# 3. Study Area:

## 3.1 Total geographical Area

Paschim Medinipur, situated in the southern portion of West Bengal, has been fixed from the former Medinipur district, the then biggest district of India, and approached into existence in the present form since 1st January 2002. It is located between 22° 57' 10" and 21° 36' 35" North latitude and between 88° 12' 40" and 86° 33' 50" East longitude. Paschim Medinipur is restricted by the Bankura district from the northern side and the Purba Medinipur district from the southeastern side. The southern boundary of the district is merged with Balasore and Mayurbhanj district of Orissa and western boundary is merged with Singbhum and the eastern district of Jharkhand. According to Survey of India, the entire geographical range of Paschim Medinipur district in 2001 (9.75 thousand sq. km.) accounted for 11.01 % of the entire geographical part of the state (88.75 thousand sq. km). The total forest region of the district was 1.70 thousand sq. km. Which accounted for 14.31 % of the entire forest part of the state (11.88 thousand sq. km.). Inhabited villages (over 7500) of the district show highly differential features and indicators of human development. While there are pockets agglomerations of highly prosperous and developed villages in the eastern portion of the district, there are also villages of distress in the western part. 637 villages have been identified by the Government of West Bengal as backward villages that belong mostly to the western part. (Table 1, Figure 1 and 2).

### 3.2. Topography

Regional diversity of Paschim Medinipur district represents physiographies, economic development, Agro-climatic characteristics, social arrangement, etc. The district can be sub-divided Geo-morphologically into three parts, viz. Chhotonagpur. In the westernmost portions are developing lands, borders with hills, and mounts. Rahr Plain with lateritic highlands

present in the central portion and alluvial plain of the east with recent deposits. It is hilly in the north-west but represents low basins in the southeast and east. The west portion has drought-affected dry areas with dense, dry deciduous forest and in the east highly wet flood-affected with semi-aquatic vegetation of marshlands.

