Chapter III

Aspects of Village: settlement, agricultural production, irrigation and Rural society
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Village

Indian villages differ from others in some respects such as form, size, shape and internal structure and also have regional differences. Even in one region, morphology can be changed from place to place in relation to site of villages or internal structure of layout of houses, according to different models and hamletization. Rural settlements expand over time and sometimes emerge as villages through natural process and on some occasions village was created. Within the boundary of present Andhra Pradesh, the traces of early farming villages of Neolithic-chalcolithic phase have been found from sites like Utnur. But, during the time c. 500 to 1000 CE, no archaeological excavation has yet succeed in presenting a clear picture of the emergence and distributional pattern of rural settlements in Andhra. For that purpose we have to depend entirely on the land grant charters. An epigraphical study of Andhra villages between c.500 to 1000 CE. Reveals divergent traits based upon locations, surface water (river, tank, canal, pond, well), the nature of soil, vegetal cover and cultivation. And the features mentioned above can be noticed from the boundary specifications of donated land/villages. But, while investigating the aspects of village-settlements, some facts should be kept in mind. First, as our information solely depend upon the land-grant charters, and as their number is limited (in comparison to the Chola and Kakatiya epigraphs), it is, therefore, not possible to take into account the vast area of Andhra Pradesh and doing
justice to every nook and corner of it. Second, even in the land-grant charters, we come to know only about those villages/plots, which have been given away. But at the same time our knowledge remains inadequate about the villages referred to as boundaries of the granted ones. So our data is bound to be meagre. Third, in the rural settlement structure, the largest volume of information we can avail are about the fields and at the same time, the plates throw little light on the habitation-area and nearly remain silent about pasture-land. Fourth, details of field or village-limits are not available in all records. Therefore, the particular land-marks can be related to a definite time-period and to that particular space.

Though the ancient village-formation can not be explained by modern factors, yet, some tendencies observed in modern times can be equally applied to the ancient days. So some aspects in modern Andhra village settlement pattern would not be altogether uncontextual. In the Telugu-speaking area, the settlement-pattern is considered to be usually agglomerated, though amorphous. Lineation occurs along the coastal areas where the fishing-villages are invariably linear and straight. From these two comments made by two different settlement-geographers it is certain that natural and physical geography leave impact on settlement-pattern. It is clearer in Spate and Learmonth’s writing, where they examined the pattern in the Krishna-Godavari area by saying “Lateritic shelves along deltaic margins are also important building sites, poor in themselves but offering rough grazing scrubby woodland..., and providing space for dry crops, the flats below being entirely given over to paddy.” However from Andhra epigraphs, the form of a village-settlement can never be determined though some indication of habitation-area in the form of house-site is visible.
Throughout 500 years we notice grant of land/village along with grhaśtaṇaṁ, āvāsaṇaṁ, grhaścetra or nivesaṇaṁ to the brāhmaṇaś and a few occasions to deities, as revealed from charters issued in Srikakulam Vishakhapatnam and Krishna-Godavari regions. The donation included both houses and house-sites. One village in Karmaraśtra was gifted on condition that the brāhmaṇa donees would inhabit the village (vasadbhogamaryādāyī, samprādām). In Srikakulam, the division or part where the brāhmaṇaś lived has been mentioned as brahmachārīchchhedā, the residential area of the brāhmaṇaś. That proves beyond doubt that here the village afforded space to more than one caste and the brāhmaṇaś found for themselves a separate habitational area or chheda. According to the settlement-study, a multi-cast village is more likely to have hamleted pattern. Because, the caste-group have to maintain distance from each other and therefore physically break up the village into sections. In the present Andhra too, the village consists of small clusters, each forming a tola, tuli or para. Probably the modern tola correspond to ancient chhedas.

One evidence from Masulipatnam from 10th century suggests that the house-site in Pambarru donated to Yuvaraja Ballaladeva Velabhaṭa had or its east Badiralama[ji?]ya paṭu( residence); on the north Tinthur[̣]taḥama paṭu and on the south Jivarakṣa paṭu. Velabhaṭa was probably brāhmaṇa by caste. It is most likely that he would like to own a house among the brāhmaṇa community and the paṭu mentioned above belonged to brāhmaṇa. Therefore, in that part of Andhra, the houses occupied by the brāhmaṇa stood in close proximity to each other. And there was rachchhā, the court of audience, on the north. Now, what is the cause of the existence of rachchhā within the brāhmaṇa quarter? Is it owing to the fact that they enjoyed
prominent position in it, controlled it and dominated the institution? Another grant from the same place refers to the committee of five (panchavarim). Here the donees' sons and grandsons were honoured by the chief people (mahājanas) who have made them serve on the committee of five. So here we can see that the brahmaṇa mahājanas and the relatives of the donee brahmaṇa worked on behalf of the committee of five.

A few references show that there was enough space between two brahmaṇa houses. In Krishna-Godavari tract, house-sites or fields were awarded along with puspadvātika (flower-garden) which should have been accessible from the grha. It is by no means accurate to think that all the brahmaṇa families possessed the flower-garden, but nevertheless, several families beautified the expanse with vātikās. Nowadays in coastal Andhra the houses tend to be contiguous and laid in an unbroken line, adjacent ones quite often sharing a common wall between themselves. As one proceeds southwards to Madras the arrangements remained the same, but the houses became separate. We do not know if the description is applicable in context of ancient Andhra though no wall is mentioned in the charters. But the statement implies that the habitation area of each locality has its own speciality which phenomenon should have been continued from earlier time.

The agricultural land or kṣetra was probably separated from the vāstu area. Interestingly, no grha-kṣetra or nivesana was mentioned to have been located beside the kṣetra. Neither a house-site ever formed the boundary of a grāma. So, the nivesanas neither intersected the agricultural land nor were considered marks of specified boundary of village. In the contemporary Andhra villages, all the agricultural land belonging to the villagers are in
one side of the village. But how far this was true in the case of the then Andhra villages we do not know. The plate referring to the *brahmachārichchheda* displays a unique feature regarding the question of division of agricultural field among different sections of society. The given phrase runs as—“brahmachārichchhede halasya bhumirudakamārga nivesanasahitā” which means that one hala of land including the water-course and the house-site situated in the brahmacarin quarter were donated to a *brahmaṇa*.

The *brahmachārichchheda* was located in the village Siddhārthhaka in the Varāhavarttanī visāya. Now a few remarks can be made from the phraseology. 1) The *nivesana* (house-site) and the *hala* (plot) were within the confines of the brahmacarin quarter which leads us to the suggestion that this quarter also housed other *brahmaṇas*’ homesteads and plots. 2) As the brahmacarin quarter was included within the limits of Siddhārthhaka and did not embrace the whole of it, it is clear that there were other quarters as well belonging to other groups. Another point to be observed is that the *brahmaṇa* assignee was privileged to enjoy the water during the summer (*grsmodakam*) equally with the other house-holders (*kutumbaistulya*). If the brahmanical dwellings and the houses of *kutumbikas* were in some distance from one another, and their fields as well, then the watercourse (*udakamārγa*) probably passed through more than one *chheda* (quarter) and supplied water to all. Then the agricultural fields were probably adjacent to one another in order to enjoy the benefit of the water-course.

From the 6th century Nellore-Guntur region comes another evidence which strengthens the suggestion further. In the Nutulaparu village in Karmarāstra
a field was given to a brahmana. It was bounded by some fields occupied by the brahmānas such as:-

i) Penukaparavam brāhmaṇa kṣetram
ii) Donavadipta brāhmaṇa kṣetram
iii) Ettakanta namā brāhmaṇa kṣetram
iv) Velerukandi namā brāhmaṇa kṣetram
v) Śramatatāka brāhmaṇa kṣetram
vi) Velukatataka brāhmaṇa kṣetram

But not always the plot assigned to brahmana donee had brahmanakṣetras on its border. A field in the village Mangavedu in the Gudrahara viśaya (Krishna district) was encircled by Kappurem cherm, Cherukani chenu and Rattodi chenu (chenu denotes the field with black-cotton soil). Now the brahmaṇa donee was awarded a field in the midst of one field owned by a person of Boya community and another owned by a rattodi (belonging to the fourth caste or an administrative personnel). So, here the notion of brahmanical seperation of agricultural land is inapplicable.

At the time of the transfer of an area, it could be specified in the following terms such as cardinal directions, adjoining plots or local land-marks, landmarks defining the territorial limits of the village (river) and unspecified limits of other villages. In Srikakulam area, local land-marks often find mention as field-boundary rather than adjoining plots, thus emphasizing more on accuracy. We do not know if it had any connection with the ever-increasing demand of land or nothing but an indication of maintaining some identity or merely a custom. On the other hand. In this area, we find the proof of the expansion of settlement and boundary-alterations. In 551 CE.,
Anantavarman’s son Ganga Devendravarman donated the village Tamarachera in the Varahavarttan visaya consisting of the Srikakulam and Narasannapeta talukas to brāhmaṇas.¹⁷ It was probably donated again in 628 CE. to 11 brāhmaṇas of different gotras and Vājasaneyā charana.¹⁸ When the village was bestowed upon for the first time, it had vanarājikā (forest-cover) and pāṣāṇa as its boundary. But when it was granted for the second time, it had only hamlets adjacent to the villages. And the village together with its hamlets were parted with. No boundary is mentioned. R.Y.Singh has written “Often the boundary between two villages is the forest land, usur land or some physical barrier, i.e., nala, mound, etc., or only the (mend) field-boundary. This boundary remained undemarcated in areas where settlement of land is not complete physically or on record.”¹⁹ So, we can hypothesise that, in the surroundings of Tamaracheru there was reclamation of lands which were turned into hamlets and regarded as part of the village. But the boundary of the hamleted region was not yet fixed. On the whole, Tamaracheruvu presents the evidence of expansion of settlement after 80 years.

According to B.D.Chattopadhyaya, the typical variations of villages could emerge from the historical conditions for the origin of rural settlements which could differ over space and time.²⁰ The conditions could at least be of two types:-

i) A particular community inhabiting a particular area could establish a small settlement-unit of vāstu and kṣetra.

ii) A new settlement over a large tract of land for brahmanas could be typologically different and the inter-relationship of social groups
and at the same time the settlement-structure should be of an altered nature here.

The epigraphical example of the second condition comes from the Vizianagaram area. The three Gudivada grants\(^{21}\) issued in the 7th century CE. in the Plakki viṣaya disclose another tale about the formation of village.

The first grant states that Punnagapadra, a hamlet of Ādivāsa, was populated and a portion of Kuliṇātaka was added to it. This new unit forming the western division of Ādivāsa was made an agrahāra and granted to the brāhmaṇas (Ādivāsa Punnagapadravastadidayam [Punnagopavana-grhaṇānam kṛtvā] Kuliṇātakakṣetrasahitām paṣchimakhaṇḍeḥ sarvakaram pariḥārena agrahāram kṛtvā)

The second grant says that the village of Kuliṇātaka was populated and having been constituted into an agrahāra with the addition of 32 nivartanas of land taking from the adjoining village Kunduru was granted (Kuliṇātaka grame vasatīṅkṛtvā Kundura grāmaśīno dvātrīṃśa nivartanam chchhitvā...sarvakarapariḥārena agrahārikṛtva).

