition' houses followed by Wayanad (56 percent), Palakkad (61 percent) and Thiruvananthapuram (62 percent).

Ernakulam ranked top in 2001 in the highest percentage of good condition houses, which is taken over by Kozhikode in 2011. Northern districts like Kozhikode, Kannur, Malappuram and Kasaragod have reported highest percentage point increase in the proportion of good condition houses from year 2001 to 2011. The lowest percentage point increase has been reported by Ernakulam followed by Alappuzha, Pathanamthitta, Idukki and Wayanad from 2001 to 2011. As per the coefficient of variation method, the variation has reduced by 2 percentage points from 12 percent in 2001 to 10 percent in 2011. The value of Krtscha index has reduced 0.77 in 2001 to 0.68 which indicates that the spatial inequality between the districts in terms of good condition houses has reduced, though slightly.

District	Rank		%age of good condition houses		% point change
	2001	2011	2001	2011	
Kozhikode	2	1	61.0	73.5	12.5
Kannur	5	2	58.2	72.7	14.5
Ernakulam	1	3	68.7	71.7	3.0
Malappuram	6	4	57.2	71.7	14.5
Kasaragod	10	5	50.4	67.4	17.0
Kollam	7	6	55.4	65.9	10.5
Pathanamthitta	3	7	60.3	65.8	5.5
Alappuzha	4	8	60.0	64.8	4.8
Thrissur	8	9	52.9	64.8	11.9
Kottayam	9	10	52.9	63.4	10.5
Thiruvananthapuram	11	11	50.2	62.2	12.0
Palakkad	12	12	49.0	61.5	12.5
Wayanad	13	13	50.2	55.6	5.4
Idukki	14	14	43.5	48.8	5.3
Kerala			55.9	66.3	10.4
Coefficient of Variation(CV)			0.12	0.10	
Standard Deviation(SD)			6.42	6.81	
Krtscha index(CV*SD)			0.77	0.68	

***Availability of space: Number of Rooms***

In 2011, 25 percent of houses in Kerala have two rooms and the percentages vary across districts; Palakkad (32 percent) has maximum and Kannur (16 percent) with minimum percentage of households with two rooms. From 2001 to 2011 the percentage of houses with two rooms have decreased in all the districts with highest decline in Pathanamthitta which has decreased by 5 percentage points and the lowest decline in Kozhikode with a decline of less than 1 percentage point. As per the coefficient of variation the variation across districts is 19 percent in 2001 which has reduced to 17 percent in 2011. The value of Krtscha index has reduced 0.93 in 2001 to 0.69 which indicates that the spatial inequality between the districts in terms of percentage of houses with two rooms has reduced.

Kerala's 32 percent of households have three rooms in 2011 which has increased by 5 percentage points from 2001. The percentage of households with three rooms varies across districts; Ernakulam (35 percent) has the maximum and Pathanamthitta (29 percent) has minimum in 2011. The ranking has remained more or less similar except Kollam which was 9th position in 2001 has jumped to 4<sup>th</sup> rank in 2011 with a 7 percentage point increase in the percentage of houses with three rooms from 2001 to 2011. All the districts have recorded an increased percentage point change from 2001 to 2011. The variation across districts from the state average has reduced from 10 percent to 6 percent from 2001 to 2011 and a similar decline in Krtscha index which indicates the decline in inequality across districts in the same time period.

Districts	%age of houses with two rooms					%age of houses with three rooms				
	2001	2011	Rank in 2001	Rank in 2011	%age point change	2001	2011	Rank In 2001	Rank in 2011	%age point change
Ernakulam	22.3	19.9	12	13	-2.4	32.1	35.1	1	1	3.0
Kozhikode	29.3	28.5	6	4	-0.8	31.6	34.2	2	2	2.5
Thrissur	21.6	22.4	13	11	0.8	28.9	34.2	3	3	5.3
Kollam	26.1	26.0	8	7	-0.1	25.6	32.5	9	4	6.9
Thiruvananthapuram	23.3	24.8	10	9	1.5	27.5	32.3	5	5	4.8
Malappuram	27.3	24.9	7	8	-2.3	26.7	32.2	6	6	5.5
Kannur	18.6	16.3	14	14	-2.3	28.3	32.0	4	7	3.7
Kottayam	30.7	27.2	5	5	-3.6	25.6	31.3	8	8	5.7
Palakkad	32.2	32.0	3	1	-0.2	25.5	30.4	10	9	4.9
Alappuzha	33.9	29.2	2	3	-4.7	24.3	30.4	11	10	6.1
Idukki	31.0	26.7	4	6	-4.3	26.1	30.3	7	11	4.2
Wayanad	24.6	22.3	9	12	-2.3	23.2	29.7	14	12	6.6
Pathanamthitta	34.8	29.7	1	2	-5.1	24	29.3	13	14	5.2
Kasaragod	23.0	23.4	11	10	0.3	24.1	29.3	12	13	5.2
Kerala	26.6	25.1			-1.5	27.3	32.2			4.9
Coefficient of Variation(CV)	0.19	0.17				0.10	0.06			
Standard Deviation(SD)	5.02	4.18				2.74	1.88			
Krtscha index(CV*SD)	0.93	0.69				0.28	0.11			

***Facility to protect basic dignity: Availability of Latrine facility within premises***

The section presents the district wise availability of latrine facilities in year 2001 and 2011. We are presenting the district wise percentage of households having latrine within the premises and later present the district wise percentage of households having water closet type latrines while comparing them in both the years. In 2011, 95 percent of the households have latrine facilities within the premises which have increased by 11 percentage points from 2001 to 2011. This must be reckoned as a remarkable achievement in the all India context given the fact that nearly half the Indian households did not have a latrine facility within premises in 2001. The percentage of households varies across districts; Ernakulam (98 percent) has maximum percentage of households closely followed by Thrissur (98), Kozhikode (98 percent) and Idukki (89 percent) has the minimum percentage of households with latrine facility. From 2001 to 2011 the

percentage of houses with latrine facility has increased in all the districts with highest increase in terms of percentage points; Kasaragod (23 percentage points) and Palakkad (21 percentage points). The lowest increase has been reported in terms of percentage points; Ernakulam (6 percentage points), Wayanad (7 percentage points) and Thrissur (7 percentage points) from year 2001 to 2011. As per the coefficient of variation the variation from the state average is 3 percent in 2011 which has declined by 6 percentage points from 9 percent in 2001. The inequality measured by Krtscha index has decreased from 0.70 to 0.10 from 2001 to 2011 which indicates that the spatial inequality between the districts in terms of percentage of houses with two rooms has slightly decreased.

Districts	Hhds. with latrine within premises					Water closet latrines				
	rank 2001	rank 2011	2001	2011	%age point change	rank 2001	rank 2011	2001	2011	%age point change
Kozhikode	1	3	92.0	97.8	5.8	5	1	72.2	84.9	12.7
Kannur	5	4	87.2	97.6	10.4	4	2	73.0	75.9	2.9
Ernakulam	2	1	91.9	97.9	5.9	1	3	78.2	72.0	-6.2
Thrissur	3	2	90.9	97.8	6.9	3	4	75.2	70.9	-4.4
Kasaragod	13	12	68.4	91.8	23.3	12	5	54.0	70.3	16.3
Malappuram	4	5	87.4	97.4	10.0	2	6	76.8	69.9	-6.9
Wayanad	7	11	85.2	91.8	6.6	13	7	49.2	69.3	20.1
Kottayam	6	6	85.3	96.6	11.3	6	8	66.2	65.3	-0.8
Alappuzha	11	10	80.0	92.9	12.9	8	9	58.0	63.5	5.6
Thiruvananthapuram	9	8	82.6	94.2	11.6	11	10	56.0	62.2	6.2
Idukki	12	14	76.0	89.1	13.1	14	11	47.9	57.4	9.6
Kollam	8	7	82.6	94.5	11.9	7	12	60.3	56.8	-3.4
Palakkad	14	13	68.4	89.8	21.4	9	13	57.1	53.3	-3.8
Pathanamthitta	10	9	81.7	93.9	12.2	10	14	56.7	50.5	-6.2
Kerala			84.0	95.2	11.2			65.2	66.7	1.5
Coefficient of Variation(CV)			0.09	0.03				0.17	0.14	
Standard Deviation(SD)			7.62	3.09				10.46	9.36	
Krtscha index(CV*SD)			0.70	0.10				1.74	1.33	

As we understood from the above analysis that at least close to ninety percent and even more households in each district has latrines within their premises. There are three types of

latrines; water closet latrine, pit latrines and other type of latrines and here the focus is water closet latrines as the most hygienic latrine facility. Kerala's 65 percent of households have water closet latrines in 2011 which has increased by one and half percentage points from 2001. The percentage of households with water closet latrine type varies across districts; Kozhikode (85 percent) in 2011, ranks first and had fifth position in 2001, and Pathanamthitta (51 percent) has minimum percentage of households with water closet latrines, even declined by 6 percentage points from 2001 to 2011. Wayanad district has shown the highest increase of 20 percentage points from 2001 to 2011 in the percentage of households having water closet latrines followed by Kasaragod (16 percentage points) which had jumped from 12 positions in 2001 to 5<sup>th</sup> position in 2011. All the districts have recorded an increased percentage point change from 2001 to 2011. As a measure of dispersion from the state average, Coefficient of variation has reduced from 17 percent to 14 percent from 2001 to 2011 and a similar decline in Krtscha index from 1.74 in 2001 to 1.33 in 2011 which indicates the decline in inequality across districts in the households with water closet latrines.

