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Paper : **Economic History of India**
(from the Earliest Time to 1707 AD)

Module : **Cholas : Agriculture, Irrigation, Guild Organization**



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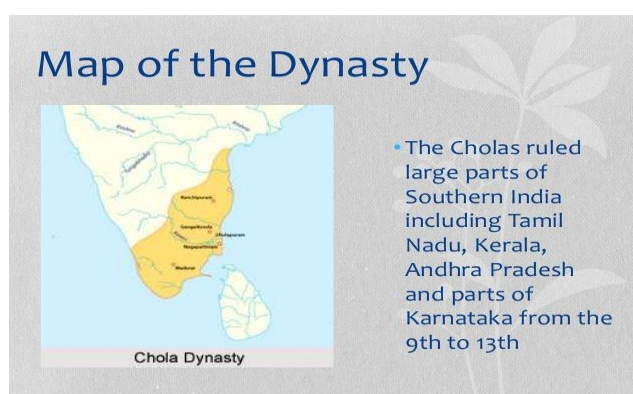
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Component-I (B) – Description of module:

Subject Name	Indian Culture
Paper Name	Economic History of India (from the Earliest Time to 1707 AD)
Module Name/Title	Cholas : Agriculture, Irrigation, Guild Organization
Module Id	IC / EHI / 18
Pre requisites	Study the various sources for understanding economic history of south India during the Chola period
Objectives	• To study about the south Indian economy under the Cholas. • To understand the land use pattern and method of cultivation. • To study the sources of water supply and its management systems. • To emphasise the guild organisation during the Chola period.
Keywords	Cholas / Land / agriculture / irrigation /trade / guild

E-Text (Quadrant-I):**1. Introduction**

The agrarian condition of south India began to change significantly from the time of the Cholas. Most important changes took place in aspects of agriculture during the Chola period were that of the forest and waste lands became cultivable land. The royal patronage was important factor for the expansion of agriculture in south India. The rise and spread of settlements clearly show the spread of agriculture and other commercial activities. The patronage extended to tank buildings activities is a marker of agrarian expansion. These agrarian changes increase the production and the expanding economy led to the growth of trade and commerce and emergence of guild organizations. The guilds organized economic activity of the merchant community as well as the state.



2. Land Tenure

There were many kinds of land during the Chola period. From inscriptions and copper plates we identify the various kinds of land and its uses in the agrarian development of the state. There was individual ownership (*ekabhogam*) as well as collective ownership (*ghanabhogam*) of land during the Chola period. The waste lands, forest lands and pasture lands seem to have been held in common by the village community. Some lands described as being a part of common land (*ur-podu*) of the village. Evidence of communal ownership is provided by the recurrent use of terms like *ur-manjikam* and *ur-podu* in inscriptions. The Chola inscriptions also use the term *karayidu*, which seems to indicate periodic re-distribution of common land.

Individual ownership (*kani* right) of land was clearly recognized in the innumerable instances of alienation by sale or gifts of the absolute proprietorship of the soil by individuals. The inheritance of such property from a father to his son can be gathered from number of Chola inscriptions. The individual *kani* rights meant rights of inheritance (*ennudaiya*) over lands, the right of possession, which was being transferred by the seller or donor. The *kani* right holders enjoyed a privileged life in the hereditary based possession of land.

The term '*kani*' was originally interpreted by scholars like Noboru Karashima, Y. Subbarayalu to mean *asthabhoga* rights, i.e. the right to absolute ownership over land. Heitman, however, shows *kani* rights to indicate a trope ranging from *nila-kani* (ownership right) to *ulavu-kani* (cultivation right) to even unusual rights like *patavu-kani* (share holding).

Noboru Karashima was among the first to evolve a sustained pattern of agrarian relations on the basis of the thirty inscriptions from Tiruchirappalli region of the Chola country. He contends that a new agrarian order comprising powerful individual landholders emerged in the lower Kaveri valley between the third and fourth decade of the thirteenth century A.D. The emergence of a number of big landlords by the late Chola period is indicated by titles such as *Udaiyan* (holders), *Kilavan*, *Alvan* or *Ariyan*.

2.1. *Vellanvagai*, *Brahmadeya* and *Devadana* Lands

We find references to *vellanvagai*, *brahmadeya* (donated lands to Brahmins) and *devadana* land (donated lands to temple) holdings during the Chola period. It has been suggested by scholars that there was only collective holdings in early Tamil country up to the 10th century A.D. Gradually there developed individual ownership of land. The basic unit of the agrarian society of the Chola period was village. The inscriptions of the Chola refer to those villages as *vellanvagai*. The *vellanvagai* type was considered as a communal possession of village land. In the *vellanvagai* villages, initially all the lands were owned by the community known as '*urar*' (inhabitant of *ur*, village). The members of the community, who they themselves being the cultivators, had received the share of the village land by rotation. Each individual of the community had the right to receive the share in the entire land of the *vellanvagai* village. Hence every individual of the *urar* was personally called as possessor (*udaiyar*) of the whole village. These individual families organized agriculture by themselves, and thereby there was no scope for basic stratification. But this un-stratified society got affected due to the formation of *brahmadeya* villages which spread the concept of private ownership rights, where Brahmins had absolute rights on those lands. In the *brahmadeya* land, the Brahmins did not involve in direct agricultural operation. Hence, the land was left to be

possessed by the Vellala families, a different ethnic group. Thus the formation of the *brahmadeya* villages out of the *vellanvagai* villages caused for the evolution of landlord as one stratum and the cultivators at another stratum.