In the third grant, we are informed about the boundary of the village Kunduru; samudra on the south, Gōlāva sarovara and Nāguvula sarovara, Kandikattu and Kodakattu on the west and Avaṅkattu on its north.

Minute observations would reveal some facts. First, at the time of the first Gudivada grant, neither Ādivāsa nor Punnagapadra or Kuliṇātaka was referred to as grāma. But the name Ādivāsa itself implies that it had been occupied from old times. So it was a rural settlement, but not a village,
rather a hamlet. A hamlet is defined as a small group of houses where live a homogenous people whose only occupation is related to primary resource-mobilization (agriculture, fishing etc.). Punnāgapadra (meaning a forest of Rottleria Tinctoria) was earlier unpopulated. That is why a habitat was created in Punnāgapadra and a kṣetra from Kulivāṭaka was affixed to it. The matter of grant was informed to the kutumbinah of the whole Plakki visaya.

Second, at the stage of the second Gudivada grant, Kulivāṭaka had already assumed the status of a grāma. But probably it had a small number of villagers. So it was populated by royal initiative and land (kṣetra) from the village of Kunderu was attached to it. Significantly, the second Gudivada grant spoke to the kutumbinah of the Kunderu grāma. Here comes the question why the kutumbinah of the Kulivataka were not addressed. Either the grant aimed at informing the kutumbinah of Kunderu of their deprivation of land-rights or Kulivāṭaka had no kutumbinah (cultivators). Probably, its first dwellers were fishermen (the mention of samudra in the third grant on the boundary of Kudivada strengthen this conjecture.

Third, now after the third Gudivada grant, the boundary of Kulivataka nearly assumed a fixed status, and the area had atleast four settlements with villages and agraharas combined; Ādivāsa, Punnāgapadra and its fields (taken from Kulivāṭaka), Kulivāṭaka and its fields (taṣen from Kunderu) and Kunderu. We can assume that after the re-arrangements were completed, Punnāgapadra and Kulivāṭaka’s population cultivated these two agrahāras whereas Kunderu and Adivasa neither were transferred into agrahāras nor were compensated for their loss of land.
The expansion and renovation of settlement was partly related to the expansion of agriculture. The relevant evidence, again, comes from Srikakulam-Vizagapatam area where Indravarman IV issued a grant awarding the Bhukkukura *chheda* in Kuraka *rästra* in 7th century CE. Bhukkukura was not a village and the *kuṭumbinah* were not dwelling here. They cultivated the division and has been referred to not as *grāmanivasinah*, but as *karsakān*. The region was not fit then for residential purpose. In another 8th century grant, *Kalamadambisakuna* in the Varahavarttanī *viṣaya* was assigned to *brāhmaṇas*.

The document shows the correlation between the settlement-extension and intensified agricultural operation, cited very well by its bordering landmarks. Among the boundary-marking places we find the term like *kupottara halah* and names like Tivādrahāi and Piśāhali. Most probably, these were the localities under cultivation at the hour of the grant. *Halah* and Tivādrahāli were adjacent to the *vanarajīḥ* facing south. So, these areas under cultivation had enough scope to spread in this direction. Besides this, there were *jalamārgasahita vanarajīḥ* (forest with water-courses) on the boundary of villages which was again fluid in nature.

In the same grant, the surrounding villages are mentioned as Indrapura, Dantapura, Sāmantapātaka and Sakunagrāma the names of which suggest the presence of a large number of *brāhmaṇa* population or the state-interference (through state-societies) since in Andhra we find few village-names which were Sanskritic in nature. Amidst them the name Kalamadambisakuna sounds quite different suggesting Telugu or Dravidian origin. We can not rule out the supposition of its being a tribal village and then its lay-out pattern and internal structure should have some specialities for according to the settlement-geographer, “Within the same territory, the difference in village-
shape and house-type between that of a tribal and non-tribal village is remarkable. The sequence of occupation of land by tribal groups and a comparatively recent change from a gathering-hunting economy to an agricultural one might explain this phenomenon. Building houses along the edge of the forest, which initially was the main source of livelihood, might have lead to the formation of linear pattern.”

We do not know how far this general description correspond to the ancient Varāhavarttaṁ, but a process roughly similar to it might be going on in Kalāmadambisākuna and its surroundings. In the grants of Srikakulam-Vishakhapatnam region, the mention of vanarājikā is often noticed (given in the following chart) which indicates the fluid nature of village-boundary and we can not rule out the possibility of the existence of the communities entirely dependent on forest in this region.

<table>
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<td>Boundary of a village</td>
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<td>Andhavaram grant of Anantavarman, 716 CE.</td>
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<td>Some of them on the boundary of villages</td>
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<td>Mention of vanarājikā for 3 times</td>
<td>Boundary of a village</td>
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<td>Tekkali plates of Devendravarman, 810 CE.</td>
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<tr>
<td>Grant Type</td>
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<td>-------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Chicacole</td>
<td>for 2 times</td>
<td></td>
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<tr>
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<td>for once</td>
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<td>for 4 times</td>
<td>Some of them on the boundary of villages</td>
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<td>Mahesvaravata</td>
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**Agricultural production**

Of all the agricultural products, rice was the principal food-grain and Andhra was no exception in this matter. In the epigraphs, we find two Sanskrit terms for paddy—namely, dhānya and vṛihi. In the 9th century CE., the Ganga king Satyavarman issued a grant in the Galalai visaya (probably the Vishakhapatnam area) describing the area as dhānya sahasraka. We do not know if the term indicates the production of multiple varieties of paddy. At least three varieties of paddy were grown in the Deccan, viz, Śāli, vṛihi and syāmaka. By the time of the composition of the early-medieval agricultural treatise called Kaśyapīyakṛṣisūkti, people were fully aware of each of their sub-types and about their nourishment too. In the Andhra inscriptions, the reference of vṛihi comes from the charters issued in the Krishna-Godavari region, though there is no mention about any particular variety.
Sometimes in the copper-plate charters, the amount (weight) of the seeds fit for sowing is mentioned. In an 8th century grant issued in the East Godavari region, the donated land has been described as ‘land sowable with 20 khanḍikās of paddy seeds’ (vimśati khanḍikā vṛhīvīja paripramāṇāya kṣetram). In another 9th century plate confirming donation in the Krishna area refers to land with the sowing capacity of 10 kanthikas of paddy seeds (daśa kantika vṛhi vijavāpa pramānam kṣetram). Though according to Charaka, śāli is the best quality of rice, while vṛhi is the worst, in Andhra, vṛhi was probably regarded of high quality and śāli, a rare variety. The weight of khanḍikā was equal to between 800 and 1000 seers and when expressed in land-measurement, nearly amounted to 64,000 square yards of dry and 10,000 square yards of wet land. However, in Andhra epigraphs, its use as land-measurement is very rare as opposite to its quantitative expression.

So, on several occasions in the Krishna-Godavari region, land was measured not in terms of their actual measurement, but in terms of the amount of seeds capable of growing in a plot. Similar reference comes from the Nellore-Guntur region in the 9th-10th centuries CE. A copper-plate charter of Maṇgi Yuvarāja also mentions the term in quantitative approach in the context of a land-donation in Karmarāṭra. Sometimes, the paddy-field is also mentioned in terms of actual measurement, as in nivartanas in Karmarāṭra or in putti in the Cuddappah region. In other places, the evidence of the grain-measurement is available. In the Gudimallam inscription of 9th century CE., discovered in the Srikalahasti taluka of the Chittoor district, the revenue of the Viprapṭṭha village has been assessed as
500 kāḍi of paddy. D.C. Sircar has referred to pāṭṭi-kāḍi as a tax payable in grain at the rate of one kāḍi for each pāṭṭi of land. Another grant from Cuddappah confirms the practice of land-measurement and grain-measurement at the same time. It asserts the donation of 80 marturs of land the yield of which was 3 puttis, 1 tumu of vuttadu and 3 tumus of pralu. Now, as one putti is equal to 20 tumus and at the same time equal to 800-1000 seers, 1 tumu may correspond to 40-50 seers. One more plate from Cuddappah mentions the grain (adlu) amount of 5 puttis.

Another tendency to precise the characteristics of gifted land was to specify its amount of grain in cash. From the Manthapuri inscription of Khottiga (972 CE.) we come to know that the land donated to temple was assessed in this way. Here, the aruvana of the land for two crops was 20 pons. This epigraph comes from the Bhuvanagiri taluka of Nalgonda district.

Besides rice, there was pulse like kodrava (kodo millet). The Vemalupadu plates (Guntur) of Amma II mentions the donation of a field with the sowing capacity of 10 khāris of kodrava. Khāri is a measure of capacity equal to 16 dronas (drona is extensively used in the Bengal inscriptions where the word dronavapa is very common). According to Kāśyapa, kodrava should be sown in the fields plowed and leveled, line by line in the watered lands or in the tablelands.

Iksu was another crop growing in the Andhra region. In the Tekkali plates of Ganga Indravarman IV, the reference to šarkaravāṭaka is available. Evidently, it indicates the growing of iksu in uḍyāna or vāṭaka. Moreover, the garden fringed the land (halasya bhūmi) assigned to a brahmana. The
stream named Vidyutganga, which flew past the gifted land, probably supported the cultivation of iksu. Kāśyapa also suggested the growing of iksu in the watery land (jalakṣetra), gardens (udyāna) and on the borders of the fields on portions of highland (kedaraṇchlabhāgeṇu tārabhūmibhāgike-api vā).

Gardens, both flower-garden and orchard were established in this part of peninsular India. Sometimes, temple-gardens were set up by the king, or in other cases, flower-garden or grove was awarded by him to the brāhmaṇas. The following chart shows the inscriptive evidences of garden coming from the Andhra region in between the 500 and 1000 CE.

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<td>vati</td>
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<td>Ramesvaram ins., 7th c.</td>
<td>2 gardens</td>
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<td>Rachanapalle inscription, 7th-8th c.</td>
<td>Palm-grove</td>
<td>Cash and palm-grove donated as vrtti to Akkaśāla Chola chari</td>
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<td>IAR 1986-87, p. 101</td>
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<td>Ipur plates of Visnuvardhana III, 8th c.</td>
<td>puspa-vati</td>
<td>Land, house-site and flower garden were given to brāhmaṇa</td>
<td>Pithapuram, East Godavari</td>
<td>El XVIII, pp. 58-60</td>
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</table>
In some of the charters of Andhra, we find the types of donated land and of the land surrounding that plot. Kṣetra or land is the most common reference. Apart from kṣetra, there are several land-types as described in the inscriptions. Pannasa or wet land (also known as niru nela) was often chosen for donation. This type was sometimes adjacent to the chenu or land under cultivation. Chenu was known as dry category and in one instance, existed side by side the land producing kodo millet. The high and dry land, known as sthala or veli was cultivated also. D.C.Sircar has explained veli as depending totally on rain. A chart is given below to show the regional pattern of land usage.
<table>
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<td>Indukuru ins. of Mahendravikrama, Chola Maharaja, 7th c.</td>
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<td>pannasa</td>
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<td>Poladurti ins. of Chola Mahārāja, 7th c.</td>
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<td>pannasa</td>
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<td>Uruturu ins. of Chola Mahārāja, 7th c.</td>
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<td>pannasa</td>
<td>Kamalapuram, Cuddappah IAP, CD I, p.7</td>
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<td>Tippaluru ins. of Punyakumāra, 7th c.</td>
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<td>50 marturs pannasa</td>
<td>Kamalapuram, Cuddappah IAP, CD I, pp.10-11</td>
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<tr>
<td>Naguru ins. of Erikal Mutturaju, 8th c.</td>
<td></td>
<td>80 marturs pannasa</td>
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We can see from the chart that primarily, wet lands were chosen for donation, and later the dry land Naturally, the land easier to cultivate attracted people first. Later the pressure on land led them to cultivate the dry land also.

