

NSS Report No. 39



**GOVERNMENT OF GOA**

**CONDITIONS OF SLUMS IN GOA  
(BASED OF NSS 58<sup>TH</sup> ROUND STATE SAMPLE)  
( JULY-DEC 2002)**

**4** **DIRECTORATE OF PLANNING  
STATISTICS AND EVALAUTION  
PANAJI-GOA**

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STATISTICS AND EVALAUTION  
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ENTERED IN DATABASE

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## PREFACE

*The National Sample Survey Organisation (NSSO) conducted an integrated survey encompassing various aspects of the socio-economic scenario during July to December 2002. The survey, inter-alia, included the condition of urban slums. Unlike various other surveys conducted by the NSSO where the information is collected from each selected household, information on the civic facilities of the slums was collected from one or more knowledgeable persons from each of the selected slums. This was the third survey on slums after the 31st round (1976-77) and the 49<sup>th</sup> round (January – June 1993). As the slum is essentially an urban phenomenon, this survey covered only the urban areas.*

*The present report contains information on ownership, area type, structure, living facilities like electricity, drinking water, latrine, sewerage, drainage, garbage disposal, distance of the slum from nearest primary school and government hospital / health centre.*

*I hope the report will be useful to the planners and policy makers. Comments and suggestions for improvement will be most welcome.*

Place : Panaji

( S. K. Tewari )  
DIRECTOR

Date:

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## Introduction

The first nation-wide survey of the 'economic condition of slum dwellers in urban cities' was conducted by the National Sample Survey Organization (NSSO) in its 31<sup>st</sup> round enquiry (July 1976-June 1977). The survey was restricted to (i) all the class –I towns having 1971 census population one lakh or more and (ii) two class –II towns viz. Shillong and Pondicherry. Only the cities proper and not the urban agglomeration were considered for the survey coverage. For identifying 'undeclared slums', a slum was defined as an areal unit having twenty five or more katcha structures mostly of temporary nature, of fifty or more households residing mostly in katcha structures, huddled together, or inhabited by persons with practically no private latrine and inadequate public latrine and water facilities.

The second nationwide survey on particulars of slums was conducted by the NSSO in its 49<sup>th</sup> round enquiry (Jan – June, 1993), which covered rural as well as urban areas. A compact area with a collection of poorly built tenements, mostly of temporary nature, crowded together usually with inadequate sanitary and drinking water facilities in unhygienic condition was considered as 'slum' in the 49<sup>th</sup> round enquiry. For the purpose of the survey, such an area was considered as 'undeclared slum', if at least 20 households lived in that area. Certain areas declared as 'slum's by respective municipalities, corporations, local bodies or development authorities were treated as 'declared slum'.

After a gap of nearly ten years since then, the third survey in the series was conducted in the 58<sup>th</sup> round enquiry (July-Dec 2002). Slum being an urban concept, on the recommendation of the working group on NSS 58<sup>th</sup> round, the Governing Council of the NSSO decided to cover only the urban slum in the present survey to which this report relates.

**Objective of the survey:** The main aim of the survey on condition of slum was to portray the condition of the urban slum, both notified and non-notified, with respect to infrastructural facilities like the area where the slum was located, road within and approaching the slum, electricity, drinking water, sewerage, drainage, garbage disposal etc. In addition, data on change in the condition of some of these facilities, and source of the improvement, if there was any such improvement over the last five years, were also collected. .

**Mode of data collection:** Unlike household surveys where data are collected from a member of each household selected for the survey, in the survey on slums, data were collected for the entire slum from knowledgeable person. Information for most of the items was recorded in codes. If more than one code was applicable for any particular item, then the code was given on the basis of majority criterion.

## Concepts and Definitions

For collection of data on the condition of slums, certain concepts and definitions were used in the survey. These are explained below.