The complexities of the agricultural operation were further enhanced due to the formation of *devadana* villages. All the land in the *devadana* villages had been vested under the custody of the temple. The temple and its functionaries, i.e. the Brahmins could not operate the agricultural activity. Hence the temple lands were given in lease to some individuals. Those individuals were wealthy persons in the village. Hence they did not directly perform agriculture operation. They in turn organized the agriculture through some cultivators. Thus in *devadana* land tenure, a multi-tier agrarian set up evolved, viz. landlord; possessors or tenant; and cultivator. This led to the emergence of a feudal set up in the Chola agrarian system. Hence a kind of landlord-tenant or service relation evolved in newly established *brahmadeya* and *devadana* villages.

3. Agriculture

Expansion of areas under cultivation through reclamation of forest and wastelands and all the way through the formation of *brahmadeya* and *devadana* lands, were the major features of the early and medieval Chola agriculture. The expansion of wet crop cultivation in particular was a major transforming factor in the landscape of early medieval Tamil country. Growth of population was one of the most obvious causes that led to seeking of new settlements. The next equally important cause was the production pattern, which depended on increase in the area under cultivation in order to increase the volume of production.



Early Agrarian settlement of the Cholas

The agriculture has always been the most important occupation in the Tamil country. An entire chapter of in the *Kural* (written by Thiruvalluvar) extols the glory and greatness of the farmers and their profession. The *Kural*, the most notable among the eighteen didactic works (*patinenkilkanakku* works) becomes significant. The *Kural* extols agriculture. It reflects the existing condition of those times and emphasis the importance of agriculture in whole section as agriculture had emerged as an important economic activity. This is evident from the following couplets “Husband men (*ulavar*) are the sheet anchor of the world; for on them depends the lives of the others”. “Even saints who have forsaken the world needs must lease from spiritual pursuits, were farmers to sit idle with folded arms”. Further, it states that even if one pursues other thinks one has to return to the plough.⁴ Again to show the independence of this occupation, the *Kural* says that “the ploughmen alone live as the

freemen of the soil; the rest are mere slaves that batten on their toil". The peasant is one who toils "in the sweat of his brow begs not at other men's doors, but ungrudgingly shares his bread with those that beg for alms". In addition to all, Thiruvalluvar also delineates the agriculture techniques and practices right from ploughing, manuring, weeding, irrigation facilities and guarding of the crops.

3.1. Crops

The geographical conditions of the particular region are the determining factors in the techniques of cultivation, the nature of crops and the cropping pattern. The red and alluvial soil of Kaveri region was extremely suitable for wet crop cultivation. Rest of the soils in the Chola region was suitable for dry-crop cultivation.

There are many references to the cultivation of different food crops in the *Sangam* literature and other historical sources. The Tamils cultivated paddy, sugarcane, millets, pepper, various pulses, coconuts, beans, corn, cotton, plantain, tamarind and sandalwood. Paddy was main crop, with different varieties grown in the wetland of *Marutam*, such as *vennel*, *sennel*, *pudunel*, *aivananel* and *torai*. The cultivation was done both by male and female peasants untiringly, with the result that food was produced in abundance in the *Sangam* age.

The agricultural products of those days were self sufficient and we also have the references to surplus of the products. The surplus products of food grain were sent for sale in the markets by bullock carts. We find descriptions of such carts carrying imported goods in the literature of the early Tamil country. The peasants in the early period were living happily because of surplus production of grain and trades.

The main agricultural crops of medieval Tamil country were paddy, *jower*, *ragi*, which was used for daily sustenance. Other subsidiary crops like cereals, nuts, oil seeds, plantations of coconuts and areca nuts, were also raised extensively wherever the conditions were suitable. Fruits gardens, flower gardens, herbal gardens, vegetables gardens were also raised to supplement the food production.

Some of the medieval inscriptions speak of different varieties of the food crops. The Chola inscriptions describe the rice-fields (*sal*), the rich field of Sugar-cane (*iksuvana*), the graves of palm trees (*kramuka*), plantains (*rambha*), and others which grew near the river Kaveri. The Udayendiram Plates which mentions the different varieties of crops which were grown on the banks of Kaveri river, such as areca-palms (*kramukha*), coconut trees (*nalikera*), mango trees (*sahakara*), Palmyra (*tala*) and other various trees. References to mango, banana, coconut, orange, lime, jack-fruits and grapes are found in the medieval Chola records. Another Chola record contains full of references to the cultivation of dry crops like *varagu*, *ragi*, *kambu*, *samai*, millet, black gram, dhall, pulse, horse-gram, etc.