As the fertility of soil differed from place to place and the regularity of rainfall was not uniform everywhere, the increasing population naturally had to depend on irrigated crop-production. The land grant charters of Andhra make reference to the demarcating symbols which margined the donated territory and the marks sometimes include some lake, pond or stream. From these references we come to know about the existence of water-bodies. But how these water-points were utilised remains totally obscure until we corroborate them with textual evidences and charters from areas other than Andhra.

**Irrigation**

Y.L.Nene has commented that while the Kṛṣiparāśara described mainly the rainfed farming, Kāśyapa focussed his attention on irrigated agriculture. Now, Parāśara wrote the the treatise on agriculture between c. 100 BC. and 100 CE. whereas, Kāśyapa represented the early-medieval and medieval period. There was an intermission of more than 500 years between these two personalities and the great span of time was sufficient for the
modification of agricultural approach. As a matter of fact, a transformation of attitude was indeed taking place and people in the meantime had been habituated to adapt new technology and newer rearrangement to adjust their respective regional imbalance instead of waiting for monsoon rainfall. Generally, four kind of hydraulic systems are prevalent in the East Coastal plains.49

1) Canals on the low lands fed by rivers, specilly in the delta region
2) Tanks on the low lands linked with streams
3) Rain-fed tanks in the areas without rivers
4) Wells on the uplands

Kasyapa, on the other hand, recommended:50

1) Constructions of reservoirs
2) Construction of wells
3) Construction of canals where he mentioned four sources of canal, namely:
   i) River
   ii) Tank, filled by water
   iii) Large lake
   iv) Canals collecting water from mountain-cascades

In Srikakulam, tanks are more dominant. This form of irrigation depends largely upon terrain, soils and rainfall.51 A very small percentage of area in Vishakhapatnam and Srikakulam is irrigated by wells.52 During 500-1000 CE., highlands find frequent mention in the Eastern Ganga grants as parvatikau dvau śikharau53, girināsika54, or merely as parvata.55 Among them, the 9th century grant mentioning parvatikau dvau śikharau also mentions the
demarcation symbol like Purudu \( \textit{vāpī} \) \textit{kramenç parvataśikhara} on the north of the village Musunika in the Varāhavarttañi \textit{viśaya}. The phrase clearly shows that the \( \textit{vāpī} \) or step-well named Purudu was situated in the hilly region. We find the mention of Ghosana \( \textit{vāpī} \) in the village Hondevaka in the Kroṣṭukavarttañi \textit{viśaya} (Narasannapeta taluka of Srikakulam district) where 2 and \( \frac{1}{2} \) \textit{halas} of \textit{sthala} was given in 580 CE. Here, the \( \textit{vāpī} \) was situated within the village. The \textit{sthala} bordered on the other \textit{kṣetrapāliś}, i.e., embankments of the lands.\(^{56}\) Perhaps, it would not be wrong to suppose that the \textit{kṣetras} on the east, west and north of the \textit{sthala} enjoyed the benefit of the \( \textit{vāpī} \) as the word \textit{pāli} suggests the existence of dykes or dams. We find another evidence where the \textit{vapi} was situated on the border of the village. In the Tekkali plates of 810 CE., we come across a village in the Rūpavarttañi \textit{viśaya} which was bounded on the south by three or more \( \textit{vāpis} \) (\textit{dakṣiṇena vāpya}).\(^{57}\)

Comparatively, the mention of \textit{kūpa} (well) is rare. We come to know from the Santa Bommali plates\(^{58}\) of 587 CE. that the donated portion of land in the Haribhața village in the Kroṣṭukavarttañi \textit{viśaya} was edged by a well. The Andhavaram plates\(^{59}\) of 716 CE. communicates about the location of \textit{kupottara- halah} (a field located to the north of a well) margined by the locality of Kalamadambisakuna in the Varāhavarttañi \textit{viśaya} (Srikakulam). Here the position of the \textit{kūpa} was outside the locality. In north-eastern India, the wells inside the village-habitat served the purpose of drinking and washing and those outside it were preserved for irrigation.\(^{60}\) But, in the Deccan, there were possibly no such differences for well command individually small areas, well-irrigation is laborious and costly and it tends
to be reserved for high-value specialised crops (garden-cultivation, sugar plantations and or first-class cereal production).  

There is no hint about the water-lifting technique in the copper-plates. Nowadays, varieties of lifting process prevail in western India and Maharashtra. These are Kos, Rahat, Pagpavathi and Dhinkvo - all present in Gujarat and the second in Rajasthan and Maharashtra too. Their mechanisms are as follows:-

1) **Kos**, where rope and bucket pulled by bullocks can lift 60 to 80 litres of water at a time and can irrigate half to one bigha of land during six hours of operation.

2) **Rehat** (Persian wheel) worked by bullocks which irrigates one bigha in a day.

3) **Pagpavathi**, similar to Rehat, but manually operated.

4) **Dhinkvo**, another manually operated power-lifting device consisting of a pot suspended from a rope tied to a larger end of a wooden pole pivoted on a vertical support with a weight attached to the shorter end.

In the early-medieval period, India was used to the application of *araghaṭṭa*, *ghatīyantra* or *arahahaṭṭaghatikā* where a number of buckets attached to a large wheel could lift water from well and at the same time watered the field. In south-eastern Marwar, they actually played their role as irrigation well and in the 12th century CE, they signified both well and the area of land which was irrigated by it. However, in Andhra, the *kūpas* or *vāpīs* were rarely given such identity.
From the mention of a large number of tanks both inside and outside the villages in the epigraphs of Andhra, Mangalam holds the view that every village had at least one irrigation tank. According to him, the sloping landscape provided the peasants with the opportunity of easy maintenance of tanks only by erecting embankments to prevent the downflow of monsoon waters. 64

Actually, there are three kinds of traditional irrigation system in Andhra:-

1) Cheruvu, the huge earthen dam built across a stream
2) Katas, the tank constructed by throwing earthen embankment, slightly curved at both ends across drainage-lines
3) Oddu (found in coastal peninsular India), a masonry wall built across a stream or river, to raise water to a certain height and then divert it to fields 65

In early-medieval Andhra, two instances are available where tatakas were probably dug up. The first is the Achyutapuram plates of 587 CE. 66 issued in the Varāhavarttanā viṣaya (Chicacole) where we come across the term taṭkapratiṣṭha (consecration or inauguration of a tank). The charter indicates that a dyke (pālli) or embankment/bridge was erected on the bank of rājatataka (probably constructed through the royal initiative) and also mentions the term udakabandha (sluice of the tank) which implies the control on the flow of water which surely drifted through a channel. A closer look into the plate gives at least some impression about the

66
construction activities going on around the lake situated in that area. The piece of land given in the Siddhārthaka village was edged by:-

1) The pāli of the rājataṭaka in the east and south
2) A boulder on the top of the gate of the northern pāli (uttarapālyā kapāṭasandhyupari pāśāṇa), then another boulder covered with bricks (seṣṭakonyah pāśāṇa) in the north

In other words, the rājataṭaka was equipped with embankments. In one place it was furnished by a kapāṭasandhi and special care was taken to strengthen the embankment as suggested by the existence of brickwork. Kāśyapa also suggested the use of brick (iṣṭaka) and mortar (sudhā) as these ensure the longevity of vāpī or kūpa. During the time of Vijaynagar kingdom, embankments dammed up valleys between ridges and most earthen embankments were faced with stepped masonry on the upstream side. “Small reservoirs may have no masonry or a few rows of roughly coursed boulders; large reservoirs may have 15 or more courses of cut stone blocks.” We do not know if the coastal districts of Andhra really witnessed such large-scale construction work from 500 to 1000 CE.

Another instance of tattakapratisthā comes from the Alamanda plates of 804 CE., discovered from the Vizagapatnam district. The Medelaka village in the Tirikatu viṣaya was awarded on the occasion of this consecration. Two tanks are said to have been located on the border of the village. Minute observation of partial village-boundary may reveal the spatial importance of the tattakas in respective to other specification-marks. The village was surrounded by:-
1) Chatera nadī in the south
2) A group of Tamarind trees (tentalivṛkṣapāṁkiti) in the south-west
3) Gurā taṭāka and a row of trees (vanarājikā) in the west
4) Kalajnā taṭāka in the north-west
5) A gartta (trench) in the north

Two points can be highlighted from the description. First, there was a possibility of the Chatera nadī being linked with Gurā taṭāka and Kalajnā taṭāka. Second, we can not rule out the possibility of the connection between the Kalajnā taṭāka and the gartta, a very important thing occurring in the plates of Srikakulam-Vizagapatam region. And finally, from the Alamanda plates we can suppose a network involving a stream, two taṭākas and a gartta. In Kāśyapīyakṛṣisūkti, there is a reference of a type of canal (kulyā) which was filled with water when fed by a big lake watered by a river with large stock of water (kvachitaḥmahāhrodārabdhaha kulyā sa jalapurītā/ Tathā mahodakanaḍjalārabdhaha cha niśritā).10 Could this gartta be a canal?

We know that in the Orissa coastal plains, the shore-area settlements developed in the trough zones in between the coastal sand-ridges for shelter against cyclones. Here settlements were established over high levels along the embankments which provided safety from floods. Sometimes these high mounds are artificially raised by piling up earth dug from the backyards of houses and the pits were used as fishing ponds.71 The Narasimhapalli plates of 6th century CE.72 presents an image of the village of Rohanaki in the Varāhavarttanī viṣaya which can substantiate the information on Orissan coast. Some fields in the village Rohanaki was bounded by:-

1) grāmagarta (the trenches of the village) in the east
2) varāṇḍaka (the mound of the earth) in the south
3) *viṣayagartṭā* (the trenches of the *viṣaya*) *kuruvakamūlasahitā* (with *kuruvaka* thicket)

The account gives the impression that some trenches were hollowed out in the east and west of the field leading to the heaping up of earth in the south. If the feature of Orissa is true in the case of Srikakulam region as well, then the village-landscape must have been scattered with little fishing ponds or *garttas*. Of course they could be associated with trees also as shown by the term *kuruvakamūlasahitā*. In the *Napatavataka* grant of 9th-10th century CE., we find the term *gartasahitā vararāji*. Another grant may be considered important for analysis in this context. In this grant of 7th century CE., the village Poppangika in the Kroṣṭukavarttan *visaya* was encircled by:-

1) *viṣayagartṭāḥ* (trenches making the boundary of the district) in the east

2) *gartṭāḥ* in the south

3) *gartṭāḥ* in the west in which the water from the Poppangika hill and the water from the Sayadaka hill unites and runs; it extends as far as the southern direction

4) *viṣayagartṭāḥ* in the north (partial boundary) which extends as far as the eastern direction

Now, the *gartṭāḥ* in the west, which acquired the water of the two hill-streams and extended upto the southern direction, must have been a canal (*kuḷyāḥ*) and it definitely supported the irrigational operation in and around the village. Where there is the mention of one singular trench (*gartṭāḥ*), we can not reject of its being a canal, and where we find the mention of many pits (*gartṭāḥ*), we may identify them as ponds.
We come to know about more canals from the copper plates issued in the Srikakulam-Vizagapatnam area. In a grant of 587 CE., two halas of land in the village Haribhata in the Krostukavarttanī visaya had been donated. It was enclosed by a parivāha (storm-water channel) of a tank named Kṣatriya taṭāka in the north and south and a well (kūpa) and royal road (rājamārga) in the west. We can assume that the tank and the canal helped in irrigation.