### ***Source of Drinking Water***

The analysis of the data shows that the well water is the major source of drinking water in the state. In 2011, 62 percent of the households used well water as the main source of drinking water and 29 percent of the households used tap water and the rest used other sources. The data shows variation across districts; Kannur (81 percent) had the highest proportion of households with well as the major source of drinking water followed by Malappuram (78 percent), Pathanamthitta (74 percent) and Kozhikode (73 percent) in 2011. While Idukki (40 percent) has the lowest percentage of household's followed by Ernakulam (41 percent) and Alappuzha (46 percent) in the same time period. Ernakulam (57 percent) had the highest proportion of households depending on tap water followed by Palakkad (43 percent) and Thiruvananthapuram (38 percent). While, Kannur (12 percent) has the lowest proportion of households dependent on tap water which is followed by Kasaragod (14 percent) and Pathanamthitta (19 percent) in 2011. In comparison to 2001, there is decline in the percentage of households using well water as the main source and tap water seem to be a close substitute. This is evident from the decline in the percentage of households across districts in the usage of well water and a corresponding increase in the proportion of households using tap water as the main source of drinking water but still

well water remains the main source of drinking water. The inequalities across the districts have decreased in the usage of both well and tap water from year 2001 to 2011.

District	Tap water					Well water				
	rank 2001	rank 2011	2001	2011	%age point change	rank 2001	rank 2011	2001	2011	%age point change
Ernakulam	1	1	47.4	57.2	9.8	13	13	49.8	40.5	-9.3
Palakkad	3	2	26.8	42.9	16.1	11	11	64.7	48.4	-16.3
Thiruvananthapuram	4	3	26.6	38.2	11.6	10	10	69	56.9	-12.1
Alappuzha	2	4	26.9	35.0	8.1	12	12	58.5	45.8	-12.7
Idukki	5	5	24.1	30.2	6.1	14	14	43.3	40.3	-3.0
Thrissur	6	6	19.7	27.5	7.8	9	8	71.8	63.2	-8.6
Kollam	10	7	13.6	27.1	13.5	4	6	82.3	68.9	-13.4
Kottayam	7	8	18.3	22.9	4.6	7	5	76.7	69.9	-6.8
Wayanad	8	9	14.2	22.6	8.4	8	7	73.7	65.9	-7.8
Kozhikode	11	10	11.7	21.0	9.3	3	4	83.4	72.8	-10.6
Pathanamthitta	9	11	13.9	19.1	5.2	5	3	80.6	74.4	-6.2
Malappuram	12	12	7.6	14.9	7.3	2	2	86.7	78.4	-8.3
Kasaragod	13	13	7.4	13.7	6.3	6	9	77.1	62.6	-14.5
Kannur	14	14	5.9	11.7	5.8	1	1	87.9	81.3	-6.6
Kerala			20.4	29.3	8.9			71.9	62.0	-9.9
Coefficient of Variation(CV)			0.58	0.46				0.19	0.22	
Standard Deviation(SD)			11.03	12.57				13.56	13.72	
Krtscha index(CV*SD)			6.45	5.76				2.56	3.03	

### *Availability of Separate Kitchen*

This section presents the district wise percentage of households with separate kitchen in the year 2001 and 2011. In 2011, 97 percent of the households in Kerala have separate kitchen, which has increased by 4 percentage points from 2001. The percentages of households with separate kitchen vary across districts but the variations are small; 98 percent in Ernakulam is the maximum and 94 percent in Pathanamthitta is the minimum in 2011. The percentage of households with separate kitchen have shown a positive percentage point increase from 2001 to 2011 except Pathanamthitta which has declined by 2 percentage points in the same time period. The variation across districts measured by coefficient of variation is very low at 1 percent in 2011 and has declined by one percentage point from 2001. The Krtscha index also shows are



corresponding decline from the same time period indicating the decline in inequality across districts.

<b>Table 5 5: District wise percentage of Households with separate kitchen in 2001 and 2011</b>					
<b>Districts</b>	<b>Ranking</b>		<b>HHs with separate Kitchen</b>		
	<b>2001</b>	<b>2011</b>	<b>2001</b>	<b>2011</b>	<b>% point change</b>
Ernakulam	10	1	93.4	98.4	4.9
Thrissur	2	2	96.1	98.3	2.2
Kannur	4	3	94.9	98.2	3.3
Malappuram	6	4	94.8	98.2	3.4
Kasaragod	8	5	94.2	97.6	3.4
Kozhikode	7	6	94.6	97.5	3.0
Kottayam	11	7	92.4	97.1	4.7
Thiruvananthapuram	13	8	91.4	97.0	5.6
Palakkad	5	9	94.9	96.6	1.7
Kollam	14	10	88.1	96.6	8.5
Alappuzha	9	11	93.7	96.0	2.3
Wayanad	3	12	95.5	95.6	0.1
Idukki	12	13	91.6	95.2	3.6
Pathanamthitta	1	14	96.3	94.7	-1.6
Kerala			94.0	97.3	3.3
Coefficient of Variation(CV)			0.02	0.01	
Standard Deviation(SD)			2.21	1.21	
Krtscha index(CV*SD)			0.05	0.01	

### ***Sources of Lighting***

The section presents the district- wise percentage of households with electricity and kerosene as the major source of lighting in year 2001 and 2011. 94 percent of households in Kerala (2011) used electricity as a major source of lighting while the percentage households with electricity vary across districts. Ernakulam (97 percent) has highest percentage of houses with electricity and Wayanad (81 percent) has the lowest percentage of houses with electricity. The rankings have not changed between the year 2001 and 2011 but the districts have recorded positive percentage point increase in the same time period. Ernakulam ranked top in 2011 in highest percentage of electrified houses and the Wayanad has the lowest electrified houses. The low ranked districts in 2001 and 2011 have recorded highest percent point increase from 2001 to

2011. Wayanad had recorded 39 percentage points increase in the percentage of households with electricity as the main source of lighting, followed by Palakkad (34 percentage points), Kasaragod(32 percentage points), Idukki (31 percentage points), Kozhikode(30 percentage points) and Malappuram(30 percentage points) from 2001 to 2011. Ernakulam (12 percentage point) has recorded lowest increase of the households with electricity in the same time period. The variation in the percentage of households using electricity across districts has reduced significantly from 17 percent in 2001 to 5 percent in 2011 as per the coefficient of variation method. The inequality across districts has reduced as the value of Krtscha index has shown a decline from 1.85 in 2001 to 0.21 in 2011. In fact the decline in inter district inequality is quite striking.

<b>Table 5.6: District wise percentage of households with electricity as the major source of lighting</b>					
<b>Districts</b>	Percentage of households with Electricity				
	<b>rank 2001</b>	<b>rank 2011</b>	<b>2001</b>	<b>2011</b>	<b>%age point change</b>
Ernakulam	1	1	85.0	97.0	12.0
Kottayam	2	2	78.0	97.0	19.0
Thrissur	3	3	77.0	97.0	20.0
Alappuzha	4	4	75.0	96.0	21.0
Thiruvananthapuram	5	5	75.0	95.0	20.0
Kollam	6	6	73.0	95.0	22.0
Pathanamthitta	7	7	72.0	94.0	22.0
Kannur	8	8	67.0	94.0	27.0
Malappuram	10	10	64.0	94.0	30.0
Kozhikode	9	9	64.0	94.0	30.0
Palakkad	11	11	60.0	94.0	34.0
Kasaragod	12	12	57.0	89.0	32.0
Idukki	13	13	57.0	88.0	31.0
Wayanad	14	14	42.0	81.0	39.0
Kerala			70.0	94.0	24.0
Coefficient of Variation(CV)			0.17	0.05	
Standard Deviation(SD)			11.17	4.42	
Krtscha index(CV*SD)			1.85	0.21	

### *Type of cooking energy*

The section presents the district wise percentage of households by the major source of cooking fuel such as LPG/PNG in year 2001 and 2011. In 2011, 36 percent of households in Kerala use LPG/PNG as a major source of cooking fuel while the percentage of households using LPG/PNG has increased by 18 percentage points from 2001 to 2011. The usage LPG/PNG as a main source of cooking fuel varies across districts; Ernakulam (63 percent) has highest percentage of households followed by Alappuzha (52 percent), Thrissur (45 percent) while Wayanad (12 percent) has the lowest percentage of households use LPG/PNG followed by Malappuram (18 percent) and Idukki (20 percent) in 2011. While comparing with 2001, Alappuzha has recorded highest percentage point increase of 31 percentage points and has also jumped from 5<sup>th</sup> rank in 2001 to 2 rank in 2011 after Ernakulam. While Wayanad has recorded lowest percentage point increase of one percentage point in the same time period. As per the coefficient of variation, the variation has increased from 40 percent in 2001 to 44 percent in 2011. The value of Krtscha index has increased from 2.8 in 2001 to 6.4 in 2011 which indicates that the spatial inequality between the districts in terms of percentage of houses using LPG/PNG as a major source of cooking has increased significantly in the same time period. The increase in inequality in the use of LPG as cooking energy is as striking as the decrease in equality in many other basic indicators discussed earlier. This could be partly due to the rate of urbanization and increase in inequality in household increase. However, the more proximate reason is the inadequate supply of LPG cylinders by the petroleum companies.

