CHAPTER 4

THE SETTING

KUTTANAD - Regional Characteristics and Ecological Setting

River Systems

Kuttanad is one of the principal rice-growing regions of Kerala state. Kuttanad region is characterised by patches of land mass literally floating over a conglomeration of rivers, rivulets, canals and water ways which give a criss-cross pattern from a bird's eye-view.

This configuration has been formed by the confluence of four rivers - the Meenachil, Manimala, Pamba and Achenkoil. The Meenachil river enters the region at Neelimangalam and Nagampadom. The Manimala river enters Kuttanad at Thondara, and Pamba at Erapuzha. The entry point of Achenkoil river is Pandalum.

The Pamba river which is wet throughout the year supplies the water for irrigation and drinking to the Kuttanad region. After entering the region, the Meenachil river spreads into a number of waterways and discharges
into the Vembanad lake. The total length of the main river course is 82.4 km. Rivers Pamba and Manimala combine before joining the Achenkoil. These four rivers are interconnected by an intricate network of canals, rivulets and waterways so that they cannot be separately identified in Kuttanad region. The total length of the rivers, canals and rivulets is estimated to be 240 km.

The river systems in Kuttanad finally discharge into the Vembanad lake. The Vembanad lake extends from Alleppey in the south to the Cochin Harbour in the north where it opens to the Arabian Sea. In addition to the already mentioned four rivers, Periyar, Muvattupuzha and several small streamlets also end up in Vembanad lake. Thus the water in the lake is a mixture of saline water from the Arabian Sea and the fresh water from the river systems.

The Map of Kuttanad region clearly depicts the river systems of Kuttanad.

**Topography**

Kuttanad lies between latitudes 9°8' and 9°52' and longitudes 76°19' and 76°44'. The land area is about one metre above Mean Sea Level. This varies from 0.53 metre to 2.4 metres above Mean Sea Level (M.S.L.). However
the paddy fields in Kuttanad lie 0.6 to 2.1 metres below Mean Sea Level (as they are reclaimed from the lake) and perhaps it is the only place in India where paddy cultivation is carried out below Mean Sea Level.

**Climate**

The temperature in Kuttanad varies from 70°F to 90°F. Humidity is comparatively high due to the omnipresence of water.

The driest months of the year are January and February. The summer season occurs during March, April and May.

The average rainfall is about 115" and 83 per cent of this occur during monsoon months, i.e., June, July and August. During the south-west monsoon season, the rivers and canals swell up and as a result the low-lying areas will get flooded. In these areas, the houses will be surrounded by water during this season. The total discharge of water in July and August during the south-west monsoon is 1,89,000 cusecs.\(^1\) The retreating monsoon is known as north-east monsoon which occurs in November and October. This monsoon can also cause medium floods, but is not severe like the south-west monsoon.
The major characteristics of the geographical setting in Kuttanad can be summarised as below:

(1) A system of rivers, rivulets, canals and waterways which is filled with water throughout the year resulting in waterlogging.

(2) Intrusion of salinity from the Arabian Sea which is severe during summer.

(3) Cultivation is carried out below Mean Sea Level.

(4) The area is prone to flood hazard during the monsoon season.

**Demarcation of the Region**

Kuttanad region is the deltaic formation of the four rivers as mentioned earlier. The people belonging to other areas in the state have an image of Kuttanad based on three aspects. Firstly, it is perceived as an agricultural area; secondly, it is perceived as a landmass surrounded by rivers and canals; thirdly, it is perceived as an area where the only form of transport is through boats.

The demarcation of Kuttanad region is, however, a difficult process as the landmass is a hydrological continuum inter-linked with the river systems which cuts across administrative boundaries.
Different committees appointed by the Government of Kerala to submit reports on the development of Kuttanad demarcate the region in different ways. Kuttanad Development Scheme identifies 39 villages as part of Kuttanad region on the basis of flood submergence, saline intrusion and lack of road communication. It eliminates the surrounding areas which have linkages to Kuttanad. Following the jurisdiction of Punja Special Office which provides assistance to cultivation, the Kuttanad Enquiry Commission identifies 79 villages.