An interesting evidence of the joint utilization of river, streams, lake and canal is supplied by the Tekkali plates of 654 CE. Here one hala of land was donated in the village Tungannā in the Rupyāvatī district. It was edged by Vidyudgaṅgā in the east and north. Another information available in the grant is that the water of Tuṅgannā taṭāka, flowing out of the Karakhanḍī and Brāhmaṇapalāṇī entered the field until the crop ripened (tuṅgannā-tadākodakamapyetātketram karakhanḍyah brāhmaṇapalanyancā nirgatyapravisaṭi yāvatapachyate). It is not clear in the grant whether Karakhandi and Brāhmaṇapalāṇī were canals or streams. If we proceed with the first conjecture then the conclusion would be that from Vidyudgaṅgā these two canals were constructed and their water was received by Tuṅgannā taṭāka, which again was connected with a channel to water the field. But it seems to be a rather complex process. Rather it is easier to think that these two were distributaries of Vidyudgaṅgā and they poured their water into the taṭāka of Tuṅgannā. A third option is that the taṭāka was connected with Vidyudgaṅgā and the canals flowed out of it and entered the field. Lastly, it also remains within possibility that Vidyudgaṅgā was not at all connected with the taṭāka and the streams/canals. Another factor in the charter is to be noted. It clearly mentions that the water enters into the field. Then the field channels must be present also which irrigated not only the donated
plot, but also the *sarkarāvāṭaka* which was located besides it. Probably in the region, the field-to-field irrigation was prevalent.

Another land-grant given in the Siddhārthaka village\(^\text{77}\) in 695 CE. indirectly alludes to the site of a canal. A *brāhmaṇa* was fortunate to own one *hala* of land including an water-course (*udakamārga*) in the village. It was the same village which was characterised by a *rājataṭaka* with *kapāṭasandhi* in the 6\(^{th}\) century CE. In the grant of 695 CE., this *taṭaka* was said to have been located in the western corner of the plot and it was furnished with a dam/ dyke (*āli*) at the foot of which a stone was placed (*tattakālimūle pāśāṇa*). One is tempted to think therefore that the *taṭaka* along with the embankment served the link with the *udakamārga* and each of them was a constituent of a common irrigation-process.

Another grant of 806 CE. records the gift of the village Musunika adjacent to the village *Siddhārthaka* (mentioned before).\(^\text{78}\) The village was bounded by:-

1) The *āli* (dyke) of Dhanyā *taṭaka* in the east
2) *gartāḥ* (pits) marking the boundaries of Musunika, Mukurumbaka and Aralaka in the south-east
3) *parvatikau dvau śikharau* (two hills) in the south
4) *vaṁśagartāḥ* (probably the pits with bamboo trees) in the west
5) *gochara* (grazing ground) in the north-west
6) Purūdu *vāpi kramaṇa parvataśikharam* (probably the mountain embracing the step-well named Purūdu); the banian tree at the junction of Yavayatika, Yāmivāṭaka and Musunikā and *ālijalapraṇāha* (the channel of the dyke) in the north
7) gochara (grazing land) in the north-east

So, the village was bounded by the dyke of the Dhanyā tāṭaka on the east and the water released from the dyke (ajijalapraṇāha) nearly touching the junction of Yavayatika, Yamivāṭaka and Musunikā formed the boundary in the north. It is probable then that the jalapraṇāha was liberated from Dhanyā tāṭaka and rushed from east to north and ensured the supply of water to more villages other than Musunikā. Moreover, in the northern direction, there was the step-well (Purūḍu vāpi). So, depending on the physical environment of the locality, people took the help of tank, canal and step-well even within a limited spatial zone. In other words, the villagers not only utilized to their benefit the existing water-resources but also constructed water-storage well by exploiting the hilly area and created diversified irrigation-facilities.

Direct reference to khāli (canal) in the charters of the Srikakulam-Vizagapatam area is also available. It is mentioned in a 7th century grant discovered in Chidivalasa of the Srikakulam district. The donated village was bounded by:-

1) suskanadī or the dry bed of the river in the east running south
2) Garttaḥ (pits) in the south
3) sarīt (River) Meghavaṇī on the west
4) Kōdrava khāli or the canal named Kōdrava on the north

Three points can be shown from the description. Firstly, it was probably the river Meghavaṇī which changed its course and shifted to the west. Secondly, the river was included in the water-distribution system and its water was drifted through the canal. Or, it is possible that the canal was constructed before the shifting of river-course and some additional arrangement was
done after the river shifted. And, thirdly, the garttah were the evidences of an attempt on the part of villagers to raise high mounds for safety from floods or from the impacts of sudden changes of river-course.

There are a few Eastern Chalukyan copper-plate charters which were issued in the Vishakhapatnam region. The Gudivada grant of 7th century CE. is one of them. It was issued in the Sarvasiddhi taluka of Vishakhapatnam district. It shows the creation of an agrahāra which was bordered on by:-

1) The boundary of the village Kundūru in the east
2) samudra on the south
3) Gōlāva sarovara and Nāguvula sarovara and also Kandikāṭṭu and Kaḍakaṭṭu in the west

The above description indicates that two large tanks were situated on the west of the agrahāra. And, the samudra in the south was either the sea (the Bay of Bengal) or a very large lake. We do not know if the last two names with the suffix kattu had anything to do with katta or embankment. But, we can assume that the existence of three large lakes in an area naturally made it an ideal place of creating and agrahāra from irrigational perspective.

From 9th century onwards, we come across the term setu which means irrigation. Then it can be questioned why we do not find the term in earlier charters, though we have already noticed the tajāka, kūpa, vāpi, sarovara and samudra in the epigraphs and are ascertained about their role in irrigation. Before attempting to find an answer, it would be probably right to have a short discussion of the contemporary condition of the village in Srikakulam-Vishakhapatnam region. At that time the pressure on land in the coastal areas was on increase, the woods and rows of trees continued to be cleared.
though some of them were preserved due to the need of boundary-demarcation or from the awareness of the benefit of forests. When the expansion was nearly complete, the sources of water might be clearly divided among the villages and occasionally, among individuals. Probably, this tension over the right of water was an accompanying phenomenon of Srikakulam from 6th century CE. Probably for the same reason, the king declared that no one should prevent the donee brāhmaṇa from opening the sluice of the tank (rājataṭaka) in the Achyutapuram plates of 587 CE.81 Again in the Siddhantam plates82 of 695 CE, the ruler instructed that the water of the same taṭaka during the summer months was to be enjoyed by the donee brāhmaṇa equally with the kutumbikas and they should not cause any hindrance against his enjoyment of the same. Here, the donee was given land and house-site in the brahmanical quarter (brahmachārīchcheda) of the village. Though the royal court might keep watch over the distribution of water of the tanks like rājataṭaka (probably built by royal initiative), it was neither possible nor wanted in each and every part of the district. When there was any bitterness between two villages on the issue of the distribution of water, the inhabitants of the villages were likely to have been participated in the matter and played a role in deciding the share of water. And until the ownership of various water-resources was decided, it could not be done. In other words, the process of irrigational improvement was possible only after adjacent villages came to possess different water-bodies in a locality or agreed upon the final distribution of water from a particular river, lake etc. If one water-body was situated in one village, the matter was easily decided upon. But, if it was located outside a village, there were other claimants as well. Naturally, the building and repairs of irrigational constructions (setu) was done successfully when the control on
water-bodies was firmly established. We can see that from the 9th century onwards, the charters of Srikakulam-Vishakhapatnam region show the evidences of *setu* and from an earlier period they mention the terms like *krtrima pāśāṇa* (artificial stone), *trikūsa* (junction) or *naidhāni sīlā* (boundary pillars) as the boundary of two or more villages which factor is shown below through a chart:-

<table>
<thead>
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<th>Inscription</th>
<th>irrigation</th>
<th>Junction</th>
<th>Location</th>
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<tr>
<td>Urlum plates of Hastivarman, 580 CE.</td>
<td><em>krtrima pāśāṇa</em>...</td>
<td>Kroṣṭukavarttani visaya</td>
<td><em>EI XVII</em>, pp. 330-334</td>
</tr>
<tr>
<td>Santa-bommali plates of Indravarman, 587 CE.</td>
<td><em>krtrima pāśāṇa punja</em></td>
<td>Kroṣṭukavarttani visaya</td>
<td><em>EI XXV</em>, pp. 194-198</td>
</tr>
<tr>
<td>Andhavaram grant of Anantavarman, 716 CE.</td>
<td>Two <em>trikūsas</em></td>
<td>Narasannapeta, Srikakulam</td>
<td><em>EI XXXI</em>, pp. 199-202</td>
</tr>
<tr>
<td>Alamanda plates, 804 CE.</td>
<td><em>trikūta</em></td>
<td>Tirikaṭu viṣaya</td>
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</tr>
<tr>
<td>Musunika grant of Devendravarm an III, 806 CE.</td>
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<td>Srikakulam</td>
<td><em>EI XXX</em>, pp. 23-28</td>
</tr>
<tr>
<td>Chicacole grant of Devendravaman, 9th c.</td>
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<tr>
<td>Pattali grant of Yuvaraja Rajendravarna n, 813 CE.</td>
<td>Two naidhani-śīlas</td>
<td>EI XXXII, pp. 201-206</td>
<td></td>
</tr>
<tr>
<td>Chicacole grant of Maharaja Satyavarman</td>
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</tr>
<tr>
<td>Napitavataka grant of Ganga Devendravarna n, 9th-10th c.</td>
<td>several trīkūtas</td>
<td>Galela viṣaya EI XXXIV, pp. 189-192</td>
<td></td>
</tr>
<tr>
<td>Gallavalli grant, 893 CE.</td>
<td>Siṁa setu</td>
<td>trīkūtas</td>
<td>Bobbili, Srikakulam EI XXXI, pp. 187-191</td>
</tr>
</tbody>
</table>

The Chicacole grant of Mahārāja Satyavarman\(^3\) shows how the surroundings of the village Tarugrama in the Galelai viṣaya (Vishakhapatnam district) had two kinds of irrigational facilities. The village was enclosed by:-