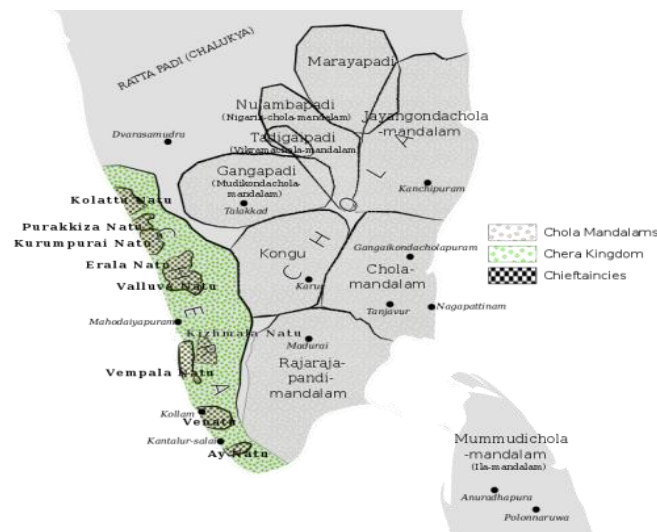
The agricultural crops were divided into two categories- *van payir* and *pun payir*. Plantains, sugarcane, ginger, turmeric, fruits like mango and jackfruit; cotton seeds and castor seeds are referred to as *van payir* and paddy, millet, and sesame as *pun payir*. In wet crop cultivation medieval Tamil society cultivated varieties of paddy according to the season. A medieval Tamil inscription states that there were two types of cultivation of paddy namely *kar* and *pasanam*. Another inscription mentions the number of paddy crops in a year to three.

These references indicate to the point that paddy was the mainstay of the people of Tamil country.

Cultivation of coconut was also important agricultural product during the Chola period, because coconut was in great demand for religious purpose as well as domestic use. Mostly the *brahmadeya* and *devadana* villages had special permission to cultivate coconuts in their lands. The collecting of toddy both from coconut and palm trees was a popular local practice.

Palmyra palms were largely cultivated in the Chola regions. Areca palms were also similarly cultivated and its nuts were in demand by the betel-using public in the kingdom. The Areca palms and its nuts were exported to other countries. A tax called '*kadaidaikkay*' was levied on areca nuts internally sold and exposed for sale in markets. Apart from these people also cultivated different oil-seeds.

Cotton also cultivated in large tracts, since weaving was one of the chief village industries. Kanchipuram (*Tondaimandalam*) and Coimbatore (*Kongumandalam*) were famous for weavings. Cotton threads (*nool*) prepared before weaving was subject to share due to the king. Medicinal plants were also cultivated in Chola territory. The cultivation of these plants was taxed during the Chola rule.



Mandalams of the Chola Empire (11th Century A.D.)

3.2. Method of Cultivation

Broadly speaking, three different systems of cultivation were adopted in the Chola country. There were:

- Where the owner himself cultivated the land with the help of his family.
- Where the owner looked after the land with the help of day labourers and farm servants.
- Where the owner let the land to tenants on lease.

The first two systems were familiar in south Indian agrarian society. These have been adopted by the rural and owner for ages, but it may be pointed out that the first system might have been specially prevalent in such cases where the owner had only a small area of land and he belonged to the cultivating class; such where the village servants, who in addition to discharging their duties in the village, looked after the cultivation of their lands.

The second system was followed by the landlords who possessed vast area of land for cultivation. The third system was quite common in the case of land owners who belonged to the non-agricultural classes or to institutions which had necessarily to depend on tenants. The Brahmins and temple lands were always cultivated by the tenant cultivators of the village.

On the basis of availability water sources the cultivated area during the Chola period was divided into 'wet', 'dry' and 'garden' lands. The Chola inscriptions refer to these lands as *nanjai* (wet land), *punjai* (dry land) and *tottakal* (garden lands). The wet lands and dry lands were also known as *nirnilam* and *kollainilam* respectively. Another inscription calls these lands as *nerraramban* and *kattaramban*. In wet land cultivation there were generally two harvests, the *kar* and the *pasanam*. The season for the sowing of the *kar* began in May or June and the harvest took place about December or January. Occasionally there was a third crop, which was called the *kadaippu*. The crops raised in the *punjai* land were called *punpayir*.