**2.1 Slum:** A slum is a compact settlement with a collection of poorly built tenements, mostly of temporary nature, crowded together usually with inadequate sanitary and drinking water facilities in unhygienic conditions. Such an area, for the purpose of this survey considered as "**non-notified slum**" if at least 20 households lived in that area. Areas notified as slums by the respective municipalities, corporations, local bodies or development authorities are treated as "**notified slums**". For the survey, slums in urban areas only were considered. The slum dwellings are commonly known as 'Jhopad Patti' in Bombay 'Jhuggi Jhopri' in Delhi. It may be noted that the definition of "**slum**" followed in the survey conforms to the one adopted in the previous NSS survey.

**2.2 Squatter settlement :** Sometimes an area develops into an unauthorised settlement with unauthorized structures put up by "squatters". Squatter settlements were the slum settlements which did not have the stipulated number of 20 households to be classified slum.

**2.3** However, squatter settlements were not considered under the coverage of slum in the present survey. A more detailed enquiry on the housing condition was done through individual enquiry at the level of households which included those living in slums as well as squatters.

**2.4 House:** Every structure, tent, shelter, etc. was considered as a house irrespective nature of its use. It might be used for residential or non-residential purpose or both or might be vacant.

**2.5 Household:** A group of persons normally living together and taking food from common kitchen constituted a household. The members of a household might or might not be related by blood to one another.

**2.5.1** Each inmate (including residential staff) of a hostel, mess, hotel, boarding and lodging house, residential institutions for disabled, etc. constituted a single member household. If, however, a group of persons among them normally pooled their income for spending, together were treated as forming a household. For example, a family living in a hotel was treated as a separate household by itself.

2.5.2 Undertrial prisoners in jails and indoor patients of hospitals, nursing homes etc., were excluded but residential staff therein were listed while listing was done in such institutions. The former persons were considered to be normal members of their parent households and were counted there. Convicted prisoners undergoing sentence were kept outside the coverage of the survey.

2.5.3 Floating population, i.e., persons having no normal residence were not listed. But households residing in open space, roadside shelter, under a bridge etc., more or less regularly in the same place were listed.

2.5.4 Foreign nationals were not listed, nor their domestic servants, if by definition the latter belonged to the foreign national's household. If however, a foreign national became an Indian citizen for all practical purposes, he/ she was covered.

2.5.5 Persons residing in barracks of military and paramilitary forces (like police, BSF etc.) were kept outside the survey coverage in view of the difficulty to conduct the survey therein. However, civilian population residing in their neighborhood, including the family quarters of service personnel were covered, for which, of course, permission was obtained from appropriate authorities.

2.5.6 Orphanages, rescue homes, ashrams and vagrant houses were kept outside the survey coverage. However, students staying in hostels (if any) and the residential staff (other than monks/nuns) of ashrams were listed. For orphanages, although orphans were not to be listed, the persons looking after them and staying there were considered for listing.

**2.6 Pucca structure :** A pucca structure was one having walls and roofs made of "pucca materials".

2.6.1 In the present survey, cement, concrete, oven burnt bricks, hollow cement/ash bricks, stone, stone blocks, jack boards (cement plastered reeds), iron, zinc or other metal sheets, timber, tiles, slate, corrugated iron, asbestos cement sheet, veneer, plywood, artificial wood of synthetic material and poly vinyl chloride (PVC) material constituted the list of pucca materials. All other materials were considered as "non-pucca materials". Non pucca materials included unburnt bricks, bamboo, mud, grass, leaves, reeds, thatch, etc.

**2.7. Katcha structure:** A structure having walls and roof made of non-pucca material was regarded as a katcha structure. Katcha structures could be of the following two types :

(a) 'Unserviceable katcha' which included all structures with thatch walls and that, roof i.e. walls made of grass, leaves, reeds etc. and roof of a similar material, and

(b) 'Serviceable katcha' which included all katcha structures other than unserviceable katcha structures.



**2.8 Semi-pucca structure:** A structure which could not be classified as a pucca or katcha structure as per definition given above was recorded as a semi-pucca structure. Such a structure had either the walls or the roof, but not both, made of pucca materials.