## STUDY AREA

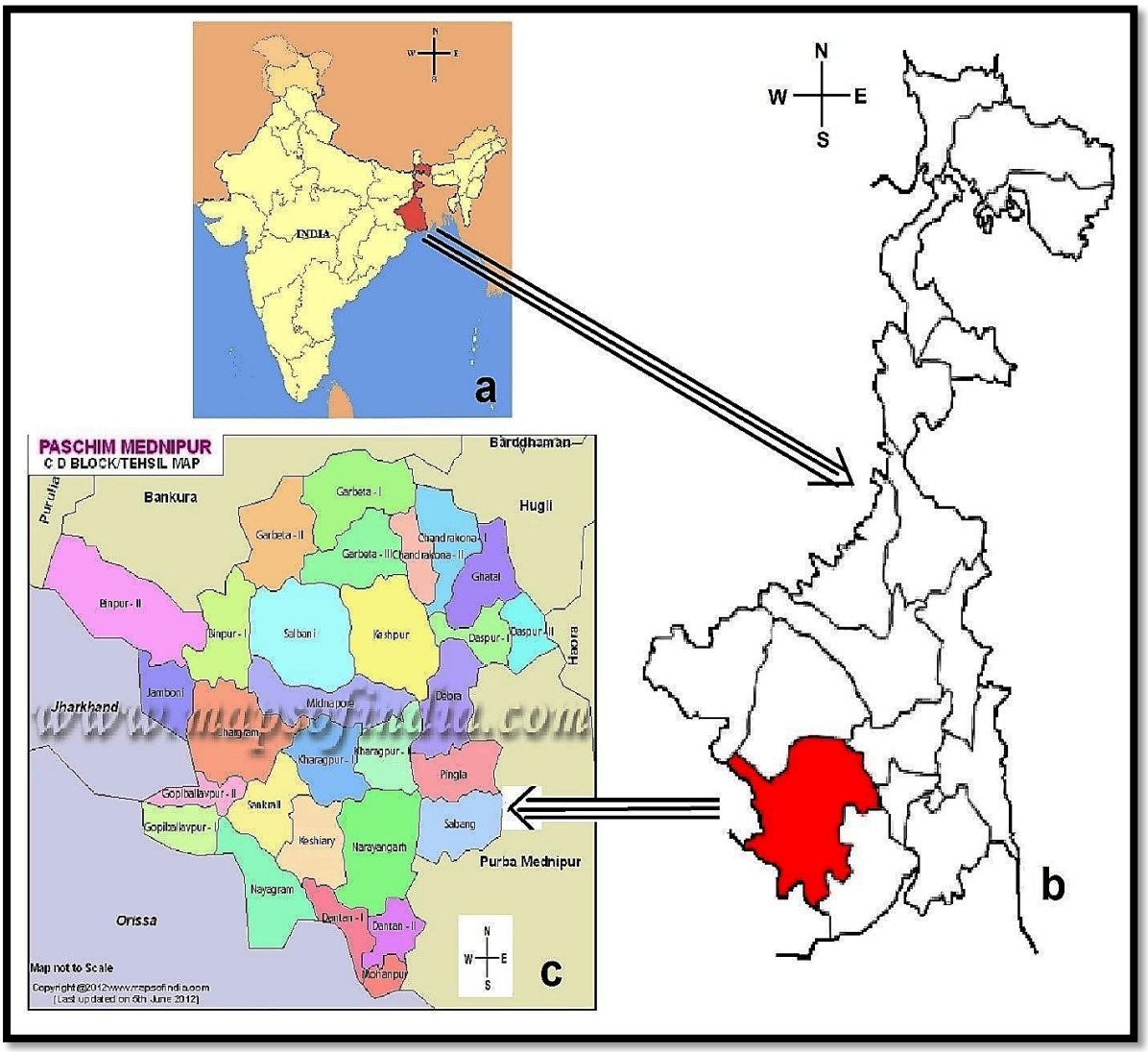
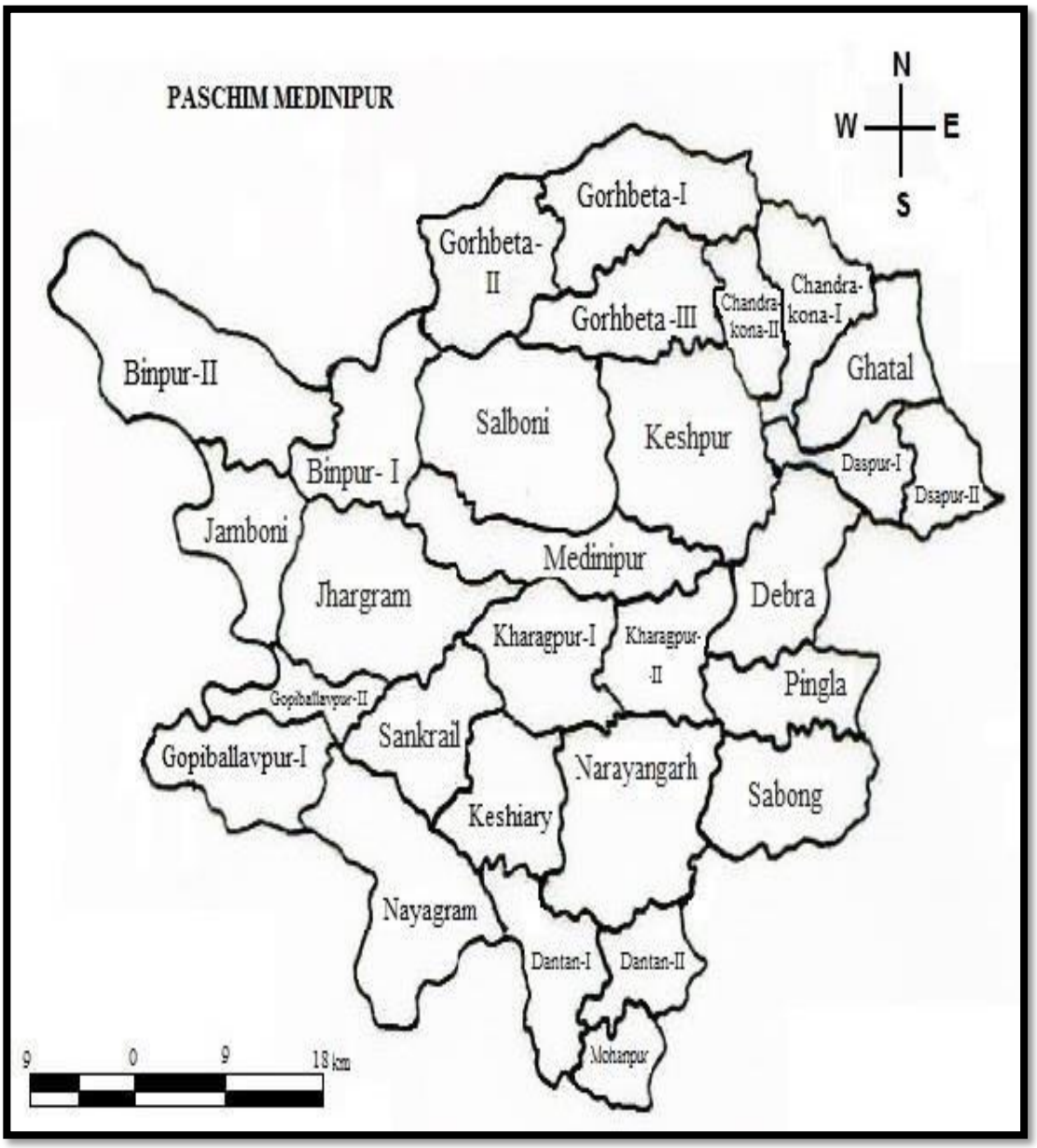