The high power committee on Comprehensive Development of Kuttanad defines Kuttanad in terms of -

(1) a core area based on any one of the four subsystems - the resource subsystem, the agricultural subsystem, the communication subsystem and the administrative subsystem;

(ii) a peripheral area based on the hydrological subsystem which influences the ecology of Kuttanad region and the ecology of which is influenced by Kuttanad region. (4)

Usually, the people demarcate the region into Upper Kuttanad, Lower Kuttanad and North Kuttanad, based on geographical characteristics and contiguity with the Vembanad lake. People in Lower Kuttanad do not consider coastal areas as part of Kuttanad. Their concept is based on their closer relationship with land and water, mode of transport, isolation from the rest of the region and the resulting cultural identity.
The identity of people in Kuttanad is based on environmental, territorial and spatial aspects and the resulting behavioural elements such as movement in the physical space. However, this does not mean the non-existence of subgroup identity at various levels based on class, caste and 'karas'.

Considerable homogeneity is found in Kuttanad in terms of interaction of the people with the environment. The total environmental system influences each and every village more or less the same way, though there may be quantitative differences. The people in any village interact with the different subsystems in the core area. Stated more concretely, it is found that people in one village own land or paddy fields in another area where there is a variation in agricultural practices or labourers from one area migrate to another for work etc., etc. Homogeneity is also observed regarding the problems facing Kuttanad, for example, salinity, growth of water-plants, etc. Considerable homogeneity is also achieved after the construction of some physical structures in Kuttanad. This study is depending on the continuity and homogeneity of the region for the generalisation of the findings.

But, within this homogenous system, heterogeneity can be observed with respect to some aspects. An exposition
of this will guard against any errors in the generalisation of the findings. The variations can be observed in the following aspects:

(1) Incidence of flood submergence. During floods, the continuum of river systems which join the Vembanad lake produce variable impacts on the land mass lying along them. In the upper reaches the water rises by two metres during floods, while in the lower reaches the water rises by only one metre. This is because, compared to upper reaches the lower reaches have vast expanse of water bodies to spread the flood waters. However, the havoc caused by flood waters is much more serious in the lower reaches of the hydrological system as the land masses lying along it are mostly low-lying.

The variation in Mean Sea Level is another factor which contributes to the variation in flood hazard. As the river system is connected to the Arabian Sea, the movement of water (tidal action) in Kuttanad is dependent on the level of water in Arabian Sea. If the level of water in the sea is high, not only there is little scope for draining the flood water from Kuttanad, but water from the sea will enter the river systems. The effect of this will vary according to the Mean Sea Level.

(ii) Variation can also be noted in the degree of salinity that is felt in different areas in Kuttanad. The degree of salinity is least in Upper Kuttanad which is situated away from the Vembanad lake and the Arabian Sea. The salinity increases down-stream and the most vulnerable areas are the ones contiguous to the lake. However, after the construction of salt-water barrier at Thanneermukkam, considerable homogeniety has been achieved with respect to this problem.

(iii) Most prominent variation is noted in the configuration of agriculture. Different soil types that exist along the river system have given rise to variation in some agricultural practices. This aspect will be expatiated in the section on soil types and agro-ecological context.
Soil Types

A mixture of sand and clay in varying proportions is the soil type in Kuttanad. Decayed organic matter containing decayed parts of wood have been observed in some areas. The logs of burned and charred wood are found in some areas in Thakazhi, Thuravoor and Vaikom. People believe that the place was once called 'Chuttanadu' (burned area) that later became Kuttanad.

Geologically, this area is considered as a recent sedimentary formation. According to geologists, the Arabian Sea once extended up to the eastern border of the region. Due to Warkalay Laterite formation, the recent land area emerged forming a bay into which the rivers discharged the water. The silt carried by these rivers helped to form the coastal regions west of Kuttanad. The lagoons were gradually converted into wet paddy fields which now characterise Kuttanad.5

The entire agricultural area in Kuttanad can be classified into three categories according to soil types and characteristics of land and water. They are -

(1) Karapadoms
(2) Karilands
(3) Kayal lands
(1) Karapadoms

They are situated away from the main lake and irrigated by the water ways and canals. 'Kara' means land, and as the name indicates they are paddy fields reclaimed from low-lying areas. Karapadoms are distributed throughout Kuttanad. The distribution is as follows:

<table>
<thead>
<tr>
<th>Area in hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Kuttanad</td>
</tr>
<tr>
<td>Central Kuttanad</td>
</tr>
<tr>
<td>Lower Kuttanad</td>
</tr>
<tr>
<td>North Kuttanad</td>
</tr>
</tbody>
</table>

The land area is 0.3 to 3.0 metres below Mean Sea Level. They are double cropped fields and during floods they are replenished with a rich deposit of silt carried by the river.