**2.10 Types of latrine:** The latrine facility used by most of the slum dwellers was noted in this survey. Latrines serviced by scavengers were called "service latrines". A latrine connected to underground sewerage system was called "flush system latrine". A latrine connected to underground septic chambers was considered as a "septic tank latrine". latrine connected to a pit dug in earth was recorded as a "pit latrine".

**2.11 Sewerage system :** Sewerage system consisted of underground pipe or conduit carrying off drainage water, discharge from water closets, etc.

**2.12 Drainage system:** A system for carrying off waste water and liquid wastes of the area was considered as the drainage system.

**2.13 Garbage disposal:** In the urban areas, some arrangements usually exist to carryaway the refuse and waste of households to some dumping place away from the residential areas. In some places, the public bodies collect the garbage from the premises of the household from some fixed points in the locality where the residents put their garbage. In some place a body of residents themselves make the arrangement of carrying the garbage to the dumping place away from residential areas without participation of any public body till the final disposal. Information on the arrangement prevailing for the colony/locality of the slum was obtained in the survey.

**2.14 Distance from nearest facility:** The distance from the nearest school having primary classes and nearest government hospital/health centre were collected in terms of codes. Distance from the centre of the slum to the nearest facility availed by/available to the slum dwellers was considered.

## Sample Design and Estimation Procedure

### Introduction

The National Sample Survey Organization (NSSO), engaged in collection of socio-economic data employing scientific sampling methods, started its fifty-eighth round from 1<sup>st</sup> July 2002. The survey continued till December 2002. The primary objective of this survey was to gather information on social indicators like disability and housing condition. Besides, annual round of data on household consumer expenditure and employment – unemployment were also collected.

### Subject coverage

The survey covered both mental and physical disabilities. Among the physical disabilities speech, hearing, visual and locomotor disabilities were considered. The other major topics covered were housing conditions, village facilities, slum particulars etc.

In addition, the annual consumer expenditure enquiry covering some key characteristics of employment-unemployment were also carried out on a sample of four households in each sample FSU.

**Period of survey and work programme:** The survey period of this round was divided into two sub-rounds of three months duration each as follows:

Sub-round 1: July-September 2002

Sub-round 2: October-December 2002

As far as possible, equal number of sample FSUs was allotted for survey in each of the two sub-rounds to ensure uniform spread of sample FSUs over the entire round. Attempt was made to cover each such FSU during the sub-round to which was allotted.

**2.4 Schedules of enquiry:** The following are lists the schedules of enquiry for this round:

- schedule 0.0 : listing of the households
- schedule 3.1 : village facilities
- schedule 0.21 : particulars of slum
- schedule 26 : Survey of disabled person
- schedule 1.2 : housing condition
- schedule 1.0 : household consumer expenditure

### Sample Design

**Outline of Sample Design:** A stratified multi-stage design was adopted for the conduct of Survey of NSS 58<sup>th</sup> round. The first-stage units were census villages (panchayat wards for Kerala) in the rural sector and the NSSO Urban Frame Survey (UFS) blocks in the urban sector. The ultimate stage units were households in both the sectors.

**Sampling Frame for First-Stage Units:** *For the rural sector*, the list of Census 1991 villages

*For the urban sector*, the list of latest available Urban Frame Survey (UFS) blocks \ as considered as the sampling frame.

### **Stratification**

**Rural sector:** Two special strata were formed as given below at the State/ UT level on the basis of Population Census 1991 viz.

Stratum 1: all FSUs with population between 0 to 50, and

Stratum 2: FSUs with population more than 15,000

The special stratum 1 was formed if at least 50 such FSU's were found in a State/UT. Similarly, special stratum 2 was formed if at least 4 such FSUs were found in a State/UT. Otherwise such FSUs were merged with the general strata.

From the remaining FSUs (not covered under stratum 1 & 2) general strata (hereafter, stratum will refer to general stratum unless otherwise mentioned) was formed and numbered 3, 4, 5 etc. (even if no special strata have been formed). Each district of a State/UT was normally treated as a separate stratum. However, if the provisional population of the district was greater than or equal to 2.5 million *as per Census 2001*, the district was divided into two or more strata with more or less equal population as per population census 1991 by grouping contiguous tehsils.