**Figure 1: Study area, a.** India with West Bengal (red mark); **b.** West Bengal with PaschimMedinipur (red mark); **c,** Paschim Medinipur district with several blocks. [Courtesy: www.mapsofindia.com]

**Fig.2:**




**Paschim (West) Medinipur district map with different blocks.**

In the west and north-west part of the district with barren lateritic, non-arable lands, which progressively changes with exceedingly useful muddy soil zones in the eastern and central portion. The western boundary is more broken, for the lower ranges of the Chhota Nagpur hills line the horizon, the jungle assumes the character of the forest and large trees begin to predominate.

**Table 1**: Showing 4 subdivisions and 29 blocks with their Latitude and Longitude.

| SUBDIVISIONS | NAME OF BLOCKS | LATITUDE | LONGITUDE |
|---|---|---|---|
| **GHATAL** | Chandrakona-I | 22.7348$^0$N | 87.3364$^0$E |
| | Chandrakona- II | 22.70$^0$N | 87.30$^0$E |
| | Daspur-I | 22.62$^0$N | 87.67$^0$E |
| | Daspur- II | 22.66$^0$N | 87.63$^0$E |
| | Ghatal | 22.67$^0$N | 87.72$^0$E |
| **JHARGRAM** | Binpur- I | 22$^0$35′00″N | 86$^0$54′55″E |
| | Binpur- II | 22$^0$37′00″N | 86$^0$64′55″E |
| | Gopiballavpur- I | 22$^0$13′N | 86$^0$54′E |
| | Gopiballavpur- II | 22$^0$13′N | 86$^0$54′E |
| | Jamboni | 22° 22' 36" N | 87° 02' 33" E |
| | Jhargram | 22.45$^0$N | 86.98$^0$E |
| | Nayagram | 22$^0$01’54.8” N | 87$^0$10’41.2” E |
| | Sankrail | 22.0843$^0$N | 87.123$^0$E |
| **KHARAGPUR** | Dantan- I | 21.911 $^0$N | 87.270 $^0$E |
| | Dantan- II | 21.8912910$^0$N | 87.3756410$^0$E |
| | Narayangarh | 22.1514 $^0$N | 87.3929 $^0$E |
| | Debra | 22.3906$^0$N | 87.5673$^0$E |
| | Keshiary | 22.133333$^0$N | 87.233333$^0$E |
| | Kharagpur- I | 22.330239$^0$N | 87.323653$^0$E |
| | Kharagpur- II | 22.37$^0$N | 87.44$^0$E |
| | Mohanpur | 21.83856$^0$N | 87.43145$^0$E |
| | Pingla | 22$^0$16’18.9” N | 87$^0$35’08.4” E |
| | Sabong | 22.176 $^0$N | 87.601 $^0$E |
| **MEDINIPUR** | Garbeta- I | 22$^0$52′N | 87$^0$22′E |
| | Garbeta- II | 22$^0$53′N | 87$^0$32′E |
| | Garbeta- III | 22.554497 $^0$N | 87.461149 $^0$E |
| | Keshpur | 22.554497 $^0$N | 87.461149 $^0$E |
| | Medinipur | 22$^0$15′N | 87$^0$39′E |
| | Salboni | 22$^0$38′23″N | 87$^0$20′09″E |