(2) Kari Lands

As the name indicates, the colour of the soil in these paddy fields is black. They are marshy and acidic.

About 4050 hectares of karilands are situated on the north, in Vaikom and Thuravoor, and about 2025 hectares are found on the south, in Purakad. The lands lie below Mean
Sea Level and the water table is about one metre below the surface of the soil. The water is mostly saline.

(3) **Kayal Lands**

These are recently reclaimed beds from the Vembanad lake and cover an area of 8100 hectares. They are spread over the revenue villages of Chennamkary, Kainakary, Pulincunnu and some parts of Veliyanadu of Kuttanad taluk and Thiruvarpu and Kumarakom of Kottayam taluk. The fields are situated 1.5 to 2.0 metres below Mean Sea Level. The salinity of water and flood havoc are some of the problems felt here.

**Agro-Ecological Context**

The foregoing exposition of the soil types and the corresponding variation in agriculture along with different impacts on the landmass help us to delineate the region into agro-ecological zones, though it may be difficult to demarcate them into separate administrative entities. They usually cut across panchayats or revenue villages.

The High Power Committee delineates the region into seven agro-ecological zones. They are: (i) Upper Kuttanad, (ii) Lower Kuttanad, (iii) Kayal Lands, (iv) North Kuttanad, (v) Coastal Kuttanad, (vi) Purakad Kari, and (vii) Vaikom Kari.
This classification is based on three criteria, viz., incidence of flood submergence, vulnerability to saline intrusion and acidity of the soil and the impact of these factors on land use. They are delineated by taking 'padasekharam' as the unit.  

Section II

Kuttanad Taluk

Kuttanad Taluk, comprising low-lying villages, was formed in 1956 on the recommendation of the Committee for the redistribution of villages and taluks. The land characteristics of Kuttanad taluk given in table 4.1 highlight the water-logging in the area.  This is typical of majority of the villages in Kuttanad. 80.9 per cent of the total area consists of wet lands like 'kayal' lands, 'kari' lands, rivers and canals. This is very high compared to Kuttanad region as a whole because peripheral areas away from the river systems are also included under the region.

Kuttanad taluk can be considered as the heart of Kuttanad region in terms of its geographical characteristics, resource use and hydrology. A major part of the river systems, we stated earlier, belong to this taluk. Majority of the kayal lands and kara lands are situated here.
Table 4.1  Land Characteristics of Kuttanad Region and Kuttanad Taluk

<table>
<thead>
<tr>
<th></th>
<th>Percentage of wet land</th>
<th>Percentage of garden land</th>
<th>Percentage of public land</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kuttanad Region</td>
<td>49.4</td>
<td>38.2</td>
<td>12.4</td>
</tr>
<tr>
<td>Kuttanad Taluk</td>
<td>80.9</td>
<td>7.7</td>
<td>11.4</td>
</tr>
</tbody>
</table>


The revenue villages and the area of each village are given in table 4.2. Among these villages, Thalavadi and Thakazhi belong to Upper Kuttanad, while the rest of the villages belong to Lower Kuttanad region.
Table 4.2 Revenue Villages and Area of Each Village in Kuttanad Taluk

