Chapter 3

CANALS AND THE AGRO-ECOLOGY OF NORTH BIHAR

In this chapter an attempt would be made to locate the canals in the agro-ecology of North Bihar and critically examine their performance. The working of the indigenous system of irrigation would be critically examined to find the irrigation options available at the time with the peasants. The reasons for the decline of the traditional system of irrigation would also be examined.

1. Canals and Malaria

Almost all the official records on Champaran have commented on the unhealthiness of the terai region in the Bagaha and Shikarpur thanas. The Champaran Gazetteer reports on the occurrence of fever\(^1\):

The greatest mortality is caused by fever which upto 1907 had never been known to cause a death rate of less than 17 per mille (?) since the introduction of the present system of mortuary returns. The average death rate from fever for the past five years (1926-30) is 17.82 per mille (?). It should be noted that these statistics for fever include influenza and other diseases with feverish symptoms, but by far the greatest number of fevers recorded are malarial. There are various types of malaria but most of them are of the benign type which yields to quinine.

If the sub-montane tract of Champaran was an ideal ground for the breeding of malarial mosquitoes, then that region needed better drainage. But the Britishers were doing just the opposite of what was needed; they were creating more waterways, which disturbed and obstructed the drainage of the countryside. It can be argued that the canals actually worsened the situation.

\(^1\) Champaran DG, 1932, p. 51.
At the time when the Britishers were busy constructing irrigation canals in India, in Europe, the engineers and agricultural experts were trying to drain marshy lands to bring them under tillage as also to make them free from malaria. In Italy, for example, the agricultural experts had found a novel method of fertilization of land and mitigation of malaria in the most uncultivable and unhealthy areas.\(^2\)

Edward Buck had tried the same method successfully in some areas, for example, in and around Kanpur, and argued for the adoption of this technique elsewhere. But Buck admitted that there was no means by which the terai could be rehabilitated by the same methods, and he was of the opinion that experts should be sent to Italy to be comprehensively trained for this purpose.\(^3\)

So, it can be argued that in the geographical setting of North Champaran, the temporary and small irrigation structures like earthen *bandhs* and *pynes* were better suited, than large permanent ones like masonry *weirs*, canals, syphons etc. In the traditional system of irrigation the earthen *bandhs* were constructed every year. The *bandhs* of the previous year were washed away by the first floods of the season. So there was no attempt to control the river flow permanently. But in the case of concrete weirs constructed by the colonial government training works were also required to be made to keep the river within a fixed course. Rivers in this region were always shifting, a this attempt to keep the river within a fixed course not only proved costly, in construction and maintenance, but increased floods in the region. Also, the *pynes*, or irrigation channels, were constructed along the drainage line of the region, taking a course which nature had intended. But the canals made by the


\(^3\) Ibid., pp. 10-21.
colonial government were constructed right across the drainage line of the region through which it passed, thus, creating drainage bottlenecks and increased flooding in the region.

2. Pyne (Pain) Irrigation

As has already been discussed in Chapter 1, artificial irrigation was practiced in the northern reaches of Champaran district. Earthen bandhs were constructed on the hill streams and water diverted from there by means of irrigation channels, which were locally called pynes. This kind of irrigation was practiced only in the years when there was a complete failure of rains. However, some of the government documents of pre-1910 lament the absence of any significant artificial irrigation being employed in the Champaran district. Hence any shortfall or variation in rainfall caused widespread distress. The documents only speak of some system of pynes, which were managed by some European concerns, or by some British officers, or by European Managers of some big zamindari.

The most noteworthy system of pynes was constructed by the Sathi concern in Bethiah. In 1907, there were nearly 150 miles of distributaries running through the property. The rivers drawn from were the Pandai, Maniari, Kataha and Ramrekha. The proprietors of the concern gave their own ryots the use of water and also allowed the same privileges to the cultivators of other villages after their own tenants had been supplied. Any surplus was run into the village tanks for the benefit of the villagers and their cattle. It was estimated, in 1906-07, that about 20,000 acres were irrigated from this source.