<b>Table 5.7: District wise distribution of households by the major source of cooking fuel</b>					
Percentage of households with LPG\PNG					
<b>District</b>	rank 2001	rank 2011	2001	2011	% point change
Ernakulam	1	1	35.0	63.0	28.0
Alappuzha	5	2	20.0	52.0	32.0
Thrissur	4	3	21.0	45.0	24.0
Thiruvananthapuram	6	4	18.0	41.0	23.0
Pathanamthitta	2	5	23.0	40.0	18.0
Kollam	10	6	14.0	40.0	25.0
Kottayam	3	7	22.0	39.0	17.0
Palakkad	9	8	14.0	28.0	14.0
Kasaragod	11	9	13.0	28.0	15.0
Kannur	8	10	14.0	21.0	7.0
Kozhikode	13	11	11.0	21.0	11.0
Idukki	7	12	15.0	20.0	5.0
Malappuram	14	13	8.0	18.0	10.0
Wayanad	12	14	11.0	12.0	1.0
Kerala			18.0	36.0	18.0
Coefficient of Variation(CV)			0.40	0.44	
Standard Deviation(SD)			6.86	14.61	
Krtscha index(CV*SD)			2.75	6.38	

### 5.3 Additional facilities

The section examines the additional facilities represented by the indicators of housing conditions and amenities such as drainage and bathing facilities across districts.

#### *Drainage Facilities*

The section presents the district-wise percentage of households with drainage facilities for the household waste outlet. The data is provided according to the households having open or closed drainage system in the table below. In 2011, only 46 percent of households have drainage system of which 25 percent have closed drainages and 21 have open drainage system. Though, the conditions have improved since 2001 wherein closed drainage system increased by 17 percent points and open drainage system increased by 10 percentage points from 2001 to 2011. The percentage of households with closed drainage and open drainage system varies across districts;

Thrissur (41 percent) has highest proportion of houses with closed drainage system and Kasaragod (30 percent) has the highest percentage of households with open drainage system in 2011. Thiruvananthapuram (12 percent) has the lowest percentage of houses with closed drainage and Ernakulam (12 percent) has the lowest proportion of open drainages in 2011. Though there is an increase in the proportion of houses with closed or open drainage systems from 2001 to 2011 but the data shows higher percentage point increase in closed drainage system than open drainages as is evident from the table. The closed drainages facility have recorded highest percentage point increase in Thrissur (41 percentage points) followed by Palakkad (39 percentage points), Malappuram (34 percentage points) and Wayanad (32 percentage points) respectively from 2001 to 2011. In case of open drainages the highest percentage increase has recorded in Kozhikode (18 percentage points) followed by Kasaragod (15 percentage points), and Thiruvananthapuram (13 percentage points) from 2001 to 2011. The increase in the proportion of households with closed drainage system is recorded lowest in Pathanamthitta (7 percentage points) and Ernakulam (5 percentage points) has recorded lowest increase in the proportion of households with open drainage system from 2001 to 2011. The value of Krtscha index has increased from 0.85 in 2001 to 3.94 in 2011 which indicates that the spatial inequality between the districts in terms of the percentage of households with closed drainage systems has increased significantly from 2001 to 2011. Similarly the inequality across districts in case of proportion of households using open drainage systems has slightly increased from 2001 to 2011.

districts	Closed Drainage					Open Drainage				
	rank 2001	rank 2011	2001	2011	%age point change	rank 2001	rank 2011	2001	2011	%age point change
Thrissur	1	1	12.1	40.8	28.7	2	8	16.4	20.8	4.4
Palakkad	6	2	8.2	38.7	30.5	9	10	11.8	18.9	7.1
Malappuram	4	3	9.5	34.3	24.8	4	7	14.7	23.5	8.8
Wayanad	2	4	11.7	32.6	20.9	8	9	12.9	19.6	6.6
Idukki	5	5	8.8	26.9	18.1	10	11	11.2	17.7	6.5
Kasaragod	7	6	7.7	25.3	17.5	5	1	14.6	30.0	15.3
Kannur	8	7	7.7	22.6	14.9	13	13	6.5	14.4	7.9
Ernakulam	3	8	10.6	21.4	10.7	12	14	6.6	11.6	5.0
Kottayam	11	9	5.6	19.3	13.7	14	12	5.6	14.9	9.2
Kozhikode	13	10	4.5	18.7	14.2	11	3	8.8	26.5	17.6
Pathanamthitta	9	11	7.4	14.3	6.9	6	6	14.4	24.1	9.7
Kollam	12	12	4.9	14.1	9.3	1	5	18.0	25.4	7.4
Alappuzha	10	13	6.0	12.8	6.8	7	4	13.8	25.8	12.0
Thiruvananthapuram	14	14	4.3	11.6	7.3	3	2	15.7	28.8	13.0
KERALA			8.0	25.2	17.2			11.7	21.2	9.5
Coefficient of Variation(CV)			0.33	0.41				0.32	0.26	
Standard Deviation(SD)			2.57	9.68				3.95	5.63	
Krtscha index(CV*SD)			0.85	3.94				1.28	1.47	

### ***Bathing Facility***

There is an increasing trend in creating private bathing facilities within the residential space or its premises. This is especially, so in urban areas where public bathing facility is almost absent in Kerala. This is now more common along with an increase in the quality of housing conditions. In 2011, 86 percent of households in Kerala have bathing facilities while the percentage of households having these facilities has increased by 24 percentage points from 2001 to 2011. Though there are higher percentage of households with bathing facilities within the premises at the state level but it varies across districts; Thrissur (96 percent) has highest percentage of households followed Ernakulam (93 percent), Kannur (92 percent) and Kozhikode (91 percent). Idukki (74 percent) had the lowest proportion of households with bathroom facility within premises. While comparing with 2001, Alappuzha has recorded highest percentage point increase of 33 percentage points and has also jumped from 12<sup>th</sup> rank in 2001 to 8 rank in 2011.

While Thrissur has recorded lowest percentage point increase of 16 percentage points in the same time period. As per the coefficient of variation, the variation has decreased from 17 percent in 2001 to 8 percent in 2011. The value of Krtscha index has also declined from 1.8 in 2001 to 0.57 in 2011 which indicates that the spatial inequality between the districts in terms of percentage of households with bathing facilities decreased from 2001 to 2011.

<b>Table 5.9: District wise distribution of bathing facilities</b>					
	Bathing facility				
<b>Districts</b>	rank 2001	rank 2011	2001	2011	%age point change
Thrissur	1	1	79.7	95.7	16.0
Ernakulam	2	2	77.0	93.4	16.4
Kannur	3	3	69.3	91.5	22.2
Kozhikode	4	4	66.9	89.7	22.8
Malappuram	5	5	66.2	89.4	23.2
Kasaragod	7	6	61.3	88.5	27.1
Kottayam	6	7	63.0	86.8	23.8
Alappuzha	12	8	51.7	84.4	32.6
Palakkad	9	9	54.2	81.5	27.3
Kollam	10	10	53.9	80.3	26.4
Pathanamthitta	8	11	57.3	80.2	22.9
Wayanad	13	12	49.2	79.0	29.9
Thiruvananthapuram	11	13	52.3	74.0	21.6
Idukki	14	14	44.7	73.6	28.9
KERALA			62.1	85.8	23.7
Coefficient of Variation(CV)			0.17	0.08	
Standard Deviation(SD)			10.43	6.96	
Krtscha index(CV*SD)			1.80	0.57	

### ***Type of roof***

There is a widespread tendency in using raw materials and techniques to build physically more stronger buildings including houses. It is mostly by using concrete using cement mortar and iron bars, Kerala is no exception. In 2011, 47 percent of households in Kerala have houses with concrete roof while the percentage of households has nearly doubled from 26 percent in 2001 by 22 percentage points. Ernakulam (64 percent) has the maximum percentage of households with concrete roof followed by Thrissur (59 percent) and Kozhikode (56 percent). Idukki (21 percent) had the lowest proportion of households with concrete roof followed by Wayanad (28 percent)

and Kottayam (30 percent). While comparing with 2001, Malappuram has recorded highest percentage point increase of 28 percentage points. While Idukki has recorded lowest percentage point increase of 11 percentage points from 2001 to 2011. As per the coefficient of variation, the variation has decreased from 37 percent in 2001 to 29 percent in 2011. The value of Krtscha index has also declined from 3.33 in 2001 to 3.66 in 2011 which indicates that the spatial inequality between the districts in terms of percentage of households with concrete roof has slightly increased from 2001 to 2011.

<b>Table 5.10: District wise percentage of households with a concrete roof in year 2001 and 2011</b>					
	Concrete roof				
Districts	rank 2001	rank 2011	2001	2011	PPC
Ernakulam	1	1	41.72	64.13	22.40
Thrissur	2	2	36.41	59.41	23.01
Kozhikode	4	3	29.52	56.08	26.56
Thiruvananthapuram	3	4	31.34	53.77	22.43
Kannur	6	5	28.12	52.38	24.26
Malappuram	9	6	21.55	49.61	28.06
Kollam	5	7	28.15	48.81	20.65
Kasaragod	8	8	23.37	48.00	24.63
Pathanamthitta	7	9	25.09	41.87	16.79
Alappuzha	10	10	20.91	38.83	17.92
Kottayam	11	11	18.87	33.95	15.08
Palakkad	13	12	12.83	30.10	17.27
Wayanad	12	13	13.03	27.95	14.91
Idukki	14	14	10.48	21.09	10.61
KERALA			26.46	47.97	21.51
Coefficient of Variation(CV)			0.37	0.29	
Standard Deviation(SD)			9.01	12.79	
Krtscha index(CV*SD)			3.33	3.66	

### ***Type of floor***

Along with the invasion of the use of reinforced cement concrete (RCC), there is also another trend in the use of high cost and high-energy intensive tiles and mosaic as floor materials. In 2011, 23 percent of households in Kerala have houses with floor of mosaic/floor tiles while the percentage of households has increased from 10 percent in 2001 by 13 percentage points.