The wet lands were irrigated from river channels or tanks by the natural flow of the water. Dry lands were solely dependent upon local rainfall and garden lands, which were irrigated by water artificially raised from well, etc. On dry lands the cultivation of a simple character. Before sowing, the field was ploughed several times in transverse directions. The seed was generally scattered broadcast from the hand, but some time a rude bamboo drill was used. Wet lands were from their position fertile, apart from the advantages of irrigation. The useful crop was paddy, which was sometimes sown broadcast in the soil worked up into a semi-liquid state, and sometimes transplanted. Water was supplied as often as it could be obtained, daily if possible; and on each occasion of watering, the land was flooded to the depth of 1 or 2 inches. After the crop had been sown, little hoeing or weeding takes place. The harvest was gathered by hand, the labourers being paid in kind.

Many of the cultivation process required the assistance of cattle. The cattle were employed in ploughing, lifting water, threshing, transport of produce, etc. Agricultural work was done without buffaloes or bullocks it was exclusively in the hands of females; but with the intervention of draught animals, it was taken over by males, soon to be succeeded by male labourers. The cattle were then yoked to the plough and a squire piece of ground was ploughed. A few furrows were made and care was taken that the plough was dropped towards the right side. As at every ceremony, god Ganapathi was invoked and offerings made to

him, after which the landowner sowed the seed in the furrows already made, the agrarian labourers in the meanwhile praying for a good season, a plentiful harvest and health and prosperity to his master and his family. A coconut was then broken on the ploughshare and it broke into exact halves or otherwise, the nature of the forthcoming harvest was predicted.

3.3. Agricultural Implements

The people of early Tamil country used various implements for the agricultural processing. In ancient *Tamilagam* the agricultural implements found in the burials of Adichanallur, a rich urn burial site of early *Tamilagam*, also yielded few agricultural tools. According to Irfan Habib the plough appeared in south India in the second millennium BC which basically Neolithic culture. The use of the plough we can find in literatures during the early days of ancient Tamil country. *Meli* and *nanjil* are the two most commonly used terms in the poems for plough and 'er' for ploughshare. The term 'er' referred to the act of ploughing, 'ulavu', and therefore, the terms 'eror' and 'ulavar' were used for ploughmen.

Interesting information about the agricultural implements used during the medieval period we get from Kampar's work of 12th century A.D. Though the sources of information are not the inscription, it is still relevant to give details here. They are plough (*kalappaṭi*), plough handle (*melī*), large nail (*urrani*), the yoke (*mukattadi*), socket (*nukattulai*), iron and wooden rod which holds the yoke in position (*nukattani*), the rope that ties the yoke to the neck of the bull (*todai*), the plough point (*kolu*), the nail that join the plough point to plough (*koluvani*), whip in the hands of the peasant (*tarrukkol*) the ox or bull that ploughs (*vilavirudu*), a leveler *manvetti* or *mammutti*, etc.

4. Irrigation

As agriculture depends largely on irrigation, both natural and artificial water resources were utilized by the farmers. Tanks and wells were the main source of artificial irrigation. Among the natural sources all the rivers of the Tamil region like Kaveri, Palar, Thenpennai, Vagai, etc. not only provided drinking water to the population but were also utilized for irrigation purpose as well. The earliest irrigation attempt was confined mainly to using the flood waters of rivers.

4.1. Kinds of Irrigation

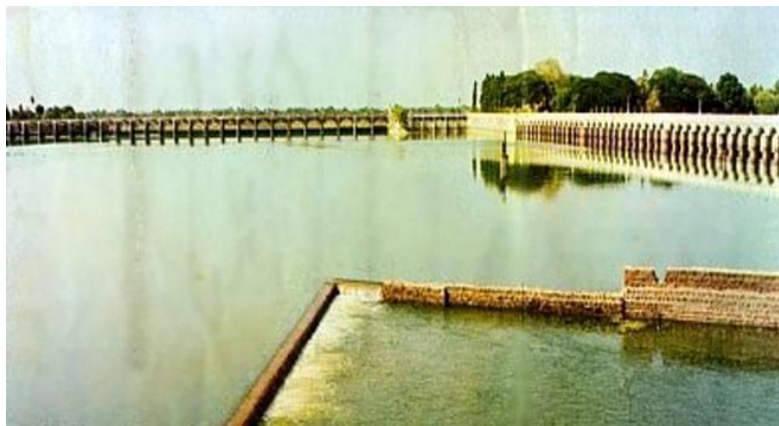
Irrigation system of the Chola period may be classified into river, tank, canal and well irrigation. Of these only tanks irrigation figures much in inscriptions. Canal irrigation too is mentioned; it existed in riverside areas. Dams supplied water to the canals. From canals, water was carried to the fields through small channels. Well irrigation was especially suited for garden crops. Water from well was lifted up by means of a pulley.