1) Trīṣṭta taṭāka setu in the east
2) giri nāṣikā (hill-ridge) in the south
3) parvata in the south-west
4) Mēru pāṣāṇa in the west
5) āli śilātāla in the north
6) Utpala vāpi setu in the north

The area under study was dotted with small hills and rocks; thus sheltering the tanks and step-wells which were accommodated with necessary arrangements to carry on irrigation.
Another notable feature of the charters issued in the Srikakulam-Vishakhapatnam region is the mention of ant-hill or *valmīkakṣetra*. From the charters we can assume that the presence of ant-hills was very common in parts of the coastal belt of the region. It was regarded as important as the border-delimiting symbol. It naturally strikes in mind why such a curious thing is mentioned. The answer probably lies in the fact that there was a trend in ancient India to predict the supply of water on the basis of the location of termite-hills. The 11th century Kannada text Lokapakāra has mentioned it more than once. According to it, the presence of a black plum tree to the west of an ant-hill in a waterless tract indicates abundant groundwater at a depth of ten cubits.84 This and similar verses refer to the means of searching groundwater by watching various signs associated with ant-hill. But, it is more elaborately narrated in the south Indian text Jalapaṅkṣaparakaraṇa by Vāsudeva. One verse from it states “In a locality where there are three termite or white-ant-hills, if excavation is carried out, 32 inches north of the middle or central termite-hills, at a depth of 240 feet from the ground level, there will be rock-stones. Beneath the stones, if further excavated, the northern vein of the spring with sweet (potable) water will be obtained.” 85 Though termite-hills were considered the most dependable way to search for groundwater, yet the authors like Kāśyapa was not in favour of its being located within the agricultural land. He stated that the land should be devoid of ant-hills (*valmīkādivivarjita*).86 But in the context of 6th-10th century Andhra, this was not always followed. There were the existence of ant-hills on the border of donated land as we will see in the following table:-

<table>
<thead>
<tr>
<th>Inscription</th>
<th>Number of context</th>
<th>location</th>
</tr>
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</table>
There was a difference between the Orissan inscriptions and those available from contemporary Srikakulam. As shown in the charters of early Orissa, lands were often donated with the right to enjoy water since 5th century CE. whereas in Srikakulam, this policy started only in the 7th century CE. Moreover, in the Srikakulam region, the donees’ control over water was far less significant than that of Orissa and the assignee was entitled to only partial control over watercourse as seen from the Achyutavaram and Siddhantam grants. However, the state was always eager to ensure the donees’ right of utilization of water to his convenience. Later, in the 9th century Srikakulam region, we find the reference to the donation of a taļaka to a brahmana which denotes the full surrender of water-reservoir and in the 10th century, another evidence shows the surrender of a village with all
water-bodies within its limit (grāma chatuśṭāḥābhyantara jala sameta) to the son of a dandanāyaka. The grants mentioning about pāli and āli are shown below in a chart.

<table>
<thead>
<tr>
<th>Inscription</th>
<th>embankments</th>
<th>context</th>
<th>location</th>
<th>Reference(s)</th>
</tr>
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<tbody>
<tr>
<td>Urlum plates of Hastivarman, 580 CE.</td>
<td>kṣetra-pālis</td>
<td>Boundary of land</td>
<td>Krośūkavarttanī</td>
<td>EI XVII, pp. 330-334</td>
</tr>
<tr>
<td></td>
<td>surrounding the plot;</td>
<td></td>
<td>viṣaya</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and Ghosanavapyah</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>pascimapali</td>
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</tr>
<tr>
<td>Achyutavaram plates of Indravarman, 587 CE.</td>
<td>pāli of the rājataṭāka</td>
<td>Boundary of land</td>
<td>Varāhavarttanī</td>
<td>EI III, pp. 127-130</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>viṣaya</td>
<td></td>
</tr>
<tr>
<td>Siddhantam plates of Devendravarman, 695 CE.</td>
<td>tattakāli mūle pāśāna</td>
<td>Boundary of a plot</td>
<td>Varāhavarttanī</td>
<td>EI XIII, pp. 212-216</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>viṣaya</td>
<td></td>
</tr>
<tr>
<td>Musunika grant of Devendravarman III, 806 CE.</td>
<td>Dhanyā tattakasya āli</td>
<td>Boundary of a plot</td>
<td>Varāhavarttanī</td>
<td>EI XXX, pp. 23-28</td>
</tr>
<tr>
<td></td>
<td>in the east</td>
<td></td>
<td>viṣaya</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ālijalapravaḥa in the</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>north</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chicacole grant of Maharāja</td>
<td>āli-śilīṭala</td>
<td>Boundary of a plot</td>
<td>Galela viṣaya</td>
<td>IA XIV, pp. 10-12</td>
</tr>
<tr>
<td>Satyavarman</td>
<td></td>
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</tbody>
</table>

The Krishna-Godavari region also had achieved certain degree of engineering and technical skill in irrigation management. Nowadays, the area is featured by thickly populated central villages (Figure 1) with linear arrangement of houses along a middle-road; the linear pattern intact in the delta-region due to limited village-site on little elevated land in the midst of wet-fields.

The land-grant charters of the Krishna-Godavari region give some very important boundary-descriptions. As known from the 6th century Chikkulla.
plates, the Regonram village near the river Kṛṣṇabennā had been assigned to the Somagiriśvaranatha temple of Tryambaka or Śiva. The gifted village was adjacent to another village called Rāvirevā on the bank of the river. The term Rāvi-rēvā denotes a hourbour and Regonram indicates black-cotton soil and hilly region at the same time. We do not know whether there was any hill named Somagiri in the neighbouring area and if it was topped by a Śaiva temple. But we may assume that Kṛṣṇabennā was navigable in that part of the Tuni taluka in the East Godavari district. We can just imagine how the river supported the villages. Diverting or storing and lifting water from rivers and streams with the help of dārs and a network of canals as well as field-channels is the most popular system for using surface water for irrigation. Probably, one of these methods was resorted to. But there was no possibility of the building and connecting of reservoir with Krishna. Probably, such large-scale initiative involving an wide-ranged construction activities was never taken. Another grant of 9th century CE. refers to the grant near the river Godavari. It records the grant of 20 khaṇḍugā of kōdrava field in the village Lūlā in the Gudavadi viśaya. The land was bordered on by the land of Ātreyasarman in the east, Korikiyari sīmā in the south, the river Godāvārī in the west and the land of Borisabo in the north.

Let us pick up another charter of 8th century which asserts the existence of agricultural land and a stream. In the 8th century CE. a land grant charter was issued by Viṣṇuvardhana III where a field capable of being sown with 20 khaṇḍikās of paddy (vrīhīvīja) was awarded in Ipur area. Cultivation of paddy required a constant supply of water and can be categorized as wet cultivation which is facilitated by canals, canal-fed reservoirs and aqueducts. Now the field’s western boundary was determined by the river Eliyēru.
which should have supplied water to the paddy-field and also to the field of Prabhākara and that of Kākanḍīvāda which formed its southern and western border respectively. Today, Eliyēr or Eluru river flows past Pithapuram in the East Godavari district and reaches the Bay of Bengal. In 8th century, the donated field or kṣetra was located in the Plolanāṇḍu viṣaya which gave its name to the present-day Prolanandu near Pithāpuram. So we can presume that the donation took place in the coastal area. In the coastal peninsular India, specially in Andhra Pradesh, the traditional dam-construction method “ōddu” is followed. Nowadays, canals are constructed from the water storage dam and brought to the area to be irrigated from where field-channels carry water to individual field. But the case of south India is slightly different. Field-channels are usually absent here in irrigated rice-areas as the conventional practice is to irrigate from field to field. In the light of such information we can assume that Eliyēr might have been equipped with dams to water the fields.

In the Katlaparru grant⁹⁷ of Vijayāditya III (848-892 CE.) the village of the same name was donated in the Veṅgi-sahasra viṣaya, i.e., in the East Godavari district. The village had on its east the boundary of Velivroli and on the north-east the kṣetram of the same village; on the south the Virpparu village and on the south-west the Virpparu grāma kṣetram, and on the south-east the Elambara cheruvu. Cheruvus stands for the huge earthen dam built across a stream in the arid and semi-arid zones of Andhra. This particular cheruvu was situated on the junction-point of three villages (Katlaparru, Velivroli and Virpparu) and probably no single village solely enjoyed its water. In fact, a cheruvu being situated within the boundary of a
village, or, in other words, *cheruvu* forming the boundary of a field is rarely seen. The mention of *Cheruvu* is more frequent in the Krishna district.

The Krishna district offers the most variegated picture of agriculture and irrigation-procedure. In the 9th century Ederu plates, the donation of a field in the Vāṇḍṛupiteyu village in the Kāṇḍeruvāḍi visāya was recorded. The field was capable of growing *kodrava* (kodo millet). It was surrounded by a *taṭāka* on the south. Evidently, it was the example of dry-cultivation. Probably, the tank, which supported the kodo-cultivation, had a perennial source of water.

During the reign of Chālukya Bhīma I, who ruled from 892-922 CE., the Bezvada inscription was engraved. It confirms the donation of the Kukipāṟṟu village in Uttara-kanderuvadi visāya to a brāhmaṇa. The boundary-markers of the village were:

i) the Pōtaryangari *cheruvu* in the east  
ii) the Paruvula *gunaṭa* in the south-east  
iii) the Chāki *cheruvu* on the south  
iv) the Chintareni *cheruvu* on the west  
v) the Juvi *gunaṭa* on the north-west  
vi) the Airiviya *gunaṭa* on the north and north-east

*Cheruvus* stand for the huge earthen dam built across a stream in the arid and semi-arid zones of Andhra while *Gunaṭa* is nothing but pond. In the charter under discussion we can see that the whole village was confined by three *cheruvus* and three *gunaṭas* and each of them had separate name. The village Kukipāṟṟu was probably established on the river-bank or shore for the word “*parru*” indicates the same. How these *cheruvus* and *gunaṭas*
operated can be guessed. They might be connected with the river. If a river nearly enclosed the village then the erection of cheruvus along its courses might be done. Otherwise, we have to think that different rivers and/or its tributaries/distributaries were controlled by embankments. There is another possibility. In Karnataka, the traditional irrigation-system is called kere whereby, tanks are built in a series and overflow of one tank supplies the next all the way down. In other words, it is similar to system-tanks which sometimes were linked with cascades where water from an upper-tank flows into the lower tank. The tanks can irrigate “large tracts of agricultural command-areas spread over multiple villages.” Somewhat identical alignment was likely to exist in Kūkiparru. According to Kāśyapa, the reservoirs (jalāśaya) should be equipped with inlets of water (jalāgamanamārga). Hence, they should be founded near some hill (gireḥ samīpe) or on a high-level ground (uttunge bhūtale) and should be joined with a big lake (mahāhrada). Were the cheruvus connected with a large lake (mahāhrada)? Virtually, all the hypothesis can not reach beyond the stage of speculations. As these cheruvus and gunṭas were located on the border of the village it is likely that they belonged to multiple villages, or at least two villages. I used the term ‘belonged’ in the sense of the area of the agricultural land allowed to be irrigated by them attached to the village/villages.