Ernakulam (30 percent) has the maximum percentage of households have floor of mosaic/floor tiles followed by Thrissur (29 percent) and Pathanamthitta (27 percent). Idukki (8 percent) had the lowest proportion of households with floor of mosaic/floor tiles followed by Wayanad (9 percent) and Palakkad (17 percent). While comparing with 2001, Ernakulam has recorded highest percentage point increase of 17 percentage points. While Idukki and Wayanad have recorded lowest percentage point increase of 6 percentage points from 2001 to 2011. As per the coefficient of variation, the variation has decreased from 42 percent in 2001 to 31 percent in 2011. The value of Krtscha index has increased from 1.55 in 2001 to 2.09 in 2011 which indicates that the spatial inequality between the districts in terms of percentage of households with floor material of mosaic/floor tiles has increased from 2001 to 2011.

Table 5.11: district wise Percentage of households with floor material of mosaic/floor tiles					
Districts	floor tiles/mosaic				
	rank 2001	rank 2011	2001	2011	PPC
Ernakulam	2	1	13.87	30.82	16.95
Thrissur	3	2	13.01	29.07	16.06
Pathanamthitta	5	3	10.16	26.56	16.39
Kottayam	6	4	9.04	25.44	16.40
Kozhikode	4	5	11.78	25.15	13.36
Thiruvananthapuram	1	6	14.37	24.80	10.43
Kannur	7	7	8.84	22.66	13.82
Malappuram	8	8	8.80	21.97	13.18
Kollam	9	9	7.97	20.76	12.79
Alappuzha	12	10	6.24	18.61	12.37
Kasaragod	10	11	7.95	18.32	10.37
Palakkad	11	12	6.32	16.72	10.40
Wayanad	13	13	2.89	8.92	6.03
Idukki	14	14	2.19	8.48	6.29
Kerala			9.78	22.92	13.14
Coefficient of Variation(CV)			0.42	0.31	
Standard Deviation(SD)			3.70	6.68	
Krtscha index(CV*SD)			1.55	2.09	

### *Type of wall*

Here we focus on two types of materials used for wall; stone packed wall and burnt bricks. In 2011 majority of the households in Kerala (57 percent) predominantly use stone packed wall and

is increased by 23 percentage points from 2001 to 2011 and 23 percent of households use predominantly burnt brick as a wall material which is decreased by 7 percentage points from 2001 to 2011. The percentage of households using stone wall vary from districts from 88 percent to 19 percent with maximum in Ernakulam and minimum in Wayanad in 2011. In contrast, the percentages of households using burnt brick across districts vary from 56 percent and one percent with maximum in Wayanad and minimum in Ernakulam in 2011. From 2001 to 2011 the percentage of households using stone packed wall in all the districts have increased with Thiruvananthapuram (38 percentage points) showing highest increase and Kozhikode (15 percentage points) the lowest. The percentage of households using burnt brick is decreased in all districts except Idukki and Wayanad which have recorded a positive percentage point increase from 2001 to 2011. The variation of districts from the mean was 74 percent in 2001 and has reduced to 42 percent in 2011 in stone packed material for constructing wall. The variation in the percentage of households across districts using burnt brick as a predominant material for wall has increased from 66 percent in 2001 to 68 percent in 2011. According to Krttscha index the inequality across districts seem to have reduced as the value of index have decreased in both the cases from 2001 to 2011.

Districts	Stone packed with/without mortar					Burnt brick				
	rank 2001	rank 2011	2001	2011	PPC	rank 2001	rank 2011	2001	2011	PPC
Kozhikode	1	1	72.96	88.08	15.11	14	14	1.25	1.09	-0.16
Malappuram	2	2	64.39	85.52	21.13	12	13	3.77	1.93	-1.84
Kasaragod	3	3	62.80	84.94	22.15	13	11	3.53	2.21	-1.32
Kannur	4	4	58.76	83.43	24.67	11	12	4.11	1.94	-2.17
Ernakulam	5	5	47.09	60.95	13.85	5	8	41.58	28.89	-12.69
Thrissur	6	6	30.57	53.37	22.80	8	10	37.19	27.00	-10.20
Kollam	8	7	20.99	46.83	25.84	4	6	44.02	34.58	-9.44
Kottayam	7	8	26.52	43.10	16.57	6	4	41.56	37.56	-3.99
Thiruvananthapuram	13	9	3.83	42.17	38.35	7	9	40.15	28.78	-11.37
Palakkad	9	10	19.82	39.10	19.28	9	7	30.28	29.28	-1.00
Pathanamthitta	11	11	17.81	38.74	20.93	3	3	46.54	39.51	-7.04
Idukki	10	12	19.32	37.41	18.08	10	5	29.60	35.07	5.47
Alappuzha	12	13	8.30	35.38	27.08	1	2	67.45	49.78	-17.67
Wayanad	14	14	1.86	19.08	17.22	2	1	55.11	55.51	0.40
Kerala			33.50	56.86	23.36			31.65	24.50	-7.15
Coefficient of Variation(CV)			0.74	0.42				0.66	0.68	
Standard Deviation(SD)			24.09	22.59				21.05	18.13	
Krtscha index(CV*SD)			17.85	9.42				13.91	12.34	

In sum what we find is that Kerala has achieved a remarkable reduction in inter-district inequality as far as the basic housing condition is concerned. When same additional features such as use of RCC, tiles and mosaic and access to LPG as cooking energy are concerned, these is an increase in inter-district inequality that most likely could be a reflection of increasing economic inequality.

# Chapter 6

## Deficiencies in Housing Condition and Policy Implications

### 6.1 Introduction

There are remarkable advances made by Kerala in improving the housing condition of its people. This is evident in its position relative to other states in India (see Chapter 2). Also it has made significant progress during the inter-census period of 2001 and 2011. This is in line with Kerala's continuing lead in other human development indicators such as per capita income, education and health. Kerala also has very low level of poverty compared to other states represented by the Multidimensional Poverty Index. This is the comparative picture.

Having said that, there remains a certain degree of deficiency in absolute terms in the overall housing condition represented by the core indicators selected for this study. In this chapter we attempt to give a measure of these deficiencies in terms of the 'most poor' indicators in the basic set of indicators in housing condition and amenities. These are represented by

- (i) dilapidated housing structure
- (ii) one-room tenements (including houses with no exclusive room),
- (iii) no latrine facility,
- (iv) no separate kitchen,
- (v) no electricity for lighting,
- (vi) physical access to drinking water measured by distance,
- (vii) no LPG for cooking.

These are self-evident except the last one. Here the reference is to the use of firewood which is the main source of cooking energy. While use of firewood in itself is not a deficiency, what we are referring is the absence of clean energy for cooking. If smokeless chulah's are used, the use of firewood need not be deemed as a deficiency but we do not have the data for that.

We are presenting the number of households experiencing this deficiency as of 2011. In most cases the gap to be covered has come down drastically and this should make it far easier for the state to address the deficiency without much of a financial burden. Here the question is how

to take care of this last mile groups. We have identified them in terms of three social group's viz., ST, SC and Others. This is because the last group has made considerably more progress than the former two. The deficiencies experienced by ST and SC groups are disproportionate to their population size. Therefore, we present the deficiency in core housing condition for the total population as well as ST, SC and others. In addition we have also presented the district-wise picture. So that it will help policy makers to target the regard remedial measures according to districts and social groups simultaneous. Table 1 gives an overview of the total household share in the districts across social groups and share of districts in the households in the state. We also distinguished the districts into broader state

District	Total		SC		ST		others	
	Total houses	%	Total houses	%	Total houses	%	Total houses	%
Kasaragod	267762	3.47	12129	4.53	11809	4.41	243824	91.06
Kannur	543209	7.04	20289	3.74	10150	1.87	512770	94.40
Wayanad	185403	2.40	9588	5.17	33053	17.83	142762	77.00
Kozhikode	683825	8.86	48028	7.02	5194	0.76	630603	92.22
Malappuram	774595	10.04	64571	8.34	6285	0.81	703739	90.85
Palakkad	628287	8.14	92207	14.68	14206	2.26	521874	83.06
<b>Total (Northern districts)</b>	<b>3083081</b>	<b>39.96</b>	<b>246812</b>	<b>8.01</b>	<b>80697</b>	<b>2.62</b>	<b>2755572</b>	<b>89.38</b>
Thrissur	743830	9.64	87367	11.75	4499	0.61	651964	87.65
Ernakulam	791737	10.26	66355	8.38	6416	0.81	718966	90.81
<b>Total (Central districts)</b>	<b>1535567</b>	<b>19.90</b>	<b>153722</b>	<b>10.01</b>	<b>10915</b>	<b>0.71</b>	<b>1370930</b>	<b>89.28</b>
Idukki	276976	3.59	40103	14.48	16776	6.06	220097	79.46
Kottayam	480453	6.23	38341	7.98	7520	1.57	434592	90.45
Alappuzha	528275	6.85	49925	9.45	2722	0.52	475628	90.03
Pathanamthitta	319968	4.15	41949	13.11	3138	0.98	274881	85.91
Kollam	663276	8.60	81875	12.34	4587	0.69	576814	86.96
Thiruvananthapuram	828774	10.74	98438	11.88	9651	1.16	720685	86.96
<b>Total (Southern districts)</b>	<b>3097722</b>	<b>40.14</b>	<b>350631</b>	<b>11.32</b>	<b>44394</b>	<b>1.43</b>	<b>2702697</b>	<b>87.25</b>
Kerala	7716370	100	751165	9.73	136006	1.76	6829199	88.50
*This percentage refers to the share of SC or ST in the district's total number of houses whereas the percentage in column 3 refers to the share of the district in the total houses in the state.								

regions into Northern, central and southern districts. Thiruvananthapuram, Ernakulam and Malappuram are densely populated districts which constitute one third of Kerala's households while Idukki, Wayanad and Kasaragod are sparsely populated districts in Kerala. Palakkad (15

percent) district has the highest proportion of Schedule Caste households closely followed by Idukki (14 percent) and Pathanamthitta (13 percent). While Kannur (4 percent) and Kasaragod (5 percent) have the lowest proportion of SC households in 2011, Wayanad (18 percent) has the highest proportion of Schedule Tribe households followed by Idukki (6 percent). In case of regions, northern districts (2.6 percent) have the highest share of ST households in their take has and southern districts (11 percent) have the highest share of SC households though the difference in the share with respect to other regions is not large, particularly in case of SC households.