4.1.1. River Irrigation

Among the irrigation system the river was an important water source for cultivation during the Chola period. The Kaveri River was the main river of the Chola land, which contains one fourth of all the riverine water in Tamilnadu, benefitting from both the south-west and north-west monsoon rains in the Western Ghats. It may be held that history of the Chola Empire

was closely linked up with the state sponsored irrigation on the Kaveri River and consequent progress of the agriculture linked to an unprecedented progress in crop production. That was favourable for the growth of the people's happiness on the one hand and an increase in the volume of state revenue on the other. Thus we may stress how a petty kingdom of the Cholas was gradually and by stages extended into far flung empire through their sincerest effort for irrigation.

From the beginning of their rules the early Chola kings tried to a great extent to harness the natural sources of water. For instance, the early Chola king *Karikala Cholan* (C.150 A.D.) controlled the overflow of the banks of the river Kaveri. He is accredited with cleaning of the jungles and introduction of agricultural settlements, construction of embankments on both sides of the Kaveri River, construction of a dam (*Kallanai* now known as Grand Anicut) across the Kaveri and also digging canals. The early Tamil works provide clear evidence of agrarian settlements and irrigated rice fields in the villages watered by Kaveri, Vaigai, and Tambraparani and besides evidence of manmade canals and tanks.



Kallanai Dam constructed by Karikala Cholan across River Kaveri (1st Century A.D)

It is well known that Tamilnadu is mainly a rain fed area. But monsoon rains spread over only a short period in a year, besides being unpredictable and are often found to be inadequate. Thus from the earlier period a large number of water tanks, canals, sluices, etc. were constructed in Tamilnadu by the royal officials, state authority, the nobility and by the private individuals in order to preserve water for future use. Even the increasing number of *devadana* and *brahmadeya* lands increased the role of the temples and village assemblies in this field. It is known that whoever invested or executed the construction of irrigation work they received a small share of agricultural production.

4.1.2. Tank Irrigation

In Tamil country the construction of the irrigation tanks seems to become well established by early and medieval Chola times. We can find references to construction of tank in the South Indian Inscriptions to improve the cropping and extended cultivation. Historian had earlier perceived that localized peasant agriculture had developed under the Cholas based upon minor irrigation works.

Construction of tanks and other irrigational works was taken up as a mission by the ruling classes and all rich sections of the society. References to the construction of tanks are

available in medieval inscriptions from 6th century onwards. Many of the Chola inscriptions in the Tamil region refer to the construction of tanks in the area by members of royal family and their subordinates. There was a rapid increase in the number of tanks constructed from the 10th century onwards. Due to the large changes in the irrigation methods there was tremendous agrarian expansion during the rule of the Imperial Cholas (C.850- 1270 A.D.), all over Tamil country and more particularly in the Kaveri basin.

The Tamil work *Visvakarma Vastu Sastra* narrates in detail about the construction of reservoirs (large irrigational tanks), big tanks (*tataka*), small tanks (*vati*) and wells (*kinarus*). Tanks and wells were the main source of artificial irrigation. Tank in Tamil country are variously known as '*tataka*', '*eri*', '*pereri*', '*kulam*', etc. The *eris* (lakes) were considered as important source of irrigation for the agricultural expansion, mainly in those places where rivers (*aarus*) and tributaries (*sittarus*) were absent. Lakes were mainly constructed to preserve rain water for future use. In medieval south India many lakes such as *Vairamegha-tataka* of Uttiramerur, the *Chola-varishi* of Sholingur and the *Rajendra Cholah-periya-eri* at Punganur were constructed for agricultural expansion. Parantaka I constructed a lake named *Viranameri* near Kattumannarkoil in South Arcot district. Other famous lakes of this period are *Madurantakam*, *Sundarachola-pereri*, *Kundavai-Pereri* (named after a Chola queen), etc.

The Chola rulers constructed tanks for the promotion of agriculture as well as for religious purpose. The Chola king Rajendra I constructed a huge tank, named *Cholagangam*, in his capital town Gangaikonda Cholapuram which was described as the liquid pillar of victory (*Jalasthamba*). It had many sluices and canals to provide water to a large area north of the Kollidam River, including the capital city. Over flow of the *Cholagangam* made the *Viranam eri*. There were several channels and feeder channels and the tank was partly filled by a channel from the Kollidam River which enters at its southern end and partly by a smaller channel from the Vellar River on the northern end. As a result there was tremendous agrarian expansion during the rule of the Imperial Cholas (c 850-1270 CE) all over Tamil country. According to some Tamil texts the big tanks were dug either in the middle or in the peripheral area of village. Water from the tank to fields was channelled through construction of sluices or channels. It is known from various sources that sometime temple also granted money for the erection of channels.

According to Karandai copper plate, the Chola king Parantaka I excavated hundreds and thousands of deep streams to make the earth fertile. A lake *Viranarayanap-pereri* evidently named after his title is known to have been caused to be excavated by Parantaka I to the west of Chidambaram. Three channels named after him, namely Singalantakan, Sri Parantakan and Irumudisolan, are mentioned in the Karandai plates. It proves that Parantaka I was not only a great warrior but also he took positive steps for the prosperity of his subjects.