In the Moga grant of Chālukya Bhīma I (discovered in the Gudivada taluka of the Krishna district, we see the existence of cheruvu, tataka and yeru as the boundary-delimiting characters in a hilly region. The boundaries of the village Moga were as follows:-
i) in the south-east, muntha-ravula-gutta (hill with three pipal trees)
ii) in the south, Vembarru Narendraśvara ksetram
iii) in the south-west, tāila-kṣetram
iv) in the west, Dēvudu cheruvu
v) in the north-west, Chāvanti paśchima taṅkam
vi) in the north, Peddapūḍi chariya (a hollow between hills in which stood the village of Pedda-pūḍi
vii) in the north-east, rintha Mrākulu (soap-nut trees)
viii) in the east Puliyēru (a stream)

Now the two plots located side by side possibly depended upon the Devudu cheruvu and Chavanti paśchima taṅkam for the provision of water. The two reservoirs might as well serve the village Pedda-Pūḍi though we have no concrete proof to confirm it. The locality was established around a hilly area or high-level ground suitable for the construction of cheruvus, probably joined with mountain-cascades (hill-streams). We find tāila-kṣetram besides the village. The term tāila-kṣetram implies the newly cleared jungles used by the people living in the uplands for cultivation. So, the area adjacent to the donated village was occupied by those who were habituated to shifting agriculture or jhuming.

The Chevuru plates of 10th century CE. shows another pattern of describing frontiers where the village named Umikili in the Gudrāhāra viṣaya is said to have Ervōka-chemu-field on its north and south. Next the plates goes on to tell the confines of the two Ervōka-chemus which is of course a unique evidence. The chemu to the south of the village had:-
i) a marshy pool (vrānta) on the east
ii) the boundary of Dudrupaka on the south
iii) the royal demesne (rācha-chenu) and the plot of land belonging to the chandalas (chandālaksetram) on the west
iv) the brook (koḍu) on the north

The chenu to the north of the village was edged by:-

i) the brook (koḍu) in the east
ii) the Vanneru river in the south
iii) the brook (koḍu) on the west
iv) the bathing place at the lake (or the drain from the lake)-kolani mulugu in the north

Two or three assumptions can be made from the record, though they can not be considered as ultimate due to want of evidence. First, the village and its surroundings witnessed the farming operation at the time of grant. Second, it was attractive to the crown and a portion of the land was preserved for royal enjoyment. Third, the two koḍus or rivulets and the Vanneru river probably irrigated the fields and the village was situated in an area full of small streams and marshes. Moreover, the inscription features the distinctive identity of chenu and the terminological change of the word. Mention can be made of the village Akulamannaḍu in the Gudrāhāra viṣaya also which had one pedda-koḍu(big rivulet) and another koḍu within its boundary.

The monarchy was enthusiastic about searching out the best land for agriculture and offering part of it either to brāhmaṇas or to royal officials.
We can mention the boundary-delineation-marks of the Masulipatnam plates of Ammaraja II Vijayaditya. It records about the donation of some field in the Pāmbarru village in the Gudrāhāra viśaya. The boundary of the first field called Nomi ksetram is as follows:-

i) on the east, the Indani cheruvu
ii) on the south, the chenu (field) of ratṭodi
iii) on the west, the margin of the chenu of Su[gu?]mmu
iv) on the north, the pannasa east of a field (chenu) of Vēlpu

The border of the second field called Pīṭasa[pai]ri[ya?] ksetram is as follows:-

i) on the east, the pannasa of Damapiya
ii) on the south, a big road (pedda-trova)
iii) on the west, a river (yērri)
iv) on the north, the pannasa of Ganthasala (Ganṭhasala-yappavayyari-pannasa)

From the delineating signs, a number of conclusions can be reached. First, the cultivation process was in full swing at the time of the issuing of the charter for the word chenu indicates the same. The existence of chenu (dry land) and pannasa (wet land) side by side is also noticed. Second, at least three fields here had already been gifted as pannasa which was obviously under cultivation also. One piece of land was given to a person of Sudra origin (rattodi) or an official. Third, the productivity was probably on increase due to the accessibility of Indani cheruvu and the river. Fourth, the second field was touched by a pedda-trova or high road. It may be compared to
mahāpatha in the inscriptions. Fifth, the donated kṣetras had separate names which is a striking factor and indicates that the territory had been settled in by people since very early period. Lastly, the village Gaṅthaśāla, which was a corrupt form of Gaṅtaśāla, was a mart in the 2nd century CE. and was mentioned in the narrative of Ptolemy as Koṭakossyla. Situated 13 miles west of Masulipatnam, an ancient port having connections with south-east Asia, Gaṅtaśāla was an important place and not too far from the convergence-point of the river Krishna with the Bay of Bengal. The area claimed special attention from the king as it was one of the best agricultural tract. This originally fertile zone with extra-attention in irrigation ultimately emerged as one of the best land in Krishna-Godavari zone and became the focus for land-transfer. At last its importance was increased with the addition of a highway.

The Mangallu grant of Amma II mentions the boundary-markers of the village Mangallu in the Natavadi viśaya (between Bezwada and Sattanapalle). The village Mangallu was situated in the Nandigama taluka of the Krishna district. Its demarcating frontiers are also useful to reconstruct the process of irrigation. The village was bounded by Yilindi guṇṭa in the east, Kurrala-bölappamasa in the south-east, Munna nadi in the south-west, a junction (miyyalukaṭṭu) in the north-west, and a guṇṭa on the junction in the north-east. We can not determine whether there was any connection between the Munna nadi and the two guṇṭas. But that the place witnessed one pannasa grant indicates that the area was being cultivated at the time of the grant.

In conclusion it may be said that in the Krishna-Godavari region, some features of irrigation management can be noticed. Almost all donated pieces
of land or village was delimited by single or more than one water-bodies. The landscape was dominated by *cheruvus* or *guntas*, sometimes in the vicinity of rivers in plain lands. We have no direct proof of the interconnection of the tanks for the betterment of irrigational operation from epigraphy; yet the traditional method of linking up the same is still followed in Andhra villages. Lakes and ponds were probably enjoyed by more than one village if they were oriented at a junction or on border. But if they were situated within one village it was difficult for other villages to approach them unless the presence of channel came to their aid. As to the surroundings of the donated land, it can be said that in some cases, they were situated amidst some *chemus* or land already under cultivation. Sometimes, the identity of land was given by its sowing capacity. Apparently, it may be seemed peculiar, for the productive capacity could also have been mentioned. But, if considered from the view of the donating authority, it was prudent not to mention the amount of production though the donor was well-aware about the crop best produced in a particular area. And, the information on the sowing capacity could easily give an idea about the amount of the land. But why did the issuer mention the sowing capacity either? Perhaps, the shape of the field was so irregular, that it was impossible to measure it. In other words, the linear measurement was difficult. But, was the administration uninformed about the actual produce? Possibly, not. Because, apart from the assigned land, the Krishna-Godavari area had other localities which gave the due revenue to the king. And in order to fix the amount of revenue, the revenue department had to keep record about the yield of crop. Still, the volume of crop-output could not be forecasted. On the whole, the existence of royal land, grant near the habitation-area of hilly population, the prevalence of *pannasas* and *chemus*
and the mention of great road establish beyond doubt that the Krishna-Godavari region was a very active zone where agriculture and irrigation went hand in hand.

There are ample evidence of irrigational supervision south of the Krishna river also. At least in the coastal districts like Guntur, Nellore and Prakasham, agricultural activities were going on in full swing. The Nellore coastal plains is a transitional belt between the Andhra and Tamil Nadu plains. It is physically dominated by tank-irrigation (Figure 2) except for canal-irrigation in the Pennar valley. The region produces mainly jowar, followed by rice, cotton and groundnuts.¹¹¹

In the 6th century CE., the Pallavas of the Nellore-Guntur region issued their donative charters in the locality. Two hundred nivartanas of land on the border of the village Uruvapalli in Munda rāṣṭra (comprising mainly the Kovuru taluka of the Nellore district) was gifted to the family of Viṣṇuhārādeva.¹¹² The river Suprayoga (Pennar) flowed in the south and east of the land. The villages of Kenḍukura, Kōṇḍamuruvudu and Kārupurā formed its partial boundary. A great road (mahāpatha) also touched the village. And, the cultivated field (halakṣetra) of the brāhmaṇas in the village of Kārupura margined the donated land. We also find the reference of the rock on the road to the village of Kārupura and to the village of Kaṇḍukuru (Kurupurāgrāmasya Kaṇḍukuragrāmasya cha pathi śilā).

As we can see, in the 6th century CE., settlements were growing alongside the Pennar. And, the gaps within villages were reducing. Now, how the river was utilized, can not be determined. Even in modern times, the Pennar remains
several hundred yards wide and show boulders and sand spread all over the beds. Only the channel for spring-channel irrigation may strike water a mile or two upstream from the fields to be watered. Probably, it was not very safe to depend on the river.

Rather the tanks could vitalize the irrigational process and probably supplied water to more than one village. The Pallava king Vijaya-Viṣṇugopavarman gave one hundred and eight nivartanas of kṣetra of the village Chūrā in Karmarāṣṭra in the 6th century CE. The land was bounded by two tafākas which again were adjacent to the Laguṅṛu and Nāgolāmi villages and Irāḍi mahāpatha. The donee was also gifted a house-site (grhaṣṭāna sthita kṣetram); the house-site being proximate to a tākaka located near the garden (vāṭikā-sthāna) assigned to the donee. As all the villages mentioned in the charter has been identified with the villages of Bapatla in Guntur, so we may assume that the above-mentioned mahāpatha went through this area. The inter-village communication was also made possible through village-roads. And the village was surrounded by several tafākas.

In the 7th century CE. Kopparam plates, 100 nivartanas of land in the village Irbuli in Karma rāṣṭra was donated. Probably, the village with its agricultural land was a large-sized one. The size of village is determined by a number of factors. In areas of dense population and large families, the villages cover a vast expanse and the number of people is governed by the ability of the land to support population. Again, if a village is near a town, it may attract extra non-farming population and thus expand. And finally, if the process of spatial growth is not debarred by any obstacle like hill or swamp, a village can spread over a fairly large area. Any of the factors,
individually, or, mixed with other conditions, could effect the size of the village. In the village Ḣrbuli, the farming area was encompassed by:-

1) the Karmakāra taṭaka in the east
2) the road to Virparu in the south
3) the Balāka palvala (pond) in the west
4) the road to Konḍaveṇpur in the north

We do not know if the tank named Karmakāra was exclusively for the community of the black-smiths and was for domestic use. The small tank named Balāka palvala probably used for irrigational purpose. Communicable roads were present also. They show the proper focus on infrastructure and irrigation.