**33.2 Urban sector:** In the urban sector, stratum was formed within each NSS region on the basis of size class of towns as per *Census 1991 town population except towns specified in Table 4. The stratum number and their composition (within each region) are given below:*

stratum 1: all towns with population (P) < 0.1 million

stratum 2: all towns with  $0.1 \leq P \leq 0.5$  million

stratum 3: all towns with  $0.5 \leq P < 1$  million

stratum 4,5,6, ... each town with  $P \geq 1$  million

**3.4 Sub-stratification:** *There was no sub-stratification in the rural sector.* However, to cover more number of households living in slums, in urban sector each stratum was divided into 2 sub-strata as follows:

sub-stratum 1: all UFS blocks having area type 'slum area'

sub-stratum 2: remaining UFS block

If there was one UFS block with area type 'slum area' within a stratum. Sub-stratum 1 was not formed: it was merged with sub-stratum 2.

**Allocation of total sample to States and UTs:** The total sample FSUs was allocated to the States and UT in proportion to provisional population as per Census 2001 subject to the availability of investigators ensuring more or less uniform work-load.

**Allocation of State/ UT level sample to Rural and Urban sectors:** State/UT level as allocated between two sectors in proportion to provisional population as per *Census 2001 with double weightage* to urban sector.

**Allocation of Rural /Urban sector level sample size to strata / sub-strata:** Both rural and urban sector samples allotted to a State/UT were allocated to different strata in proportion to population of the stratum. All the stratum-level allocations were adjusted to multiples of 2. Stratum e sample size in the urban sector was further allocated to 2 sub-strata in proportion to the number of UFS blocks in them with double weight age to sub-stratum I subject to a minimum sample size of 2 or 4 to sub-stratum 1 according as stratum-level allocation is 4 or greater than 4, Sub-stratum level allocations in the urban sector were made even.

**Selection of FSUs :** FSUs were selected in the form of two independent sub-samples in both the sectors. For special stratum 2 and all the general strata of rural sector. FSUs were selected by probability proportional to size with replacement (PPSWR) where size was the 1991 census population. For urban sector and special stratum 1 of rural sector. FSUs were selected by simple random sampling without replacement (SRSWOR).

### **Selection of hamlet-groups/sub-blocks / households**

**Formation of hamlet-group/sub-block:** Large villages/ blocks having approximate population 1200 or more were divided into a suitable number of hamlet-groups/sub-blocks as given below

approximate present population	no. of hamlet-groups/ sub-blocks formed
less than 1200	1 (no hamlet-group/sub-block formation)
1200 to 1799	3
1800 to 2399	4
2400 to 2999	5
3000 to 3599	6 ....and so on

Hamlet-groups / sub-blocks were formed by more or less equalising population. *For large urban blocks*, the sub-block (sb) having slum dwellers, if any, was selected with probability 1 and was termed as *segment 1*. However, if there were more than one sb having slum dwellers, the sb having maximum number of slum dwellers was selected as *segment 1*. After selection of sb for segment 1, one more sb was selected by simple random sampling (SRS) from the remaining sb's of the block and was termed as *segment 2*. *For large blocks (having no slum areas)* two sub-blocks were selected by simple random sampling without replacement (SRSWOR) and *were combined* to form *segment 2*. For urban blocks without sub-block formation, segment number was 1 or 2 depending on whether the block was having a slum or not. *For large villages* two hamlet-groups were selected by SRSWOR and *were combined* to form *segment 2*. For villages without hamlet-group formation, segment number was also 2. The segments were considered *separately* for listing and selection of the ultimate-stage units.