Another instance of the satisfactory working of pyne irrigation was in the northwestern corner of Champaran. It was dug as famine relief work in 1897, and since then was under the charge of Sealy, the District Engineer. It received its supply from the river Masan. It irrigated an area exceeding 10,000 acres, in a strip of land about 15 miles long, and 3-4

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4 SSR, Champaran, 1900, p. 107.
5 Champaran DG, 1932, p.56.
miles in width. The necessary silt clearance and minor repairs were done at the cost of the cultivators who paid a cess on the area irrigated. Sealy made a yearly budget of the requirements and dividing it proportionally among the cultivators who paid the money to the Collector. This system worked without any trouble.\(^6\)

Apart from the above-mentioned cases, there were other instances of zamindars and planters running a system of pynes in other parts of Champaran, especially the north-western corner (as well as the rest of the north Bihar). But not much has been written about the existence in the official records about the existence of pynes in the estate of the Indian zamindars. But to argue that the Champaran zamindars had not maintained a system of pynes would be wrong as even the British observers agreed that "many of these bandhs and pynes [were] relics of the old system of irrigation which were carried on before the Tribeni canal was built."\(^7\)

But a study of some files of a later date (Post-1910) shows that pyne irrigation was, if not very widespread, quite popular in the terai area of Northern Bihar. It was a very common practice to erect bandhs on small rivulets, drainage channels and river, some of which were perennial, when the rains failed or during the hathiya season.

One reason for showing pyne irrigation in a bad light or to say that it was not practiced very often and everywhere in the official documents could have been due to the irrigation bureaucracy's over zealously and over enthusiasm to get the sanction for Tribeni canal from the Government of India. The engineers badly wanted an irrigation project in Bengal, where no new canals were constructed for 25 years (after Son canal in 1875). So their attempt was to, first, show the absence of artificial irrigation in Champaran and second, to show that the Tribeni canal was a well-planned, cheap and effective project. They were

\(^6\) Indian Irrigation Commission, 1901-03, Minutes of Evidence (Bengal), pp.45-48. [IIC, Bengal]
\(^7\) Champaran DG, 1932, p.34 (emphasis mine).
not in a mood to see a refusal for the project for a second time, especially when the PWD had passed strict rules for sanctioning of project.

The Tribeni canal was planned to irrigate the area north of the Sikrana River (or old Gandak). This was the area where bandhs were put across rivers every year to irrigate the rice crops when rains failed. The practice of irrigation continued even after the Tribeni canal became operational. But the pyne irrigation had certain inherent problems in their working which led to its eventual disappearance from a number of places. These will be discussed in the following section.

2.1. Problems in Pyne Irrigation

One major problem with pyne irrigation was the constant conflicts and bickering between peasants in the upper reaches of the river and those in the lower reaches on the question of distribution of water. As was the case several bandhs were put up on a stream and the short period within which all the fields had to be irrigated, conflicts were bound to crop up. Most of the hill streams north of river Sikrana (in Champaran) were utilized for irrigation purposes, and each of these, throughout their courses, were connected with a series of pynes to carry off the water to neighbouring village. Water was obtained by putting bandhs across the rivers. These earthen bandhs were swept away by the first floods. Putting up new bandhs was deferred until the last moment, and they were constructed only when there was a long break in rains. Another limiting factor was the small amount of water available in these rivers, most of which had their sources in Nepal, where the same practice of putting bandhs across the rivers was followed. The streams carried a limited supply of water. Due to the fact that pynes and other channels were not constructed on a very scientific line and not properly maintained, there was a great deal of wastage of water. The result was that those
people who had bandhs higher up the stream got practically all the water, while those lower down got very little and not on time. There were also conflicts over new bandhs coming up or over the location of some old bandhs, especially in times of serious break in rains.\(^8\)

An area of conflict or mismanagement in the working of the pyne irrigation was the constant upkeep and maintenance of the pynes and the construction of bandhs every year. Because of the simple technology used in the construction of earthen bandhs, a large number of labourers had to be employed for the purpose. Construction of bandhs was a very labour intensive process and there was always a possibility of breach in the bandhs, which again required the same level of mobilisation of labour on another day. So the process of bandh making must have required a high degree of cooperation among people of several villages benefiting from a particular bandh.