We have earlier seen that in the Nutulaparu village in Karma rastra, a field was given to a brāhmaṇa. It was bounded by some fields occupied by the brāhmaṇas such as:-

1) Penukāparaṇa brāhmaṇa kṣetram
2) Donavadipanta brāhmaṇa kṣetram
3) Etakanta nāma brāhmaṇa kṣetram
4) Velerukandi nāma brāhmaṇa kṣetram
5) Śramataṭāka brāhmaṇa kṣetram
6) Velukatataka brāhmaṇa kṣetram

The last two demarcating signs seem to suggest two land-pieces occupied by the brāhmaṇas which probably were irrigated by two taṭākas. Here we notice for the first time the reference of the land to be irrigated by a particular tank.
In another 7th century grant, we find the combined presence of *taṭāka* and *kūpa*. The site was a plot in the Penukaparru village in Karma rāstra.118 The field was bounded by the Nidugutta *taṭāka*, Tāla-*taṭāka*, three other *taṭākas* and four *kūpas*. A road (*panthāh*) touched the boundary of the plot in the west. The *kṣetras* of Jedḍa-Boḷa and Puṣa-Boḷa along with a rice-field of four *nivartanas* also formed the boundary. We can not decide whether the *taṭākas* were included in an integrated reservoir-system where tanks arranged along a sloping plain fill one by one as through irrigation-channel as was the case in Vijaynagar. 119 Or, a whole stream was reduced to a string of tanks, the lower ones trapped the surplus water from those above and the high water-table below the tanks supplied good wells as noticed by Spate and Learmonth in Indian context.120 But we can surmise that in Penukaparru, tank and well were supplementary to each other.

In the 10th century CE., we find the intricacy of boundary description in a charter issued by Amma II. This grant records the donation of the village named Pedda-Gālidipāru (in Tenali taluka of Guntur) situated in the Velanāṇu viṣaya (Guntur-Prakasham).121 While describing the delimiting water-bodies of the village, the grant records the names of their adjoining places and sometimes, the name of the village to which the signs belonged. The village was margined by:-

1) A *duba* (mound ?) in the centre of Yisupakatṭala *cheruvu*, on the boundary of the village Maṇḍayūru in the east

2) Kundaviddi *gunṭha* situated to the north of an ancient village-site (*prāṇa-parti*) of Chunturu in the south

3) Gārala *gunṭha* on the boundary of the village of Valīvēru in the north-west
4) A marshy swamp (*paduva*) belonging to the village of Tapparāla in the north

5) Nadupani *guntha* at the meeting-point of the boundaries of the villages Kōda-Gālidiparru and Valiveru in the north-east

Several factors are here to be noted. First, the village-names like Valiveru, Kōda-Gālidiparru and the gift-village Pedda-Gālidiparru imply the existence of *eru* and *parru* (banks and shore). And, the presence of the *cheruvu* and *gunṭas* on the boundary of those villages indicates the significance of their names. Second, the *cheruvu* named Yisupakattala had an embankment (*kattā*) and during its construction, some rocks were kept nearby which were never removed. They took the shape of a mound. Third, the existence of tanks on the fringe area of villages probably marks the inter-village distribution of irrigation-water. However, the marshy swamp is clearly stated to have been located within the limits of the village of Tapparāla. Therefore, it was perhaps considered as important wetland, sources for water for rural population, providing water for drinking, domestic use and irrigation.

In the Tandikonda grant\(^\text{122}\) of Amma II, we find the names of two *taṭakas* which have been possible to identify and whose remnants still inspire amazement. The charter marks the confirmation of the donation of the village Tandikonda (located in the Guntur taluka) in the Gudla-Kaṇḍeruvādi *viṣaya* (covering the whole of Guntur and parts of Tenali and Sattanapalle talukas). The village was bounded by:-

1) A stream named Tundēru in the east

2) Gārala *guntha* in the south-east

3) Odda *guntha* in the south-west

4) Chayita *nāma taṭāka* in the west

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5) Bhīma samudra with a tank (sataṅka) in the north-west
6) A heap of boulders called Enukaralu in the north
7) Regadu guntha in the north-east

There were some differences between a taṅka and a gunta. Gunta roughly correspond to Sanskrit Puṣkaraṇī which was nothing but a tank about 100 x 200 cubits and Taṅka measured nearly 800 cubit long and 200 cubit wide. Puṣkaraṇī actually was a tank smaller than puṣkara which has also been explained by D.D.Sircar as a tank. Chayita taṅka and Bhīma samudra have been identified. Bhīma samudra was larger than Chayita taṅka and was joined by a tank (taṅka). Probably, it was a water-storage dam.

Another grant issued by Amman shows the orientation of guntas within the agricultural fields. The granted fields from Anmanaguru and Anḍeki (in the Ongole taluka of the Guntur district) were edged by rivers and ponds which gives us the idea that the agricultural fields were spotted with water-bodies. The boundary-description is as follows:-

1) In the east, a śanti tree at the meeting-point of three boundaries
2) In the south-east, a gunta
3) In the south, trees on the bank of the Gunṭeru (river)
4) In the south-west, the salt-marshes on the southern side of a lake
5) (?) on the bank of a river on the west
6) A gunta on the north-west
7) Chali gunta on the north
8) A stone at the meeting point of three boundaries in the north-east

At least two rivulets, one lake and three guntas comprised the agrarian landscape. In spite of that, the area was not so productive in paddy-
cultivation. In this grant, the field with the sowing capacity of *kodrava vīja* was donated. So, primarily, everything depended on the quality of soil. The production could be increased by proper irrigation-procedure, but total alteration in the type and nature of crops was not possible. From this point of view, the agrarian prospective was bounded to remain more or less the same.

Another field in the east of the Nammuru village situated in the Guḍḍa-kanṭheruvāṭi viśaya capable of growing *kodrava* was enclosed by:

1) The *gunṭha* with a demarcation-stone (*sthāpitaśīlā*) in the east
2) The boundary of the *pannasa* of Pandi-Peddēri in the south
3) The border of Kroppeti tuppu in the north
4) The Indula *gunṭha* in the north

This 10th century grant shows that the given field was located in the east of the village and could get the water of the *guna* in the east and of the *gunṭha* in the north. The land in the south of the *kodrava*-field was the land granted for *pannasa*. Yet, the quality of soil was probably not fit for rice-cultivation.

In 954 CE., Ammarāja II authenticated the gift of Maliyapuṇḍi village in the Kammanāṇḍu viśaya. The village was bounded by Mūnunjy[u]ru in the east, Yinimili in the south, Kalvakuru in the west and Dharmavuramu in the north. Maliyapundi was a *grāmaṭīka* (small village) whose fields were bounded by:

1) The Gollani *gunṭha* in the east
2) The R̄āviya-periya *cheruvu* in the south-east
3) A *sthāpitaśīlā* in the south
4) Another sthāpitaśilā in the south-west
5) Malkaparru and Koraboyu taikā in the west
6) A sthāpitaśilā in the north-west
7) Duba-cheruvu in the north
8) The boundary of the evvāka-chenu in Kalvakuru

The boundary description draws our attention for some reasons. First, the limits of both the village and its fields are described vividly which shows that the villagers were aware of the boundary of the village-land even if the agricultural fields of several villages were mutually adjacent. Second, the village Kalvakuru formed the western boundary of Maliyapundi, but the field of Maliyapundi was bounded by the boundary of the evvāka-chenu in Kalvakuru in the north-east. If Maliyapundi was enclosed by its own fields on all sides then it is possible that the village Kalvakuru in the west was large enough to bound the field of Maliyapundi by its evvāka-chenu in the north-east. But, then what about the place Dharmabhiramu in the north of Maliyapundi and the place named Malkaparru in the west of the fields of Maliyapundi? There is another probability which seems to be nearer to reality. It is that the village Maliyapundi was not enclosed by its own fields on all sides, but its fields were located in its south-west. Then only the field of Kalvakuru could be adjacent to it. In that case, Kalvakuru would be located in the north of the field of Maliyapundi and to the south-west of Dharmavuramu. And, the place named Malkaparru would cause no obstruction as it was sure to be located to the south-west of Kalvakuru. Third, the Gollani guntha, the Kaviya-periya cheruvu and the Duba cheruvu could be accessed from Yinimili as well. Now the question is that if their access was limited to any particular person or community. These tanks are associated with the names of some communities like the Golla, Boya and Periya. Either
the area was dominated by them, or they built and maintained the tanks. On the whole, the agrarian structure appears to be largely sustained by tank-irrigation though the size of the tank was not similar even in a limited geographical context.

Every region has its speciality in the motivation and structure of settlement-formation which sometimes comes out through language. In the early-medieval north-eastern India, the identity of village was made by the nature of its dwellers. Here we find the names like *kheta* (village-settlement of the tillers and farmers), *khetaka* (small village inhabited by husbandmen), *ghosa* (settlement of herdsmen) or *palli* (hamlet where hunters and forest-dwellers lived in their huts). But, the Andhra villages were named primarily after flora-fauna, rivers (*eru, kodu, parru*), tanks and dams (*cheruvu, katta*), ponds and wells (*gunta, taṭaka, kolanu, kuli*), forest (*vana, katu, padra*) and hills (*konda, gonḍa, kurru, mala*). Comparatively, the toponomy denoting castes, tribes and professions are smaller in number. Probably, it indicates the importance given to geographical and agricultural landscape by the people of Andhra.

In the adjacent areas of the Guntur-Nellore region, i.e., in the Anantapur-Chittoor area, we do not find any detailed information of irrigation management. But, from the surrounding region of Tamil-Nadu and Karnataka, we find elaborate descriptions. From the details, we come to know that the tanks were interconnected and utilised for irrigation. However, this inter-connections of tanks are nowhere clearly stated in the Andhra inscriptions. In southern Karnataka also, the tradition of tank-construction and tank-repairment reached to such a height in the 9th-10th centuries, that *bittuvattata*,
or grants for the maintenance of tanks, has been frequently mentioned in the inscriptions of the region. To explain the factor, we can mention about the Agara inscription (Bangalore taluka, Bangalore district) of 9th century CE. which recounts an instance of a land-holder (ur-odeya) constructing irrigation-works. He had sluices erected for two tanks and constructed a third tank to the east of the village. He received a bituvatta for all three tanks.130 According to D.C.Sircar, bituvatta was “a portion of the produce derived from the land irrigated by a tank or wet lands irrigated by a tank, granted to a person who built the tank or repair it.”131 Sometimes, the inscriptions of Karnataka recorded the sources of tanks particularly, such as, the mahātaṅka fed by the waters of the three small rivulets flowing from the forest Mangali described in the Gattavadi plates (Nanjanagud taluka, Mysore district) of 904 CE.132 Tamil Nadu has also a prolonged history of irrigation-management. Kārikala Chola constructed the grand anicut on the river Kaveri as early as 11th century BC. He also constructed the banks of the Coleroon to contain the flood-waters of the river.133 In the 11th century CE., the Chola kings like Rājarāja drew irrigation-channels in the area. A bi-lingual inscription of Kopperinjuvenga from Tribhuvanī (near Pondicherry) states that the chief repaired the embankments (kūlam), sluices (prevāham) and irrigation-channels (parīvāha) of the tank (takā) at Tribhuvanamahādevī which had breached at many places.134

The people of Andhra developed expertise in the field of irrigation and did not lagged much behind their counterparts in Karnataka and Tamil Nadu. They utilised the water-points to their advantage and created dams. However, the direct mention of the inter-connections of water-bodies is rare to the south of the Srikakulam-Vizagapatam districts, though we notice the
concentration of various types of tanks in a limited spatial context. We can not come to any conclusion regarding the ownership of tanks and are unable to identify properly the persons responsible for them. However, it is evident that agriculture was treated with great care and also the matter of irrigation which were the two main concerns of village-society.