The following sections present the deficiencies in each of the basic indicators of housing conditions as mentioned earlier, by districts which make it possible to identify the deficiency spatially as well as across social group.

## **6.2 Dilapidated Houses**

The following section provides the analysis of condition of housing with respect to dilapidated houses across districts and social groups in year 2011. There are five percent of dilapidated houses in Kerala as a whole. In terms of districts, Thiruvananthapuram (8 percent) has the maximum and Mallapuram (3 percent) has the minimum. As per the percentage share, 50 percent of the total dilapidated houses are in southern districts while its population share is only 40 percent. Thiruvananthapuram (16 percent) has the highest share of dilapidated houses followed by Kollam (11 percent) while Pathanamthitta (4 percent) and Kasaragod (4 percent) has the lowest share of dilapidated houses in Kerala. Looking at the distribution of dilapidated houses across social groups namely SC, ST and Others within districts; the share in dilapidated houses among SC/ST households is higher than their respective population share in each district and region. In Pathanamthitta, 33 percent of the total dilapidated houses belong to SC households of whose total share in total houses is 13 percent. Kannur (15 percent) has the lowest SC household share to total dilapidated houses in the district, which is similar to the percentage share of SC households to total households in the district. Wayanad (39 percent) has highest share of ST households in total dilapidated houses followed by Kasaragod (17 percent) and Idukki (11 percent). While Alappuzha has the lowest share of ST households in the total dilapidated houses in district.

At the broader regional level, southern districts (15 percent) have the highest proportion of dilapidated houses belonging to SC households. While in the northern districts (10 percent) the highest share of dilapidated houses belongs to ST households with respect to other regions of the state. The percentage shares of dilapidated houses are disproportionate to their share of total households. Southern districts have 11 percent of total share to its total households and northern districts have three percent of ST households to its total households.

**Table 6.2: Dilapidated House (DH) by district and social groups, 2011**

District	% of DH total houses	Total		SC		ST		Others	
		No. of houses dilapidated	%	total houses	%	total houses	%	total houses	%
Kasaragod	5.77	15463	3.80	1472	9.52	2684	17.36	11307	73.12
Kannur	3.61	19594	4.82	728	3.72	1762	8.99	17104	87.29
Wayanad	8.89	16489	4.06	1039	6.3	6385	38.72	9065	54.98
Kozhikode	4.58	31308	7.70	3206	10.24	368	1.18	27734	88.58
Malappuram	3.45	26689	6.57	3619	13.56	819	3.07	22251	83.37
Palakkad	4.87	30589	7.53	5958	19.48	2333	7.63	22298	72.9
<b>Total of Northern districts</b>	<b>4.55</b>	<b>140132</b>	<b>34.48</b>	<b>16022</b>	<b>11.43</b>	<b>14351</b>	<b>10.241</b>	<b>109759</b>	<b>78.33</b>
Thrissur	4.44	33002	8.12	3673	11.13	211	0.64	29118	88.23
Ernakulam	3.71	29359	7.22	2866	9.76	589	2.01	25904	88.23
<b>Total of Central districts</b>	<b>4.06</b>	<b>62361</b>	<b>15.34</b>	<b>6539</b>	<b>10.49</b>	<b>800</b>	<b>1.283</b>	<b>55022</b>	<b>88.23</b>
Idukki	7.98	22104	5.44	2934	13.27	2451	11.09	16719	75.64
Kottayam	4.05	19478	4.79	3028	15.55	667	3.42	15783	81.03
Alappuzha	7.04	37188	9.15	3956	10.64	168	0.45	33064	88.91
Pathanamthitta	4.65	14893	3.66	4971	33.38	403	2.71	9519	63.92
Kollam	6.60	43764	10.77	8357	19.1	551	1.26	34856	79.65
Thiruvananthapuram	8.02	66500	16.36	8242	12.39	1421	2.14	56837	85.47
<b>Total of Southern districts</b>	<b>6.58</b>	<b>203927</b>	<b>50.18</b>	<b>31488</b>	<b>15.44</b>	<b>5661</b>	<b>2.77</b>	<b>166778</b>	<b>81.78</b>
Kerala	5.27	406420	100	54049	13.3	20812	5.12	331559	81.58

### 6.3 Deficiency in Space: Houses with only One Room

In Table 3 we give the data on one room also includes the no exclusive room category. The percentage of no exclusive room's category is around one percent of the total households in Kerala and the percentages across the districts are more or less the same. Hence we clubbed the both categories together to represent the deficiencies in the space in Kerala. In 2011, 8 percent of the households in Kerala have only room. Idukki (15 percent) has the highest

District	%age of houses with one room to total houses	Total		SC		ST		Others	
		No. of houses	% ST	total houses	% DT	total houses	% DT	total houses	% DT
Kasaragod	10.98	29388	4.56	2756	9.38	3237	11.01	23395	79.61
Kannur	5.23	28383	4.40	2306	8.12	2096	7.38	23981	84.49
Wayanad	11.63	21570	3.34	1761	8.16	7086	32.85	12723	58.98
Kozhikode	7.97	54491	8.45	8290	15.21	874	1.6	45327	83.18
Malappuram	6.26	48457	7.51	7559	15.6	1204	2.48	39694	81.92
Palakkad	11.79	74048	11.48	14000	18.91	4857	6.56	55191	74.53
<b>Total of Northern districts</b>	<b>8.31</b>	<b>256337</b>	<b>39.74</b>	<b>36672</b>	<b>14.31</b>	<b>19354</b>	<b>7.55</b>	<b>200311</b>	<b>78.14</b>
Thrissur	7.79	57935	8.98	13701	23.65	855	1.48	43379	74.88
Ernakulam	6.11	48400	7.50	7866	16.25	1178	2.43	39356	81.31
<b>Total of Central districts</b>	<b>6.92</b>	<b>106335</b>	<b>16.48</b>	<b>21567</b>	<b>20.28</b>	<b>2033</b>	<b>1.912</b>	<b>82735</b>	<b>77.81</b>
Idukki	14.55	40301	6.25	12393	30.75	3403	8.44	24505	60.8
Kottayam	6.69	32165	4.99	5151	16.01	839	2.61	26175	81.38
Alappuzha	8.65	45685	7.08	8099	17.73	406	0.89	37180	81.38
Pathanamthitta	7.58	24268	3.76	7519	30.98	512	2.11	16237	66.91
Kollam	8.88	58892	9.13	14436	24.51	851	1.45	43605	74.04
Thiruvananthapuram	9.78	81083	12.57	16405	20.23	1909	2.35	62769	77.41
<b>Total of Southern districts</b>	<b>9.12</b>	<b>282394</b>	<b>43.78</b>	<b>64003</b>	<b>22.66</b>	<b>7920</b>	<b>2.805</b>	<b>210471</b>	<b>74.53</b>
Kerala	8.36	645066	100	122242	18.95	29307	4.54	493517	76.51

Note: % ST means percentage share in state total.  
% DT means percentage share in district total

percentage of houses with one room followed by Palakkad (12 percent) and Wayanad (12). Kannur (5 percent) has the lowest percentage of houses with one room followed by Mallapuram (6 percent). In terms of broader regions; southern districts (9 percent) has the highest percentage



of houses with one room and Central districts (7 percent) on an average has the minimum percentage of houses with one room. The distribution of houses with one room across social groups reveals that the share of SC and ST households is disproportionate to their share in total households share. The disproportionality in the share is more prominent in SC households with the exception of Wayanad district where the share of ST households with one room houses is the highest with respect to other districts. SC's in southern districts (22 percent) has the highest share in total one room houses with respect to their share (11 percent) to their total houses in Kerala which is closely followed by central districts whose share of SC households with one room to total one room houses is 20 percent and its respective share SC households to total houses is 10 percent. However the share of ST houses is highest in the northern districts where Wayanad (33 percent) has the highest share of ST houses with one room followed by Kasaragod (11 percent).