The formation of *brahmadeya* and *devadana* villages during the medieval period of Tamil country introduced much rearrangement within the existing indigenous system. The new settlements like *brahmadeya* and *devadana* created demand for the construction of new tanks and for expansion of the linkages of the earliest canal system. Inscriptions regarding land grants contain detail information not only about donated lands but also about irrigation facilities such as canals, lakes, sluices or wells. Thus, among the wealth of sociological

information buried in these land boundaries lies lots of information on water sources within or near the cultivated plots attached to religious institutions. The expansion of the irrigation system during the Chola period caused many other people to become agriculturists, as it accommodated the other groups of people not previously included in the agrarian structure.

4.1.3. Canal Irrigation

There was a well-developed and highly efficient system of water management from their village level upwards. Long canals (*kal* or *vaykkals*) were constructed and used for irrigation to carry water from its origin in a river, lake or tank through villages and often between villages. Most of the distributory canals of the Kaveri River belong to the Chola period. They are namely *Uyyakondan* canal, *Rajendran vaykkal*, *Sembian Mahadevi vaykkal*, etc. There was a highly developed efficient system of water management from their village level upwards.

4.1.4. Well Irrigation

Well irrigation has been practiced in Tamil Nadu from time immemorial. It is one of the cheapest means of irrigation in ancient Tamil country. The Chola gave more importance to well irrigation in and around Thanjavur regions. The scarcity of the surface water supplies can be solved by the method of grand water irrigation or well irrigation.

The wells were called *kinarus* in Tamil, were mostly used for irrigation in the individual plots of land. People used traditional methods of watering the field in which the farmers used a bullock-propelled device called *kapilai* or *kamalai* for bailing out water from deep wells and a manual set up called *erram* (mote), for shallow wells were used. The *kamalai* is an animal drawn device used to lift water from deeper depths. Wells were connected to fields mainly to supplement irrigation from the lakes and tanks. In some areas wells became an important source of artificial irrigation.



Ancient Method of Water Lifting (kamalai erram) from Well

4.1.5. Sluices

In many places small ponds (*kuttai*) were also constructed for irrigation purposes and sluices became part of the tank-fed system. In the inscriptions of the Cholas, sluices and sluice-

gates called *tumbu* are regularly referred to from the beginning of the 8th century CE. The Chola record mentions a kind of irrigation device called *madugu* or *madagu* may not necessarily denote a sluice. According to the inscription, the *madagu* regulated the outflow from the river, so it seems to have been a kind of weir rather than a sluice at a tank. Proper sluices (*tumbu*) are in fact mentioned only century later, when a Chola king recorded repairs to several tank, bunds and sluices. In the 9th century, the number of references to sluices increases markedly in the epigraphic of the Cholas. By then, advanced hydraulic engineering and construction had apparently become quite common in south India.

The sluices consisted of two granite pillars varied in height, according to the depth of the reservoirs. The sluice mouth could be easily opened by lifting the rod. The sluice pit (*kumili* which is referred from the Chola inscriptions) was another system for the regulation of the flow of water from the reservoirs used at required centres. In the case of *kumili* water from the reservoir flew into the sluice from above. Medieval Tamil inscriptions record the names of innumerable distributive channels from the Kaveri which helped to make the land fertile of the Tiruchirappally-Thanjavur region during the Chola period.

Every agrarian unit at the village level had a network of channels (*vaykkals*) to supply water in each field, leading from the village tank (*ur kulam*) or the channel of the locality to lakes and tanks which were either river- fed or rain-fed. During Kulottunga Chola III's reign initiatives were taken for bringing water into *Uyyakondan* channel, branch of Kaveri River. The head sluice of the *Uyyakondan* channel was made of stone and it was erected in c. 1205-1206 A.D. During the rule of Raja Raja III (c. 1216-1256 AD) in the *periya vayakal* (great channel) at Musiri the head sluice was built of stone in 1219 A.D.

4.1.6. Maintenance of Water Sources

The maintenance of the water sources was another important part of irrigation system. There are many inscriptions during the Chola period, speaks of the maintenance of the irrigational sources. An inscription of the Chola king *Parakesarivarman* (10th century A.D.) refers to the dredging arrangements made for a tank by the assembly of *Nayadhira-mangalam*. Most interesting thing is that the workers engaged to dredging work were paid through paddy instead of cash. This inscription also mentions various dredging equipments such as spade (*kottu*), baskets, rods; etc. T.M.Srinivasan has provided a comprehensive view of agency and maintenance at different scales by temples, private individuals, mercantile assemblies, village assemblies, ministers of state and the royal government. *Maramat* (cleaning) work of the tanks was also done on regular basis. Thus it is evident that regular supervision had been done for the maintenance of the tanks.