### 3.3. Soil

The soil is lateritic, almost uninhabited, particularly in the extreme north-west where there are several hills over 1000 feet in height and this area is infertile. The result is an almost level plain broken only by the Sandhills. Mostly speaking, there are two natural separations of the

district. The character development of the district is lateritic, which inhabits closely the whole country in the north and west, but in the south and the east, it progressively gives way to the ordinary alluvium of the Gangetic delta. The alluvial part may be partitioned into two separations; first is a strip of deltaic portion bordering Hooghly, interconnected by several rivers and watercourse and are tidal effect. Those are associated with one another, thus rendering it to transportable by water. This low-lying region spreads for about 20 miles inland from the Rupnarayan and Hooghly. The sedimentary deposits appear to cover the ending undulations of the lateritic development. None of this development as yet seemed on the external, but the watersheds between the watercourses are distinct and the overall promotion of the country is sophisticated. The second part contains the alluvial tract establishing the rest of the eastern half of the district. This is monotonous rice plain crossed by several watercourses and tidal streams, which are furrowed with dams to protect the arenas from floodwater. Textural classification of soil across the district shows that the Nayagram block has the highest sandy area (6575 hectares) followed by Keshiary (5300 hectares), the lowest being in Chandrakona-I (60 hectares). Sandy loam is the predominant soil in the district, where the highest area belongs to Jhargram followed by Binpur-II, the lowest being observed in Dantan-II. Next to sandy loam, loam soil is predominant in the district, where the highest area belongs to Kharagpur-II followed by Debra, the lowest being registered in Dantan-I. Next to loam is, clay loam soil where the highest area belongs to Narayangarh followed by Sabong, the lowest being observed in Garhbeta-III. Clay soil is high in Sabong followed by

Pingla, the lowest being in Kharagpur-II. Sandy clay loam is highest in Ghatal followed by Daspur-II, the lowest being registered in Chandrakona-II. (Figure 3)