<table>
<thead>
<tr>
<th>Village</th>
<th>Area in hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pulincumnu</td>
<td>3105.11</td>
</tr>
<tr>
<td>2. Kumarakom</td>
<td>5472.32</td>
</tr>
<tr>
<td>3. Chennankari</td>
<td>5502.62</td>
</tr>
<tr>
<td>4. Neelamperoor</td>
<td>990.18</td>
</tr>
<tr>
<td>5. Veliyanad</td>
<td>1942.14</td>
</tr>
<tr>
<td>6. Ramankari</td>
<td>1135.57</td>
</tr>
<tr>
<td>7. Muttar</td>
<td>1047.97</td>
</tr>
<tr>
<td>8. Thalavadi</td>
<td>1576.47</td>
</tr>
<tr>
<td>9. Kozhimukku</td>
<td>2712.61</td>
</tr>
<tr>
<td>10. Thakazhi</td>
<td>2528.83</td>
</tr>
<tr>
<td>11. Champakulam</td>
<td>2297.51</td>
</tr>
<tr>
<td>12. Nedumudi</td>
<td>2023.35</td>
</tr>
<tr>
<td><strong>Total Area</strong></td>
<td><strong>30334.68</strong></td>
</tr>
</tbody>
</table>

**Pulincunnu Village - A Short Presentation**

Pulincunnu is one of the twelve villages of Kuttanad taluk. It covers an area of 3105.11 hectares (31.05 sq.km.). Pulincunnu is one of the most developed villages in Kuttanad region.

**The Surrounding Area**

Pulincunnu is half-way between Alleppey town and Changanacherry town and also Alleppey town and Kottayam town. Alleppey lies to the west of Pulincunnu, Kottayam and Changanacherry to the east. The village is surrounded by Chennamkari village to the east, Kainakari to the west, Champakulam to the south and part of Vembanad lake to the north. The Alleppey-Changanacherry road passes almost through the southern border of the village.

Alleppey, Changanacherry and Kottayam are important towns for the people as these towns provide the marketing facilities. People also go there for specialised medical treatment as there is one medical college at Alleppey and another at Kottayam. In terms of agriculture and administration, people are closer to Alleppey as the district headquarters offices, Punja Special Office, Agricultural Income-tax Office, etc. are situated at Alleppey which is 20 km away from the village.
Administration

Pulincummu panchayat has ten wards and ten elected members. The president of the panchayat during our field work was a Nair landlord. People complain that the panchayat is almost dormant and does not undertake the developmental works such as repairing of roads, replacing bridges, etc. At the time of our field work, the distribution of pension for agricultural labourers was entrusted with the panchayat. The panchayat executive officer was interviewing the candidates.

The number of buildings in the different wards are given in table 4.3. This includes shops, schools, and other institutions apart from residential houses. The total number of households in the panchayat is 2593.

'Karas' of the Panchayat

Like most of the Kerala villages, Pulincummu is an administrative unit than a sociological unit. The different wards of the panchayat are constituted only for administrative purposes. However, at least four separate 'karas' can be thought of considering the geographical isolation, the locational orientation of the people and sociological factors. They are Pulincummu, Kottabhagom, Kannadi West
Table 4.3 Number of Buildings in Different Wards of Pulincunnu, 1980

<table>
<thead>
<tr>
<th>Ward No.</th>
<th>No. of buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>501</td>
</tr>
<tr>
<td>2</td>
<td>440</td>
</tr>
<tr>
<td>3</td>
<td>452</td>
</tr>
<tr>
<td>4</td>
<td>426</td>
</tr>
<tr>
<td>5</td>
<td>431</td>
</tr>
<tr>
<td>6</td>
<td>542</td>
</tr>
<tr>
<td>7</td>
<td>375</td>
</tr>
<tr>
<td>8</td>
<td>495</td>
</tr>
<tr>
<td>9</td>
<td>337</td>
</tr>
<tr>
<td>10</td>
<td>387</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4386</strong></td>
</tr>
</tbody>
</table>

Source: Panchayat Tax Register, 1980

and Chathurthiakari.¹² Monkompu can also be considered as a separate sociological unit although it forms a part of Chathurthiakari.

Pulincunnu 'kara' which forms a part of Pulincunnu panchayat consists of ward numbers 5 and 6. In terms of numerical strength, Christians are the dominant caste here.
In Kottabhagom also, Christians occupy the dominant position. Christians and Nairs are equally distributed in Kannadi West which consists of ward number 2. Monkompu which is a part of Chathurthiakari 'kara' consists of ward number 8. This is the only place in the village where Brahmin houses are located. But in terms of numbers, Christian and Nair households are more than the Brahmins. In Chathurthiakari which also forms part of the Chathurthiakar 'kara' and which consists of ward numbers 9 and 10 of the panchayat, Christians occupy the dominant position. All the other castes are equally distributed except in ward number 8 and ward number 6, where their number is less. However, the percentage of scheduled castes is very high in Chathurthiakari 'kara' when compared with other 'karas'. In terms of land ownership, Christians occupy the dominant position except in Monkompu where landlords belonging to Brahmin (Tamil) community and Nairs live.