It is stated in an inscription of the time of Chola king Kulottunga that in his 12th regnal year, the tank of *Somangalam* alias *Pancanadivanaca-caturvedimangalam* breached at seven places due to heavy rains. An individual named *Kamankandavanavan* repaired all these breaches. The same person repaired breaches appeared to the same tank in the next year. Finally the Chola king Kulottunga donated forty '*palankasu*' (a kind of coin) as endowment for repairing the channels and the tank on his 14th regnal year. The village assembly was given the responsibility to de-silt the tank and to repair the bund regularly.

During the Chola period in most of the villages 'tank committee' (*eri-variya*) was looked after the maintenance of the tank and other water sources. This committee functioned as a

committee of the village assembly. The famous Uttiramerur inscription of Parantaka Chola gives an elaborate description of the rules regarding the composition of this committee. This body consisted of six members who held office for 360 days and then retired. The committee was in the main, concerned with raising of resources and their utilization for the maintenance of irrigation works. It is mentioned in an inscription that an irrigation committee raised the banks of river Kaveri to protect cultivable lands from flood water. Strict rules and regulations were implemented to protect irrigational projects from unwanted damages. People made agreements among themselves that they should not cause any damage to the wells, tanks and other water resources. Any deliberate attempt to damage irrigational tanks was considered as crime.

Sometime taxes were levied for the maintenance of the tanks. For instance, the tank committee collected a tax called '*eri-ayam*' for the repairing and maintenance of the tank. Various kinds of irrigational taxes (*neer kuli*) were collected during the medieval period of south India. *Pasipattam*, *vaykal-pattam*, *minpattam* were other taxes collected by the tank committee. *Pasipattam* was a tax levied on the distant lands that used the tank water supplied through channels. *Minpattam* was collected from those who held the rights of fishing in the tank as well as in the channels. *Vaykal-pattam* was collected from those who use the channels for irrigation of their lands.

People of medieval south India had tremendous scientific knowledge about construction of tanks, banks and other means of irrigation sources. The Cholas were advances in irrigation system, from the simple weirs across rivers to small-scale tanks and finally to large reservoirs with sophisticated sluices mechanism lay at the beginning of this remarkable expansion of the Cholas from the early 10th century. The field of hydraulics was recognized as a special field. It was called *Jalasastra* and *Pathasastra*. The hydraulic engineer was called *Jalasutrada* and water diviners were called as *Kupadasakas*. Experts learned in hydrology had great demand at that time. Selecting the most suitable points and places where banks should be raised for storing maximum quantity of water as well as fixing the position and depth of the sluices had been well known art and practiced in medieval south India.

5. Guild Organization

In medieval Tamil country, particularly in Chola period the corporate trading communities were called guilds. The guild was a well organized association, which involved in commercial activities of the country. The development of the guild system is an interesting feature of ancient Indian economic history. Originally it was a grouping of the persons following the same profession, then occupation and craft became hereditary in families, later the group following hereditary avocation formed a monopoly of its trade by making the guild as a close corporation.

The functions of the merchant guilds were not confined to economic matters alone. They also played a prominent role in matters concerning social, religious, administrative and judicial affairs of the territory. From the point of economic theory, guilds can be divided into five categories:

- Guilds as joint commercial undertaking with capital of their own *Sangha*;

- Guild of skilled workmen who were supplied materials by capitalists and were paid according to their outturn;
- Guild of lower class artisans;
- Guilds of various grades of materials and low class workmen;
- Guilds of men of various profession, workmen, etc.

Guilds of all types played very important part in the state economy and helped for the growth of state wealth and prosperity.

The merchant community of the Chola country had their own guild organizations, depending upon the nature of goods or commodities they handled. The community, those who handled the horses as their commercial goods, was called by the generic term 'Chettis'. The oil merchants were called Sankarapadiyar or Sankarappadi Nagarattar, who supplied oil and ghee to the temple worship and festivals. The weaver community were involved in the textiles trade were called Saliyars. The merchant guilds, who involved in the transaction of agricultural products and other related articles, were called by the general name as *Manigramam*, *Ayyavole*, *Nanadesi*, *Anjuvanna-vanigar*, *Tisaiayirattu-ainurruvar*, *Anjuvannathar*, *Chitrameli Periyannattar*, *Valinjiyar*, *Padinenbhumi-visayathar*, *Nagarattar*, etc. Most of them had a fair way of trade connections both in inland and foreign countries. The great ports (*pattinam*) also had their guilds and autonomous institutions, but they were much more under the control of royal officers of the Cholas.

The best known among the merchant guilds of the Cholas were the *Manigramam* (*vanika-gramam*) and *Ayyavole* guilds, and they had their bases in Kodumbalur in Pudukkottai, Tiruchirappally districts. The *Ayyavole* were generally referred to as the *Tisai-ayirattu-ainurruvar*, though sometimes this was prefixed with the *Nanadesi* from several countries. The *Ayyavole* had their home base at Aihole in the Raichur Doab, in north Karnataka, as their name suggests.