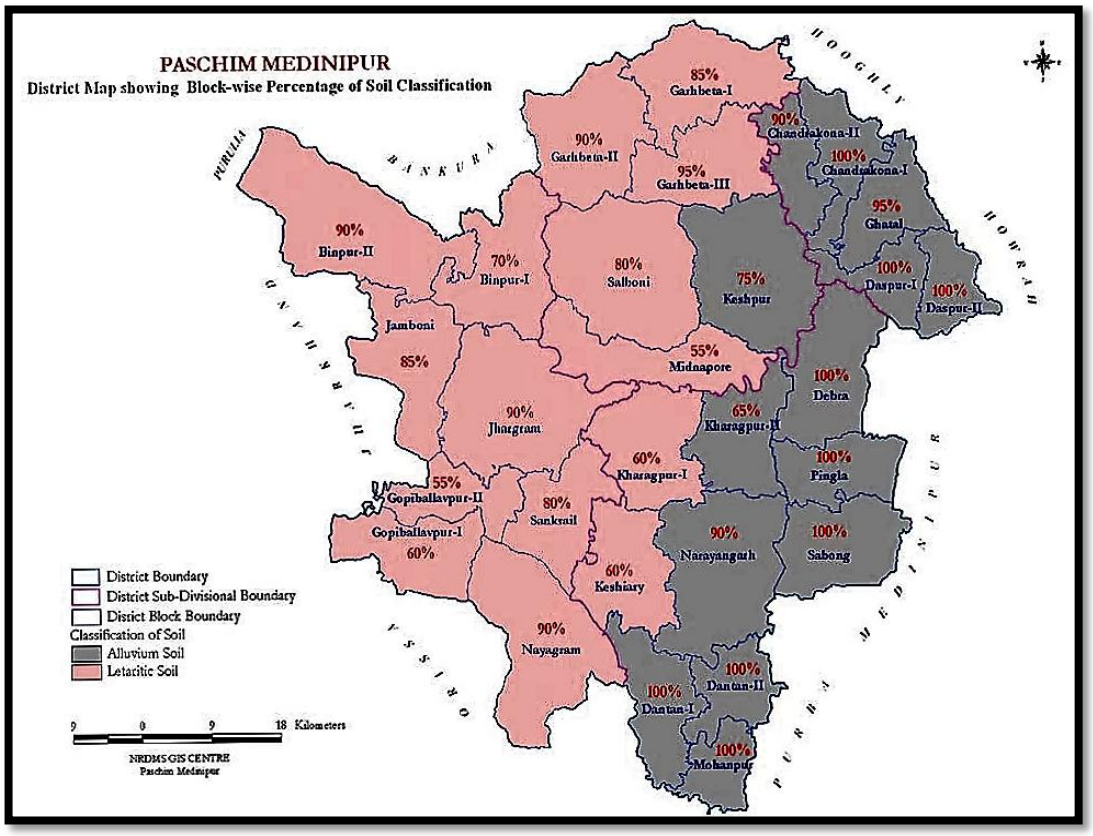



**Figure 3:** Soil classification: District map showing the block-wise percentage of soil classification. [Courtesy: www.mapsofindia.com]

### 3.4. Climate

The climate is tropical. The tremendous rocky landscape is seen in the western part of the district and progressing geography is a knowledgeable containing lateritic region. These progressing plains progressively combine into uniform alluvial and deltaic plains to the east and southeast of the district. The soil is impartially fertile. Regular rainfall in the district is nearby 1400 - 1500 mm. Conversely, for the latter few years, it has been greatly unpredictable. The average temperature varies widely through seasons, varying between the

maximum of $39^0$C and minimum $10^0$C. The temperature is categorized by warm summer, cold winter, rich rainfall, and humidity. Rainfall varies extensively over the years and distillates over insufficient months of a year under monsoon. Normal rainfall estimated over 21 years from 1994 to 2015 is 1549 mm.

### 3.5. Rivers

The river of Paschim Medinipur district contains the Kansai, the Rupnarayan, and the Subarnarekha which arrives this district starting Singbhum and passes into the Balasore district, where its waterfalls into the Bay of Bengal. The major branch of the Rupnarayan is the Silai or Silabati. This river arrives Midnapore beginning the Manbhum district on the north and shadows a twisting course. That runs fast in an easterly way through the north of the Medinipur (Sadar) sub-division, then goes to the southeast and south over the Ghatal Subdivision. Nearby Narajole it proceeds a sharp turn to the north and finally, it falls into the Rupnarayan at Bhandar, 4 miles below Ghatal. The Silai is negotiable all over the year for a little distance in its inferior influences, which are within the tidal effect. It is served by two small watercourses from Bankura district on the north, the Purandar, and Gopa, and by the Chandur and Kubai in Medinipur, its enlargement in the north-west of the district and streams east till it empties itself into the Silai near Narajole. The Kasai arrives in the district in the north-west from Bankura. It follows an exceptionally tortuous sequence, running first south and south-west and then eastwards past the town of Medinipur, which is located on its north bank. Below Medinipur the channel agreements rapidly, till at Kapastikti, 13 miles inferior

down and it splits one small division going north and finally into the Rupnarayan, while the central channel runs southeast. The Subarnarekha is the only other river of Paschim Midnapore requiring notice. It enters the district on the north-west from Dhal hum and passes through the south-west of Medinipur (Sadar) sub-division intersecting Gopiballavpur block. To the South of Dantan, it enters the Balasore district and lastly falls into the Bay of Bengal. The Subarnarekha has a fast stream with a sandy bed, and its banks are regularly high and well distinct. In seasons of the high flood, the river excesses, it's left bank around 4 miles overhead the point where it leaves Paschim Medinipur district to arrive Balasore district. The Dulong is also an important river in the district. The experiences of drought and floods are common in this district. The flooded zone is about 142647 hectares. (Ghatal and part of Kharagpur sub-divisions). The drought-prone part is around 335248 hectares (Jhargram and Sadar sub-divisions). Ghatal and the Southern portions of Kharagpur sub-divisions are affected by water logging during the rainy season. As a result, there is frequent loss of crop. Sabang, Pingla and Narayangarh block in Kharagpur sub-division often suffer from such damages. Many areas in the Jhargram subdivision have a rolling topography and lateritic soil, which is inappropriate for broad-scale cultivation. Drought affects the population here frequently and causes damage to the limited agriculture in the area, affecting the food safety of the people alive here. Though the district has no coastline, it is affected regularly by the cyclones throughout October and November and early rains during April and May (Figure 4).