### Estimation Procedure

Notations:

s = subscript for s-th stratum

t = subscript for t-th sub-stratum of an urban stratum ( t = 1, 2)

m = subscript for sub-sample ( m = 1, 2)

i = subscript for i-th FSU [village (panchayat ward)/ block]

u = subscript for a segment ( u = 1, 2)

j = subscript for j-th second stage stratum of an FSU

k = subscript for k-th sample household under a particular second stage stratum within an FSU  
 D = total number of hg's / sb's formed in the sample village (panchayat ward) / block

$D^* = 1$  if  $D = 1$

=  $D / 2$  for rural FSUs with  $D > 1$

=  $(D - 1)$  for urban FSUs with  $D > 1$  and with segment 1

=  $D / 2$  for urban FSUs with  $D > 1$  and without segment 1

N = total number of FSUs in an urban stratum / sub-stratum or rural stratum 1

Z = total size of a general stratum or special stratum 2 of rural sector (sum of sizes for all the FSUs of a stratum)

Z = size of sample village used for selection.

n = number of sample village / block surveyed including zero cases but excluding casualty for a particular sub-sample and stratum / sub-stratum.

H = total number of households listed in a second-stage stratum of a segment of a sample

FSU h number of households surveyed in a second-stage stratum of a segment of a sample FSU.

$x, y$  = observed value of characteristics  $x, y$  under estimation

$X, Y$  = estimate of population total  $X, Y$  for the characteristics  $X, Y$ .

Under the above symbols, observed value of the characteristic  $y$  for the  $k$ -th household in the  $j$ -th second stage stratum of the  $u$ -th segment ( $u = 1, 2$ ) of the  $i$ -th FSU belonging to the math sub-sample for the  $s$ -th rural stratum: observed value of the characteristic  $y$  for the  $k$ th household in the  $j$ -th second stage stratum of the  $u$ -th segment ( $u = 1, 2$ ) of the  $i$ -th FSU belonging to the math sub-sample for the the  $t$ -th sub-stratum of  $s$ -th urban stratum

However, for ease of understanding, a few symbols have been suppressed in following paragraphs where they are obvious.

Formulae for estimation of aggregates for a particular sub-sample and stratum / sub-stratum in Rural / Urban sector:

**A) Schedule 0.21:**

**Rural:**

(a) Estimation formula for stratum I (i.e. special stratum at State/UT level):

i) For estimating the number of households possessing a characteristic:

$$\hat{Y} = \frac{N}{n} \sum_{i=1}^n \left[ D_i^* \times y_{i2} \right]$$

where  $y_{i2}$  is the total of observed values for the characteristic  $y$  belonging to segment 2 of the  $i$ -th FSU.

ii) For estimating the number of villages possessing a characteristic:

$$\hat{Y} = \frac{N}{n} \sum_{i=1}^n y_i$$

where  $v_i$  is taken as 1 for sample villages possessing the characteristic and 0 otherwise.

Estimation formula for other strata:

i) For estimating the number of households possessing a characteristic:

$$\hat{Y} = \frac{Z}{n} \sum_{i=1}^n \frac{1}{z_i} \left[ D_i^* \times y_{i2} \right]$$

ii) For estimating the number of villages possessing a characteristic:

$$\hat{Y} = \frac{Z}{n} \sum_{i=1}^n \frac{1}{z_i} y_i$$

**Urban:**

(a) Estimation formula for a sub-stratum of an urban stratum:

$$\hat{Y} = \frac{N}{n} \sum_{i=1}^n [y_{i1} + D_i^* \times y_{i2}]$$

where  $y_{i1}$  and  $y_{i2}$  are the totals of observed values for the characteristic  $y$  belonging to segments 1 and 2 respectively, of the  $i$ -th FSU in the  $t$ -th sub-stratum and  $s$ -th stratum

(b) For the  $s$ th stratum

where  $\hat{Y}_{st}$  denotes the estimate of  $Y$  for the  $t$ -th sub-stratum of the  $s$ -th stratum

$$\hat{Y}_s = \sum_{t=1}^2 \hat{Y}_{st}$$

## FINDINGS OF SURVEY

National Sample Survey Organization, Government of India has allotted a total of 114 Urban Frame Survey (UFS) blocks for Goa. Out of these sample only 5 blocks had slum. Thus, about 4.4% UFS blocks were having slums in Goa. All the slums found Notified.

The findings of the survey are given below :

**Type of Ownership:** Table no.1 indicates the distribution of slums by type of ownership of land on which the slums were built.