#### **6.4 Houses without a latrine**

In Table 4 we present the statistics on the deficiency in latrine facilities across districts and its distribution across social groups in 2011. We also account the distribution of no latrines houses into; those who depend on open defecation and others who use public latrines. On an average 5 percent of the total houses do not have latrines; out of which 77 percent depend on open defecation and the rest use public latrines. The percentage of no latrine households varies across districts with the maximum in Palakkad (10 percent) and minimum in central districts (2 percent). In terms of the total share of no latrine households across districts, 50 percent of them reside in four districts namely Palakkad (17 percent), Thiruvananthapuram (13 percent), Kollam (10 percent) and Alappuzha (10 percent). The share of no latrine households disproportionately belongs to SC and ST households in general and SC in particular across districts. With respect to broader regional level; southern districts constitute 50 percent of the households with no latrines and other 40 percent in northern districts and 10 percent in central districts. But out of these, relatively smaller percentages of households with no latrines in southern and central districts open defecate than northern districts. Among social groups; Schedule Caste share 22 percent of houses with no latrines in northern districts, 32 percent in central districts and 3 percent in southern districts while the total household share is 8 percent, 10 percent and 11 percent respectively. Schedule Tribes share 17 percent of houses with no latrines in northern districts, 4

**Table 6.4: Houses without a latrine across districts and social groups, 2011**

District	No latrines (%)	Total				SC			
		total houses with no latrine	Share in total (%)	Of which		total houses with no latrine	Share in total %	Of which	
				open defecate (%)	Use public latrines (%)			open defecate (%)	Use pub latrines (%)
Kasaragod	8.22	22015	5.94	86.18	13.82	3393	15.41	90.66	9.34
Kannur	2.35	12773	3.45	74.65	25.35	1472	11.52	75.82	24.18
Wayanad	8.22	15233	4.11	80.98	19.02	962	6.32	73.18	26.82
Kozhikode	2.19	14983	4.05	67.37	32.63	3944	26.32	68.61	31.39
Malappuram	2.65	20521	5.54	70.94	29.06	6128	29.86	65.36	34.64
Palakkad	10.21	64145	17.32	92.13	7.87	17529	27.33	92.10	7.90
<b>Total of Northern dists</b>	<b>4.85</b>	<b>149670</b>	<b>40.41</b>	<b>83.25</b>	<b>16.75</b>	<b>33428</b>	<b>22.33</b>	<b>83.02</b>	<b>16.98</b>
Thrissur	2.15	16007	4.32	68.64	31.36	6047	37.78	69.21	30.79
Ernakulam	2.15	16994	4.59	60.70	39.30	4741	27.90	63.59	36.41
<b>Total of Central dists</b>	<b>2.15</b>	<b>33001</b>	<b>8.91</b>	<b>64.55</b>	<b>35.45</b>	<b>10788</b>	<b>32.69</b>	<b>66.74</b>	<b>33.26</b>
Idukki	10.87	30098	8.13	86.08	13.92	7093	23.57	80.83	19.17
Kottayam	3.40	16329	4.41	75.57	24.43	4239	25.96	76.98	23.02
Alappuzha	7.07	37340	10.08	75.96	24.04	10784	28.88	80.76	19.24
Pathanamthitta	6.09	19484	5.26	78.71	21.29	8356	42.89	78.99	21.01
Kollam	5.51	36518	9.86	73.55	26.45	13632	37.33	77.18	22.82
Thiruvananthapuram	5.79	47953	12.95	73.03	26.97	14331	29.89	75.77	24.23
<b>Total of Southern dists</b>	<b>6.06</b>	<b>187722</b>	<b>50.68</b>	<b>76.62</b>	<b>23.38</b>	<b>58435</b>	<b>31.13</b>	<b>78.17</b>	<b>21.82</b>
Kerala	4.80	370393	100	78.22	21.78	102651	27.71	78.55	21.45
District		ST				Others			
Kasaragod	-	3821	17.36	91.81	8.19	14801	67.23	83.70	16.30
Kannur	-	2003	15.68	83.97	16.03	9298	72.79	72.46	27.54
Wayanad	-	9145	60.03	82.67	17.33	5126	33.65	79.44	20.56
Kozhikode	-	522	3.48	87.16	12.84	10517	70.19	65.92	34.08
Malappuram	-	1601	7.80	86.26	13.74	12792	62.34	71.70	28.30
Palakkad	-	8387	13.08	96.91	3.09	38229	59.60	91.10	8.90
Total of Northern dists	-	25479	17.02	89.15	10.85	90763	60.64	81.67	18.33
Thrissur	-	378	2.36	81.22	18.78	9582	59.86	67.79	32.21
Ernakulam	-	1023	6.02	89.64	10.36	11230	66.08	56.84	43.16
<b>Total of Central dists</b>	-	<b>1401</b>	<b>4.25</b>	<b>87.37</b>	<b>12.63</b>	<b>20812</b>	<b>63.06</b>	<b>61.88</b>	<b>38.12</b>
Idukki	-	6262	20.81	92.64	7.36	16743	55.63	85.84	14.16
Kottayam	-	929	5.69	86.65	13.35	11161	68.35	74.12	25.88
Alappuzha	-	353	0.95	72.80	27.20	26203	70.17	74.03	25.97
Pathanamthitta	-	820	4.21	88.90	11.10	10308	52.90	77.67	22.33
Kollam	-	923	2.53	84.72	15.28	21963	60.14	70.83	29.17
Thiruvananthapuram	-	2778	5.79	96.87	3.13	30844	64.32	69.61	30.39
<b>Total of Southern dists</b>	-	<b>12065</b>	<b>6.43</b>	<b>91.71</b>	<b>8.29</b>	<b>117222</b>	<b>62.44</b>	<b>74.28</b>	<b>25.72</b>
Kerala	-	38945	10.51	89.88	10.12	228797	61.77	76.09	23.91

percent in central districts and 6 percent in southern districts while the total household share is three percent, less than one percent and one percent respectively. This reveals that the deficiency is much higher among SC and ST households even in central districts where the situation is relatively better.

### **6.5 Deficiency in Cooking Facility: No Separate Kitchen**

The deficiency in the cooking facility in terms of households who do not have separate kitchen across districts and social groups in 2011 is given in Table 5. There are three percent of households in Kerala which do not have separate kitchen facility in the house. The variations across districts are very less with Pathanamthitta (6 percent) has the maximum number of households without separate kitchen and Thrissur (2 percent) has the minimum. As per the share of households without separate kitchen, five districts constitute more than 50 percent of such households; Thiruvananthapuram (12 percent), Kollam (11 percent), Alappuzha and Palakkad (10 percent each), and Kozhikode (8 percent). If we look at the regional level, southern districts have more than fifty percent of all households with no separate kitchen, is disproportionate to its share of total households in Kerala. Among social groups the percentage share of households without separate kitchen belongs to SC households disproportionate to its population size more likely from southern districts.

<b>Table 6.5 Availability of kitchen-no separate kitchen by district and social groups</b>									
District	No separate kitchen (% of total houses)	Total		SC		ST		Others	
		total houses	%	total houses	%	total houses	%	total houses	%
Kasaragod	2.84	7602	3.00	770	10.13	1009	13.27	5823	76.6
Kannur	2.03	11031	4.36	814	7.38	1092	9.9	9125	82.72
Wayanad	5.84	10832	4.28	788	7.27	3789	34.98	6255	57.75
Kozhikode	2.88	19713	7.79	3843	19.49	352	1.79	15518	78.72
Malappuram	2.11	16365	6.47	2858	17.46	589	3.6	12918	78.94
Palakkad	3.98	25011	9.89	4911	19.64	2408	9.63	17692	70.74
<b>Total of Northern dists</b>	<b>2.94</b>	<b>90554</b>	<b>35.79</b>	<b>13984</b>	<b>15.44</b>	<b>9239</b>	<b>10.203</b>	<b>67331</b>	<b>74.35</b>
Thrissur	1.91	14223	5.62	3359	23.62	188	1.32	10676	75.06
Ernakulam	1.93	15266	6.03	2878	18.85	446	2.92	11942	78.23
<b>Total of Central dists</b>	<b>1.92</b>	<b>29489</b>	<b>11.66</b>	<b>6237</b>	<b>21.15</b>	<b>634</b>	<b>2.150</b>	<b>22618</b>	<b>76.70</b>
Idukki	5.94	16442	6.50	2702	16.43	2033	12.36	11707	71.2
Kottayam	3.23	15527	6.14	2571	16.56	488	3.14	12468	80.3
Alappuzha	4.65	24582	9.72	5375	21.87	209	0.85	18998	77.28
Pathanamthitta	6.11	19535	7.72	5959	30.5	443	2.27	13133	67.23
Kollam	4.11	27264	10.78	7033	25.8	438	1.61	19793	72.6
Thiruvananthapuram	3.57	29602	11.70	7325	24.74	705	2.38	21572	72.87
<b>Total of Southern districts</b>	<b>4.29</b>	<b>132952</b>	<b>52.55</b>	<b>30965</b>	<b>23.29</b>	<b>4316</b>	<b>3.246</b>	<b>97671</b>	<b>73.46</b>
<b>Kerala</b>	<b>3.28</b>	<b>252995</b>	<b>100</b>	<b>51186</b>	<b>20.23</b>	<b>14189</b>	<b>5.61</b>	<b>187620</b>	<b>74.16</b>

### 6.6 Deficiency in Lighting: No Electricity

In this section we present the households without electricity across districts and social groups in 2011 in Table 6. The households without electricity mainly constitute those who use kerosene as a source of lighting. The category also includes households without any kind of lighting which constitute less than one percent of the households in Kerala. The percentage of households without electricity is 6 percent to total households in Kerala and northern districts on an average have higher percentage of households without electricity with respect to other regions. The percentages vary across districts with highest percentage of households without electricity from 19 percent in Wayanad followed by Idukki (12 percent) and Kasaragod (11 percent) to lowest in Ernakulam, Kottayam and Thrissur with 3 percent each. As the share of households without electricity, more than fifty percent of them reside in northern districts and one third of total reside in Kozhikode (10 percent), Mallapuram (10 percent) and Palakkad (9 percent). The

distribution across social groups suggests that the SC and ST households have higher share of households without electricity with respect to their share in total households.