Economy of the Village

The agricultural economy of the village is part of the wider system. It is influenced by the total agricultural system of which administration, cropping pattern, agricultural operations, wage structure, credit facilities, use of pesticides and fertilisers, etc. form the part. People of any one village do not have any control over it.
For example, wage rates are decided by the Industrial Relations Committee and the entire Kuttanad region has to follow the same.

Agriculture forms the major economy of the village. Other important constituents of the primary sector are based on coconuts, fishing, limeshell digging, etc.

**Institutions in the Village**

There are three high schools and four primary and upper primary schools in the village. Two of the high schools are run by the Christian Church. The literacy of the population is very high, almost 80 per cent.

There is one post office and telegraph office at Pulincumnu 'kara'. Monkompu and Chathurthiakari are also served by post offices as these are geographically isolated. Other important offices situated in the village are Block Development Office, Sub-Treasury, Rice Research Station, Sub-Registrar's office, etc. There are two nationalised banks and two scheduled banks in the panchayat.

As there are a number of important offices in the panchayat, people from outside the village come here for official work. A large number of people from Alleppey town and Changamacherry town work in these offices. A number of hotels and tea shops have sprung up as a result of this floating population.
We could see three markets in the panchayat, two at Pulincunnu 'kara' and one at Monkompu. In Monkompu, the market is situated on the street adjoining the temple, while in Pulincunnu the two markets are situated on the street connecting the two churches.

The Taluk Headquarters Hospital is situated in the Pulincunnu 'kara'. Till 1979 it was a Primary Health Centre. Though the building is complete, the facilities like staff pattern, etc. usually available in taluk hospitals are not provided.

Three of the private medical practitioners in the panchayat belong to the homeopathic system. There is one ayurvedic practitioner in Monkompu and one private allopathic dispensary in Kannadi. Two of the doctors serving in taluk hospital are also staying in the panchayat, and do private practice. There are two medical shops in Pulincunnu, near the hospital.

As Christians are more in number, there are numerous churches in the panchayat. Two of them, which are tall structures, stand out prominently as we approach Pulincunnu by boat. There is one separate church for the converted Christians. In Pulincunnu, we saw one small temple, but the one in Monkompu is more famous in the village.
Mode of Transport

The only mode of transport is by boats. There are small country boats in every household. Labour households have small country boats known as 'kothumpu valloms' by which they go to different padasekharams for work. Rich households have big country boats to carry the fertilisers, cropped paddy, etc. Some rich cultivators have motorised boats (known as 'pleasure boats'). The small country boats serve as ferries to cross the canals and rivers.

Most of the bridges connecting small canals are made by putting coconut tree trunks across. Sometimes, a rope is tied to two bamboo sticks on either banks to keep the balance on the tree trunks. While walking across, one can catch the rope in order to keep the balance. However, people of Kuttanad can very well walk across the tree trunks without using the ropes.

There are no paved streets in the panchayat. The paths are made up of clay and soil. The panchayat is well connected to other important places by the service boats of Kerala Water Transport Department. The service between Alleppey and Changanacherry ply via Pulincumnu. Boat jetties are made of wooden planks placed on two coconut tree trunks. There are also boat services to Kottayam and Neelamperoor which take school students studying in the high schools of Pulincumnu and outsiders who work in the offices.
Notes and References


8. The paddy fields in Kuttanad, known as 'padasekharams' (collection of fields), are blocks bounded by canals, rivers and other partitions. The size of a 'padasekharam' ranges from 2 acres to 2366 acres.

9. The Kuttanad region here is according to the definition of Kuttanad Enquiry Commission.

10. Bridges across small canals are made of coconut tree trunks which need replacement.

11. The Executive Officer is a Government servant in charge of the administrative work of the panchayat. In the interview, the Executive Officer was asking questions regarding age, work experience, etc. One panchayat member was also present.

12. In our sample, all the four 'karas' are represented.