**Percentage distribution of slums built on land  
owned by Public Authorities**

Type of Slum	Ownership Type		
	Local Body	Highway	Others
Notified	28	49	23

The above table reveals that 100% of the notified slums were built in public land. A further look into the ownership pattern of public land occupied by the slums, 28% were built on land belonging to local bodies, 49% were built on land belongs to High way and 23% others in Goa.

**Area Surrounding:** Table no. 2 gives the Percentage of Slums by Type of Area Surrounding.

**Percentage distribution of slums built on land  
by Public Authorities**

Type of Slum	Type of area surrounding		
	Residential	Industrial	Others
Notified	100	-	-

The above table reveals that 100% of the notified slums were located surrounding the residential area in Goa.



## Major Source of Drinking Water :

Table no.3 gives the Percentage of Slums by major source of drinking water.

### Percentage distribution of slums by major source of drinking water

Type of Slum	Source of drinking water		
	Tap	Tube well	Well
Notified	100	-	-

The above table reveals that 100% of the notified slums were using Public Tap water for drinking purpose in Goa.

## Availability of Electricity

Electricity connection in the slums may be of different types, i.e. for household use, streetlight etc. Table no.4 indicates the status of Electricity in Slums.

### Percentage distribution of slums by type of availability of Electricity connection

Type of Slum	Type of Electricity Connection		
	Street light only	Household only	Others
Notified	100	-	-

The above table reveals that 100% of the notified slums were using streetlight in Goa.

**Roads within Slum:** Data on the nature of the roads lanes within the slums were collected in the survey.

### Percentage distribution of slums by nature of roads within the slum

Type of Slum	Type of road within slum		
	Pucca	Katcha	Others
Notified	77	23	-

The above table reveals that 77% of the notified slums to have pucca roads within slums and 23% were located on katcha roads in Goa .

### Sewerage system and Drainage Facility:

Data on the percentages of slums those are having Sewerage system and Drainage Facility in the survey.

#### Percentage distribution of slums by different types of drainage

Type of Slum	Type of drainage system		
	Open Pucca	Open Katcha	No. facility
Notified	23	28	49
	Type of Sewerage system		
	Yes	No	
	-	100	

The above table reveals that 23% of the notified slums were having drainage facility Open pucca 28% were having open Katcha whereas 49% reported about no such facility and also no facility of sewerage system in Goa.

### Arrangement of Garbage

Data on the percentages of slums about the type of agency disposing of garbage in the survey.

#### Percentage distribution of slums by different types of agency disposing of the garbage

Type of Slum	Types of Agencies for garbage collection		
	Panchayat	No facility	Others
Notified	23	28	49

The above table reveals that 23% of the notified slums were having garbage disposing of facility through Panchayat, only 28% were having such no facility whereas 49% could not explain in Goa.

### Availability of Primary School :

Data on the percentages of slums by distance from Primary Education Schools in the survey.

#### Percentage distribution of slums by distance from Primary Education Schools

Type of Slum	Percentage of Slums by distance from Primary School			
	<0.5 Km	0.5-1Km	1-2 Km	2-5Km
Notified	28	49	23	-

The above table reveals that 67% of the notified slums found to have at least one Primary School located within 1 Km whereas 23% slums were having such facility within 2 Km in Goa.

**Availability of Government Hospital:** Data on the percentages of slums by distance from Hospitals in the survey.

**Percentage distribution of slums by distance Government Hospital**

Type of Slum	Percentage of Slums by distance from Government Hospital			
	<0.5 Km	0.5-1Km	1-2 Km	2-5Km
Notified	28	23	49	-

The above table reveals that 51% of the notified slums found to have at least one Government Hospital / Health Center located within 1 Km whereas 49% slums were having such facility within 2 Km in Goa.

**Location of the Slums:** Data on the percentages of slums by location in the survey.

**Percentage distribution of slums by location**

Type of Slum	Percentage of Slums by location	
	Along nallah	Others
Notified	1	99

The above table reveals that almost 100% of the notified slums are located in Other area which is unexplained properly in Goa.