For SC households have the higher share across districts which are highly disproportionate to their share in total households and on average central districts have the highest share with respect to other regions while ST households without electricity have the highest share in northern districts.

District	percentage of total households in Kerala	Total		SC		ST		Others	
		total houses	%age share	total houses	%age distr.	total houses	%age distr.	total houses	%age distr.
Kasaragod	11.24	30092	6.97	3632	12.07	5666	18.83	20794	69.10
Kannur	5.90	32042	7.42	2546	7.95	3893	12.15	25603	79.90
Wayanad	19.17	35539	8.23	2483	6.99	16511	46.46	16545	46.55
Kozhikode	6.17	42165	9.77	9014	21.38	1055	2.50	32096	76.12
Malappuram	5.74	44476	10.30	10533	23.68	2347	5.28	31596	71.04
Palakkad	6.48	40704	9.43	11431	28.08	6651	16.34	22622	55.58
<b>Total of Northern districts</b>	<b>7.30</b>	<b>225018</b>	<b>52.13</b>	<b>39639</b>	<b>17.62</b>	<b>36123</b>	<b>16.05</b>	<b>149256</b>	<b>66.33</b>
Thrissur	2.99	22205	5.14	7948	35.79	622	2.80	13635	61.41
Ernakulam	2.58	20450	4.74	5865	28.68	1337	6.54	13248	64.78
<b>Total of Central districts</b>	<b>2.78</b>	<b>42655</b>	<b>9.88</b>	<b>13813</b>	<b>32.38</b>	<b>1959</b>	<b>4.59</b>	<b>26883</b>	<b>63.02</b>
Idukki	11.60	32132	7.44	5633	17.53	7016	21.83	19483	60.63
Kottayam	3.42	16414	3.80	3800	23.15	879	5.36	11735	71.49
Alappuzha	3.85	20362	4.72	5905	29.00	279	1.37	14178	69.63
Pathanamthitta	5.52	17672	4.09	6902	39.06	736	4.16	10034	56.78
Kollam	4.90	32509	7.53	12775	39.30	944	2.90	18790	57.80
Thiruvananthapuram	5.42	44902	10.40	13894	30.94	2693	6.00	28315	63.06
<b>Total of Southern districts</b>	<b>5.29</b>	<b>163991</b>	<b>37.99</b>	<b>48909</b>	<b>29.82</b>	<b>12547</b>	<b>7.65</b>	<b>102535</b>	<b>62.52</b>
<b>Kerala</b>	<b>5.59</b>	<b>431664</b>	<b>100</b>	<b>102361</b>	<b>23.71</b>	<b>50629</b>	<b>11.73</b>	<b>278674</b>	<b>64.56</b>

## 6.7 Ease of Accessing Drinking Water

In Table 7 we present the statistics relating to the ease of accessing drinking water measured by distance. Census measures distance through three indicators: first, within the premises; second, near the premises; third, away from the premises. The first category is self-explanatory and the last two were defined on the basis of the distance in meters from the household to the location of the source of drinking water. If the source of drinking water is located 100 metres from the premises in urban areas and 500 metres in rural areas was defined as near premises and beyond this limit is defined as away from the premises. We took deficiency in the ease of accessing drinking water by the number of households whose drinking water source is far away from the premises i.e. beyond 500 metres in rural areas and beyond 100 metres in urban areas.

In 2011, 16 percent of households in Kerala have water sources away from the premises and across districts; more than fifty percent of the households in Wayanad and one third household in Idukki have drinking water sources far away from the premises. The lowest percentages of households are in southern districts (9 percent) with such type of drinking water access. In case of the share of households with drinking water sources far away from the premises across districts, southern districts have the highest share of such households. The highest share across districts is Idukki (12 percent) and lowest share of such households is in Pathanamthitta (4 percent). The distribution of such houses across social groups in each district is revealing. In many of the districts the share of SC households in the households with drinking water sources away from the premises is much higher than their respective share in total households and districts such as in districts like Kollam (30 percent), Pathanamthitta (27 percent), Thrissur (27 percent), Palakkad (26 percent), Mallapuram (20 percent) and Thiruvananthapuram (23 percent) has the SC household share which range from 20 percent to 30 percent while as their respective share in total households ranges from 8 percent to 15 percent. The share is ST households is higher in Wayanad (18 percent) followed by Idukki (6 percent).

**Table 6.7: drinking water facility-far away from all sources by district and social groups in 2011**

District	Percentage of total households in Kerala	Total		SC		ST		Others	
		total houses	% age share	total houses	% age distr.	total houses	% age distr.	total houses	% age distr.
Kasaragod	23.79	63708	5.05	6206	9.74	8474	13.3	49028	76.96
Kannur	14.39	78176	6.19	5896	7.54	5680	7.27	66600	85.19
Wayanad	32.23	59764	4.73	4010	6.71	16332	27.33	39422	65.96
Kozhikode	16.25	111100	8.80	17044	15.34	2250	2.03	91806	82.63
Malappuram	13.10	101438	8.04	20062	19.78	2332	2.3	79044	77.92
Palakkad	17.01	106882	8.47	27332	25.57	7164	6.7	72386	67.73
<b>Total of Northern districts</b>	<b>16.90</b>	<b>521068</b>	<b>41.28</b>	<b>80550</b>	<b>15.46</b>	<b>42232</b>	<b>8.10</b>	<b>398286</b>	<b>76.44</b>
Thrissur	9.28	69046	5.47	18504	26.8	996	1.44	49546	71.76
Ernakulam	9.63	76206	6.04	13450	17.65	1700	2.23	61056	80.12
<b>Total of Central districts</b>	<b>9.46</b>	<b>145252</b>	<b>11.51</b>	<b>31954</b>	<b>22.00</b>	<b>2696</b>	<b>1.86</b>	<b>110602</b>	<b>76.14</b>
Idukki	54.37	150584	11.93	21222	14.09	14366	9.54	114996	76.37
Kottayam	24.21	116324	9.22	18228	15.67	4192	3.6	93904	80.73
Alappuzha	22.59	119316	9.45	18896	15.84	774	0.65	99646	83.51
Pathanamthitta	17.07	54610	4.33	14638	26.8	1346	2.46	38626	70.73
Kollam	9.12	60472	4.79	17910	29.62	952	1.57	41610	68.81
Thiruvananthapuram	11.42	94646	7.50	21928	23.17	2516	2.66	70202	74.17
<b>Total of Southern districts</b>	<b>19.24</b>	<b>595952</b>	<b>47.21</b>	<b>112822</b>	<b>18.93</b>	<b>24146</b>	<b>4.05</b>	<b>458984</b>	<b>77.02</b>
<b>Kerala</b>	<b>16.36</b>	<b>1262272</b>	<b>100</b>	<b>225326</b>	<b>17.85</b>	<b>69074</b>	<b>5.47</b>	<b>967872</b>	<b>76.68</b>

## 6.8 Deficiency in Clean Cooking Energy

The importance of examining cooking energy is from the point of the health of the women although the census questionnaire may not have factored this point of views. In Table 8, we present the deficiency in clean cooking energy across districts and social groups in 2011. As we

discussed earlier the deficiency of clean energy is measured in terms of number of households using firewood as a predominant source of cooking fuel. There are only two predominant sources of cooking energy in Kerala firewood and LPG/PNG. The households using other sources other than LPG/PNG and firewood is less than half a percent of total households in Kerala. Here we are focussing here on the poor source of cooking energy i.e. firewood. Majority of the households in Kerala use firewood predominantly as a source of cooking energy in 2011 which ranges from 88 percent in Wayanad and 37 percent in Ernakulam. In terms of the share of households across districts around half of the total households using firewood as a predominant fuel for cooking reside in northern districts. The central districts have the lowest share and the southern districts are just maintaining its share to its total household share. Among the social groups there does not seem to have a difference in using firewood with respect to Other households. The schedule castes have a higher share in districts like Palakkad and Idukki (16 percent each), and Kollam (12 percent) and for schedule tribes the share is higher in Wayanad (20 percent).