### 3.6. Forests

There are four forest divisions in the Paschim Medinipur district. The Medinipur Forest Division has under its 50267.49-hectare area in nine Territorial Ranges. Jhargram Forest Division comprising a forest area over 621 Sq. Km is one of the oldest forest divisions of South West Bengal. Kharagpur Forest Division is primarily a Social Forestry Division constituted in 1982 to implement Social Forestry Scheme / Project throughout the erstwhile Midnapore district. Rupnarayan Planning and Survey Division since November 1995 emerged as a Territorial Division and it is also implementing different schemes related to soil conservation and social forestry works. The forest under each Division is managed with the active co-operation of the Forest Protection Committees. Reserved forest and open scrub are largest in Medinipur Forest Division while protected forest which constitutes the highest percentage of the total forest area of the district is largest in Jhargram Forest Division and the un-classed forest area is largest in Kharagpur Division.

### 3.7. Vegetation

In the west with dense, dry deciduous forest and is replaced by the vegetation of semi-aquatic marshlands in the east. *Shorea robusta* dominated along with natural forest species like *Madhuka indica, Terminalia bellerica, T. chebula, T. catappa, Bombax ceiba, Dalbergia latifolia, D. scandes, Holarrhena antidysenterica, Cassia fistula, Anogeissus latifolia, Lagerstromeia indica, Aegle marmelos, Butea frondosa,* etc. Woody climbers found here are *Combretum decundrum, Hemidesmus indicus, Moringa pterigosperma, Tenospora cordifolia,*

*Dioscorea bulbifera*, *Bahunia vahlii*, etc. It has infertile lateritic, non-arable lands in the west and north-west, which after progressively changes with extremely productive alluvial soil areas in the central and eastern portion of the district.


**Figure 4:** River and Forest by type along with Block and Panchayat Boundary of Paschim Medinipur District. [Courtesy: www.mapsofindia.com]

The overall appearance of the district is that of a large and well-cultivated plain, but towards the north and west gently undulations appear, with ridges covered by a thick growth of sal trees and other scrub jungle, while the intervening depression produces rich crops of rice. Partly from the poor fertility of the soil, and also from the ruthless way forest has been cut down in the past, large forest trees are scared, but still in the neighborhoods of some of the villages, a few fine tamarinds, sal and mahua trees still do remain. The western boundary is

more broken and picturesque, for the lower ranges of the Chhota Nagpur Hills line the horizon, the jungle assumes the character of the forest, and large trees begin to predominate.

### 3.8. Agricultural

The people of district Paschim Medinipur depend on agriculture, primarily with around 75%. Rice, potatoes, wheat, corn, and sugar cane are major crops. The people of this district also cultivate paddy, mulberry, guava, mango, lemon, cashew, banana and jackfruit. There is high agricultural productivity differential across 29 blocks of the district.

High differential environment observed in the district with drought-prone blocks in the western part and irrigated blocks in the eastern part. The low productivity of agriculture has considerable relevance to the high level of poverty among households in the drought-prone regions, especially among the SCs and STs. This section presents the regional profile of the district by types of net cropped area and textural characteristics of soil by block, classification of blocks by predominant soil, land use, and cropping intensity by block and forest by sub-division. There is the highest area under cultivation is 585222 hectares (63 % of the reporting area of the district), whereas 18932 hectors (2 %), 20132 hectares (2.16 %) and 141290 hectors (15.20 %) of the land cone under the category of cultural waste, infertile and uncultivable and area under non-agricultural use respectively.

### 3.9. Population

The present population of this district is 57 lakhs with 18.05% SC and 14.87% ST population. The total population as per the census of India within the 29 blocks of Paschim Medinipur district was 23.80 lakh in 1961, which increased in 2001 to 51.93 lakh accounting for 6.48

percent of the total population of the State. The rate of growth of the population of the district from 1961 to 1971 was 27.52 %, which has disappointed to 15.76 % from 1971 to 2001. The population decadal growth rate during the year 1971 to 2001 of this district was below that of the state as a whole.