**Rural society**

The inhabitants of village have been referred to in the most general terms like grāmyekan in Andhra inscriptions. This conventional mode of address included probably the people of all castes and professions residing in the village. Sometimes, janapadah were communicated about the grant.135 The term distinguished agricultural settlement spaces from both city (purā/nagara) and fortified capital (dūrga).136 Commonly, the janapadas were thought a political as well as cultural units, and the cultural unity of the inhabitants was reflected in their manners, customs and dialects.137 In the Sātavāhana and Ikṣvāku inscriptions, the gahapati (holding large areas of cultivated and cultivable lands) was obliged to support his parents, wives, brothers, sisters, brother’s wives, sons, daughters, daughters-in-law, grand-children, sons-in-law, relatives (svajan, jñāti ) and the friends. A new social and kinship relation emerged where property to sons including the debt was incurred by the father in his life-time.138 This same closeness worked among the janapadah. Another aspect of janapada equally significant was its necessity to colonize wasteland. Kautilya shows preference for a janapada capable for bearing the burden of army and taxation and inhabited by hard-working cultivators. We do not know how this approach continued to characterise the janapada from the 6th to the 10th century CE. though we can surmise its dwellers being mainly the peasant community. Another term used in the context of
announcement of grant was *kuṭumbinah* inhabiting the *grāma* and *visaya*. The term has been elucidated as cultivator, agriculturist house-holder, or simply as house-holder.¹³⁹

One land grant charter gives some hint about the existence of village-assembly which attended tasks of village-administration. It is mentioned as *rachchhā* or court of audience in that plate.¹⁴⁰ The members of the assemblies were referred to as *grāma-vṛddhas* by Kautilya and as *mahattaras* in the epigraphs of the later period. *Kuṭumbin* or head of the householders could express their opinion there related to villages.¹⁴¹ We get the name of *mahattara* Ṣabarā Nandiśarman as the witness of the Chicacole grant of Devendravarman in the ⁷th century CE.¹⁴² In another grant of the Srikakulam region we find two examiners of grant named *Srīdharaḥhaṭṭa* and *Yajñabhatta*, who were *brāhmaṇas*.¹⁴³ In the villages of Srikakulam region, the *brāhmaṇas* and *mahattaras* enjoyed the right of witnessing the grant and they agreed to the donees’ rights. But in the Cuddappah area, the act of observing the effectiveness of grant was entrusted mainly to the local officials as known from the Renāṭi Chola, Bāṇa and Vaidumba grants. We find the names of some persons with the suffix *rattagullu* as witnesses in the Chilmakuru plates of the ⁸th century CE.¹⁴⁴ D.C.Sircar has identified *rattagudi*, *rattagullu* and *rattoḍi* as one and the same. In his opinion, it was an official designation and none other than *rāstrakūṭa*.¹⁴⁵ Again, in the Arakatavemula inscription of the ¹⁰th century CE., several *perggadas* have been mentioned as the witnesses of the grant.¹⁴⁶ *Pergadda* is a Kannada term meaning either a chamberlain or a superintendent or, director (Sanskrit *adhyakṣa*).¹⁴⁷ We do not know what kind of role they exactly played if the terms of grant was violated in any respect. Probably, they were not denied
access to the donated village in such situations and they could have been played their role in protecting the grant.

In some cases, royal officials were totally denied access to the donated village which prove that they had the right to arrive in those villages where their entrance was not debarred by any order. The Andhavaram grant of 10th century CE. declared a village in the Srikakulam region as a-chatta-bhatta (not to be entered by the chaṭtas and bhāṭas).\(^{148}\)

In the Nellor-Guntur region, several more officials were addressed at the time of donation, though they were not denied access to that village. In One Pallava grant of the 8th century CE.,\(^{149}\) the karaṇāyuktaḥ, sarvanaiyogika, rājaballabha and śāsanasanchārin have been informed about the grant. The Pallavas of the Nellore-Guntur region issued their grants addressing the adhikṛta, āyuktakah\(^{150}\) and sarvādhyakṣa, vallabha and ṣāsanasanchārin.\(^{151}\)

Thus we can see that the administrative officials, accountants/ clerks, and messengers were informed about the grant.

In the village society of the 6th to the 10th century Andhra, village headmen enjoyed important position. The Malepadu inscription discovered in the Kamalapuram taluks of the Cuddappah district mentioned the fact that the three village headmen of a village granted to a brahmaṇa 20 mārturs of land as grāma-datti.\(^{152}\) In the 10th century epigraph coming from the Krishna area, we find the mention of another person who was elevated to the status of grāmanit.\(^{153}\) He was the noble warrior (subhaṭa) named Vemaraṇa, son of Rājaditya’s younger brother Manohitāryya, grandson of Chandeyaraṇa of the Kona family, who (Chandeyaraṇa) had the distinction of being the headman of the village Umikili in the Gudrahara viṣaya (Krishna region). Vemaraṇa was

\(^{151}\)
also made the grāmaṇī of Umikili. The Eastern Chalukyan king also exempted him from all manner of taxes (sarvakaraparīhāram) except the traditional fixed tribute of eight gadyānakas. From the first instance, we notice that the village headmen exercised their donating right by granting a grāma-datti. From the second case we notice that the post of grāmaṇī tended to be hereditary in the Umikili village and a brāhmaṇa warrior named Vemarāja was entrusted to the position. He was the nephew of Rājāditya, the general of the Eastern Chalukyan king. According to the Kāśyapīyakṛṣiśūkti, a pure and compassionate brāhmaṇa should be appointed as grāmaṇī by the king. Besides protecting the village, he should be prepared to obey the royal instructions. Here, the penetration of central authority in the village-level administration is noted.

We have a 10th century inscription to show that some farmers (kampus) of Venāḍu were entitled to several privileges. The inscription has been found from Kalakada in the Vayalpal taluka of the Chittoor area and written in the Telugu-Kannada script of the 10th century CE and it belongs to the Vaidumba king Bhuvana Trinetra. The king donated the farmers some awards (sthiti) on the occasion of his coronation. The farmers have been mentioned separately by their names. Among them, we notice the presence of the gāmunḍa and rāṭḍodi. Gāmunḍa is a Kannada term denoting a village-headman. The term Vaidumba Rāṭṭodi or Vaidumba Rāṭṭagudā possibly imply the administrative official of the Vaidumbas. It is interesting to note that the official of the state and the village-headman have been introduced as kampus or farmer. They associate their proper names with place-names. Among them Medikurti, Ratiguntapalle (Rakunda) lay in the Vayalpal taluka while Pichchalivandla-palle (Pichchali) and Vempalle (Vemballi) are located in
the Madanapalle taluka of the Chittoor district. We have already seen the existence of rattodi-chenu in the charters. And from the evidences coming from the Cuddappah and Krishna region, the power of grāmānī (village-headman) is noticed.

In the charters of Andhra, we come up with the appearance of executors (dūlaka or ghoṣaka) of grants. In the Srikakulam-Vizianagaram-Vishakhapatnam region, we find the names of bhogikā, mahāmahattara and purohita as executors. The term bhogikā has been interpreted as the head of a district or the collector of the state’s share of produce of lands taken in kind. D.C.Sircar has expressed the opinion that they enjoyed rent-free-land for their services.\(^{157}\) Mahāmahattara has been identified with the head of a group of villages or of the village-council; or chief among the village-headmen.\(^{158}\) Bhogikā and mahāmahattara probably had some connections with village and some of them emerged influential enough to execute the royal grant.

A notable factor in the epigraphs of Andhra is the mention of cattle-theft (or the destruction of cattle) and the death of persons who tried to prevent that. Hero-stones coming from the Cuddappah and Chittoor region have referred to those incidents, though from the 6\(^{th}\) to the 10\(^{th}\) centuries CE., their number is minimal. Cattle-rearing was an indispensable job of village-society and the forcible taking away of cattle by the army of a hostile king was very ancient practice which needed to be prevented either by the royal servants, or by the villagers themselves. According to the Kāśyapīyakṛṣīṣūkti, the kṛṣibalaḥ (toiling peasantry) should protect cattles either by themselves (svayam), or should employ servants (bhṛtyaganaḥ), or better still, the cowherd
boys (gopālaḥ). This is probably a general comment. The real military protection came from the kṛṣibalaḥ who formed a distinct group in the village-society. And, the persons killed in war for cattles were probably included in this group.

The inscriptions of Andhra ranging between the 6th to the 10th century CE. are silent about any conflicts in the village-society as compared to epigraphs coming from other regions and the succeeding centuries. Or it may be that the conflict never took a violent turn so as to be recorded in grant. Or, the issues were not regarded important. After 10th century CE., a Telugu Choda inscription from Andhra mentions some gaṇḍa cultivators who left the village Inambrolu on the outbreak of plague and settled in a brāhmaṇa village on the condition of the payment of a compensation. Later, the brāhmaṇas themselves deserted the village on the outbreak of famine. But when they came back, the immigrant cultivators refused to pay them the compensation. Later the king instructed the peasants to pay the amount. Such incidents are not mentioned clearly in the inscriptions under the period of our study. However, In the Kandyam plates of the Eastern Chalukyan king Dānar̥ava, two princes of the Eastern Chalukyan king were given 300 villages in Pottapi-nāḍu viśaya. The immunities they were entitled to was sarvakaraparihāra. Interestingly, the donor king Dānar̥ava ordered that the yuvarāja should protect and enforce the gift with the aid of 2032 soldiers. Therefore, there was probably some opposition against tax-collection. This was the epigraph of 970 century CE. And the above-mentioned Telugu Chōḍa epigraph more clearly displays the factor of peasant-discontent which probably began to come to forefront not before the 11th century CE.
Among the privileges granted to the donees of villages during the 6th to the 10th century CE., the *visti* was rare which meant forced labour and which was present in other territories of contemporary India. Another factor was that the numerous taxes which were granted with the villages in Karnataka, Orissa, Bengal or Tamil region, were almost absent in the case of the 6th to the 10th century Andhra. One 10th century Eastern Ganga epigraph has mentioned the privileges like *achatta-bhatta*, *jalasameta* and *sarvapīḍābāḍhavarjīta* which imply that the donee had the control over the water-resources of the village and there was the existence of *pīḍās* among the dues.\(^{162}\) Earlier, the state was not so efficient in finding out the sources of revenue, or the issuing authority did not find it important to mention about them, or they were not the significant sources of income primarily. Only a few epigraph mentions about the privilege like *aśvattha-chheda*\(^{163}\) or *anavamarṣyam*.\(^{164}\) Of course, the royal authority began to show its skill in collecting various kind of taxes in the last decades of the 10th century CE. Overall, the Andhra epigraphs show a picture of village and village-society which is variegated, region-specific and very much interesting.


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Figure 1. Settlement in Krishna region (www.google.com) 20.6.2013 (10.00 AM)

Figure 2. Village in Nellore with tanks (www.google.com) 20.6.2013 (11.00 AM)