Districts	Percentage of total households in Kerala	Total		SC		ST		Others	
		total houses	%age share	total houses	%age distr.	total houses	%age distr.	total houses	%age distr.
Kasaragod	72.33	193670	3.91	7865	4.06	10823	5.59	174982	90.35
Kannur	78.76	427853	8.64	6343	1.48	8308	1.94	413202	96.58
Wayanad	87.58	162375	3.28	8550	5.27	32066	19.75	121759	74.99
Kozhikode	78.71	538267	10.87	18059	3.36	2656	0.49	517552	96.15
Malappuram	81.93	634601	12.82	39350	6.20	4464	0.70	590787	93.1
Palakkad	71.61	449901	9.09	70352	15.64	13180	2.93	366369	81.43
<b>Total of Northern districts</b>	<b>78.06</b>	<b>2406667</b>	<b>48.62</b>	<b>150519</b>	<b>6.25</b>	<b>71497</b>	<b>2.97</b>	<b>2184651</b>	<b>90.77</b>
Thrissur	54.51	405480	8.19	29273	7.22	1905	0.47	374302	92.31
Ernakulam	36.94	292446	5.91	21300	7.28	2468	0.84	268678	91.87
<b>Total of Central districts</b>	<b>45.45</b>	<b>697926</b>	<b>14.10</b>	<b>50573</b>	<b>7.25</b>	<b>4373</b>	<b>0.63</b>	<b>642980</b>	<b>92.13</b>
Idukki	80.28	222350	4.49	35111	15.79	15724	7.07	171515	77.14
Kottayam	61.03	293240	5.92	25945	8.85	5637	1.92	261658	89.23
Alappuzha	48.06	253883	5.13	22490	8.86	846	0.33	230547	90.81
Pathanamthitta	59.72	191079	3.86	34785	18.2	2532	1.33	153762	80.47
Kollam	60.33	400128	8.08	49385	12.34	2751	0.69	347992	86.97
Thiruvananthapuram	58.54	485184	9.80	45250	9.33	6495	1.34	433439	89.33
<b>Total of Southern districts</b>	<b>59.59</b>	<b>1845864</b>	<b>37.29</b>	<b>212966</b>	<b>11.54</b>	<b>33985</b>	<b>1.84</b>	<b>1598913</b>	<b>86.62</b>
<b>Kerala</b>	<b>64.16</b>	<b>4950457</b>	<b>100</b>	<b>414058</b>	<b>8.36</b>	<b>109855</b>	<b>2.22</b>	<b>4426544</b>	<b>89.42</b>

## 6.9 Policy Implications

Several issues relating to policy has emerged from our analysis of the housing condition in Kerala during the last decade. One is that Kerala has been able to register impressive progress in providing basic housing amenities to an overwhelming majority of its people going by the core housing indicators that we have selected here. Its progress is impressive on two counts. The first is the considerable reduction in housing deprivation as we have shown above. The second is its position in relation to the all India scenario.

Although the latest Kerala State Housing Policy of 2014 recognizes that housing deprivation should not be based only on the housing structure (either absent or dilapidated), housing schemes are often planned in terms of number of houses to be provided. The question of examining housing deprivation in terms of certain core facilities and amenities are often either missing or postponed to a later date. In that sense, we emphasize the need to assess housing deprivation in terms of access to the core facilities. When such an approach is taken, the quantitative dimensions differ and therefore a single number will not suffice for purposes of policy.

In the Kerala context, what we find is the ‘last mile’ challenge in terms of core facilities. We have already discussed their total magnitude for all the population and for SC and ST sections separately by districts. With the available resources from the central government schemes supplemented by state’s own resources it should be possible for Kerala to abolish housing deprivation in terms of the core facilities selected here. For effective implementation, Kerala already has a reasonably well functioning Panchayat Raj (both in villages and urban areas) that should be assisted and guided by state agencies.

While undertaking the abovementioned task, it is important to note the higher incidence of housing deprivation among SC and ST sections despite the formulation and implementation of a number of schemes. Therefore, a higher priority should be accorded to the housing needs of this section of the population.

At the higher end of the housing spectrum, there is a problem of plenty. Kerala has a higher percentage of census houses (mostly residential, one presumes) that are unoccupied. A

higher taxation for non-occupancy beyond a certain period would yield some resources that could be utilised for the housing needs of the poor.

While the availability of housing as shelter has only a relatively small backlog, what Kerala now faces is the inadequacy or absence of certain facilities associated with the idea of a habitat. Foremost among these is the question of waste management especially in urban areas. This has now assumed the proportion of social conflicts given the lack of effective collective mechanisms for collection, processing and disposal or conversion into usable goods. While a number of rural panchayats and small towns have successfully tackled this issue, the bigger towns and cities continue to face this as a major challenge. The social and health dimensions of this problem could get aggravated if timely and adequate steps are not taken by the Government of Kerala on a priority basis.

Equally important is the inadequacy of drainage facilities. Nearly half the population of Kerala (as of 2011) lives in urban areas but the drainage facilities are either quite inadequate or absent. Except in certain important areas of big cities, the existing drainage is of a open canal kind with a high propensity for health hazards such as breeding of mosquitos and other harmful consequences. Very little attention is being paid to cover the open drainage system. From the point of both health and safety of the population, the two immediate tasks before the government is in the area of instituting an efficient system of waste management and closing of open drains as well as creating suitable drainage systems in the urban areas.

The question of environmental sustainability in construction – both in housing and other than housing sectors – has emerged as a serious agenda of concern but very little has been done beyond grand declarations and some minor initiatives. This is as much true for Kerala as the country as a whole. In Kerala the issue has affected the cost of construction in a significant way. The growth in the construction sector has led to the widespread and indiscriminate extraction of sand from its rivers, canals and wherever one can find one's hands on. This has not only resulted in a steep increase in the price of sand but an absolute decline in supply. Currently a substitute called M-sand is being widely used which is produced by crushing of granites. In addition the demand for granites had also increased for construction especially in roads, bridges, ports and other infrastructural facilities. This has led to another widespread and indiscriminate quarrying of granites littered all over the western ghats in Kerala. Although a licensing system exists, it is

believed that there are thousands of unlicensed quarries. Even the licensed ones do not follow any sustainability principles or remedial measures arising out of negative externalities to the local area.

In addition to the immediate resource constraints and adverse environmental consequences, there is the ultimate environmental impact of carbon emissions. The construction is said to be the single largest sector contributing to at least one-third of the carbon emissions globally. This calls for a low carbon emitting system of construction. In the Kerala context, the indiscriminate use of reinforced concrete as well as cement (for plastering, etc.) and steel and other metallic inputs is hardly compatible with its tropical climate of warm temperature. Traditional architecture and its construction technologies using mud, bamboo, wood, lime, and an array of locally available resources have got neglected in the name of 'modern' construction and facilities. Although the topic is beyond the scope of this study, we had mentioned earlier the alternative architecture of cost-effective and environmentally sustainable technologies that made an entry into Kerala's construction sector. However such alternatives continue through voluntary and private initiatives of a few professional restricting themselves to a niche market. Despite bombastic policy pronouncements (see Government of Kerala 2011) while releasing housing policies, there is a no effective public intervention or credible support system to develop this alternative that has now become imperative given the national commitment to a low carbon emitting regime.

A number of policy interventions can be made by the Government of Kerala to move towards what we would call this alternative as a Green Habitat. It should include the introduction of a new curriculum that incorporates the knowledge and practices in alternative architecture and construction subjects. Despite the demonstrated feasibility of an alternative architecture and construction technology of Laurie Baker and a number of his followers, none of the departments or colleges of architecture in Kerala has thought it appropriate to include it in the curriculum for architecture and civil engineering students.

Another public intervention could be in the area of developing the skills of workers in the construction sector. The feasibility of translating new ideas that are environmentally and economically sustainable depends on the capability of workers to translate them into action. Given the literate and educated (around 9 to 12 years of schooling) nature of Kerala's workforce

their learning curve in terms of absorbing new ideas and techniques is expected to be quite high. In fact those working in the alternative construction technology sector will vouch for the speed with which the workers have learned the new techniques. What is needed is institutional arrangements for skill development by way of training courses and other programmes to impart the new knowledge and technologies. The Kerala Academy of Skills Excellence is an appropriate agency to undertake this task along with other institutional facilities (such as Polytechnics, Industrial Training Centres and Vocational Higher Secondary Schools).

Along with the abovementioned public initiatives, there is an urgent need to promote research, development and dissemination activities in the area of a cost effective and environmentally sustainable approach to architecture and construction. There is considerable scope here to adapt, improve and assimilate traditional knowledge and technology with modern knowledge, technology and requirements. This is an area where the government could promote the existing efforts by policy encouragement, grants and other financial and non-financial assistance. In some instances, local self-governments and other public agencies have adopted such alternative building construction systems by awarding the construction of a number of institutions. Special mention should be made of the panchayat raj institutions who have promoted such alternative construction systems for building anganawadis, offices, housing schemes and so on. Such construction systems have also been adopted by a select few of private institutions especially in the hospitality sector such as building tourist resorts. But more should be, and can be, done.

In fact, Kerala can claim to have laid the foundations for a cost-effective, environmentally sustainable, pro-people especially the poor and aesthetically pleasing that respects traditional knowledge, local climatic conditions and availability of resources alternative architecture and construction approach way back in early 1970s when C. Achutha Menon was the Chief Minister. His initiative resulted in a government report that very much carried the imprint of Laurie Baker who pioneered this architecture (see Government of Kerala 1973 CHECK). However the well-entrenched techno-bureaucratic system had already abandoned the traditional knowledge and its environmental compatibility and moved towards a high cost, concrete intensive, cubic-oriented architecture devoid of any aesthetic appeal or climatic and cultural sensibilities of the region. It also gave rise to a system that is widely perceived as one of

a nexus between technocrats-contractors-politicians. While there are exceptions to this characterization, the actual record of cost and time-overruns resulting in considerable financial burden to the exchequer is often pointed out as a testimony to this nexus. The rent-seeking interest that such a system gave rise to was powerful enough to thwart the adoption of an alternative approach and system of construction where the scope for rent-seeking was intrinsically much restricted.

In sum, a new paradigm in the area of providing housing facilities within a perspective of moving towards a green habitat and then to a green economy is called for. Kerala is well positioned to move towards such a goal.

**\*\*End\*\***

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