The *Manigramam* had also regional base of operation which is clearly stated in the Chola inscriptions. *Manigramam* of Uraiyur, *Manigramam* of Kodumbalur were frequently mentioned in Chola inscriptions. The Syrian Christian tradition about the *Manigramam* says that they were a group who had originally come from Valikantapuram of the Chola country. Thus they had regional base in Tamil country and had overseas contacts. The merchants of *Manigramam* guild purchased the cotton fabric from Kaikolas and exported the same to the foreign countries.

Kanakalatha Mukund says that "it is clear that they had a southern base in Pudukkottai and that two groups were not part of one centralized decision-making body-though the two groups had a common point of origin". The *Ayyavole* guild migrated from Aihole to Pudukkottai region during the Imperial Chola period. The *Ayyapolil* is the Tamil form of *Ayyavole* was popular in south India. Several trading centers were called *Ayyavole* of the south probably indicating branches of the main guild of south Indian region. The international connections of *Ayyavole* extended to West Asia, while the *Manigramam* concentrated on trade with South East Asia.

During the Chola period both the *Manigramam* and *Nanadesi* of 1500 (of all countries) were very popular and powerful merchant community, had their own representative assemblies looking after their business in commercial center known as *Nagaram*. Among these, the *Manigramam* is said to be the earliest guilds in south India, the *Nanadesi* corporation was the most celebrated of the guilds, who were prominent not only in inland trade but also in overseas commerce. In medieval Tamil country, the *nanadesi* were equated to the *Tisai-ayirattu ainurruvar* (*ainurruvar* of thousand directions), which denotes the number of five hundred of the thousand directions.

The *Nanadesi-tisaiayirattu ainurruvar* was a celebrated and influential autonomous corporation of merchant. They flourished in all places, and maintained an army to protect their merchandise. An inscription from Vittrirunda-perumal temple at Kattur ascribed to the 11th century A.D, furnishes details about the *Nanadesi* who claimed descent from Vasudeva Kundali and Virabhadra. They proclaimed themselves as the protectors of the *Vira Valanjika* religion, who were glorified in 500 *Vira-sasanams*. The south Indian inscriptions speak of the *nanadesi's* close association with the *Chitirameli periyannattar*, the agricultural guild involved in the transaction of agricultural products. In many inscriptions of south India, we find the words *nanadesi*, which denote the existence of merchant groups that moved in the four directions of the country for pursuit of trade.

The mention of *paradesi* and *nanadesi* testifies the presence of colony of merchants of foreign countries. The *nanadesi* seemed to be a powerful body of merchants, who had great influence in the royal court. Some inscriptions of the Chola period provide information on the merchants and their corporate bodies' *paradesigal* (foreign merchants) and *nanadesigal* and about their contributions to the worship of temples and for the repairs of temples. They decided to assign to the temple, a fixed amount of money obtainable through the sale of commodities such as pearls, cloth, oil, and merchandise of various commodities.

The *ainurruvar*, was a large network of merchant organization in and after 11th century A.D., engaged in long distance trade even across the sea. As they engaged in long distance trade, they needed soldiers for the protection of their valuable commodities and the soldiers groups were called as *virar*, *eri-virar*, *virakkodi*, *diyaar*, *munai* and others also appeared in Tamil inscriptions. The earliest extant eulogy of this *ainurruvar* is recorded in a Kamudi inscription dated around 1000 A.D. The eulogy of the *ainurruvar*-the five hundred of the thousand directions of the eighteen countries, who support all the people, who are adorned with the five hundred victorious charters, where bosom, was adorned by goddess of future, who were also the descendents of the deities Vasudeva Kundali and Mulabhadra. The *ainurruvar* had their own settlement known as *Virapattanas* in the Chola country, enjoyed special privileges in matters of trade.

It was because of the trade activities of the merchant guilds, there was a marked increase in commercial transaction of the guilds from the sixth century to the fourteenth century A.D. They established their sway even in foreign countries. The trade guilds enjoyed their power in Tamil country and exercised their commercial supremacy in many trade and market centres. Beside trade, they involved in multi-dimensional works like charity, social welfare, judicial, temple endowments, etc. They contributed much for the development of economy of medieval Tamil country as well as in spread of Indian culture to the foreign countries.

6. Summary

Thus it can be concluded that water sources was the central regulator of agricultural activity in south India and so the long term policy of the people had mainly focused on the development of irrigation. They tried to control water flow as well as stored rain water for the improvement of cultivation. Various sources of water supply were in vogue during the study period which facilitated agriculture. State's role in this regard was quite satisfactory though private initiatives were much more impressive. As agriculture was the mainstay of the economy, developed irrigation facilities were provided for betterment of agriculture which helped directly to the economic progress. Inscription as well as literary sources shows that the Chola rulers were conscious about the welfare of their people and they took interest for the development of irrigation system.