2.2. Management in Pyne Irrigation

In the absence of any reliable source material\(^9\) on the management techniques and practices in pyne irrigation, we have to take the help of some of the theoretical formulation that has lately been used by certain scholars to explain the working of indigenous irrigation works.

The most interesting is the use of various models of Game Theory\(^10\) to show that "in sufficiently old irrigation systems, due to a process of evolution and selection, systematic co-operation of users... is a more likely event than not".\(^11\)

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\(^8\) *IJC, Bengal*, 1903, p. 49.

\(^9\) "Indeed, the specific nature of irrigation policies pursued in each region determined the volume of information available and thereby shaped the state of knowledge of the existing state of affairs. In India, it led to total ignorance of the widespread joint management by water users". Sengupta, *Managing Common Property*, p. 25.

\(^10\) "In sharp contrast to neoclassical theories, the Game Theory permits the hypothetical social agents to exercise all options of behaviour without having any ethical hangover. Thereby it is able to trace the evolution of systems, which provides the necessary information for appreciating them critically", *Ibid.*, pp. 30-31.

As we have already seen from the previous discussion that the major area of cooperation is in construction (of bandhs), operation and maintenance (of pynes), in allocation (of water) and conflict resolution.\textsuperscript{12}

In North Bihar (especially the terai area) artificial irrigation was needed only once every 2-3 years, that too only for a single crop (aghani rice). As was the case in Champaran, "the making of the bandhs was generally deferred until the last moment, in the hope that rains would come and avert the necessity of making them. But when a serious break of rain occurred, and irrigation became necessary to save the crops, bandhs were at once constructed\textsuperscript{13}. This goes to show that even though artificial irrigation was not required every year there was a very high level of cooperation and communication among co-users who could get together for community labour at short notice. The benefit accruing out of pyne irrigation (or contributing to community labour) would have been known to all keeping in mind the effect of untimely rain, or a complete failure of rain, on the aghani rice. So, the long-term strategy of each individual would be to cooperate, rather than not.

As has already been discussed earlier, construction of bandhs required a large labour force. This very fact ensured an equitable distribution of water among the co-users, as any attempt to usurp a larger share of water by those in the upper end (of pyne) users, at the cost of the tail end users, would have led to absenteeism by the latter in community labour (for bandh making) in the next season. So in the long term, the best strategy, even for a group of self interested individuals having no moral qualms against cheating co-users, would have been to cooperate with each other for the best results of all.

\textsuperscript{12} Ibid., p. 25.
\textsuperscript{13} IIC, Bengal, p.49 (emphasis mine).
However, several _bandhs_ were erected on a particular stream by villages along the stream, and all of them had to utilize the limited supply of water in the stream during a very short and limited period. The natural choice of the people having _bandhs_ in the upper reaches of the stream would be to use all or a major part of the water of the stream to the detriment of those in the lower reaches of the stream. No moral or ethical pressure would succeed in convincing the former to release the rightful share of water to the latter. This would result in conflicts and violence between villages. This conflict could be averted or resolved by a higher institution or authority.¹⁴ In case of small irrigation systems in India (also in north Bihar) this authority was provided by the _zamindar_ (under whose jurisdiction all the villages came).

The _zamindar_, in turn, was interested in improving agricultural conditions in his estate so that his share in the produce also increased. The existing law in North Bihar permitted him to enhance the land rent if he brought any improvement in the agricultural condition. Moreover, during famine or scarcity it was difficult to realize the rent from an already improvised population. It has been seen that during years of scarcity the full rent was never realized.

The _zamindar_ also had to contend with the danger of flight of labour to other areas during scarcity, as till the 19th century (in large parts of North Bihar, especially northern Champaran) land was easily available. In fact, _zamindars_ invited new tenants and settled them with easy terms and conditions. Running away from one's land to another place was a very effective mode of protest in the hands of the peasantry.

¹⁴ "Metanorm game indicates that an authority, by seeing to it that the whole community is punished if they fail to punish the defectors, may assist in the establishment of complete authority", Sengupta, *Managing Common Property*, p. 30.
2.3. Why the decline in Pyne Irrigation?

The above discussion on the working of the pyne irrigation shows that agriculture could have been secure from the vagaries of famine. But famine and scarcity did occur in North Bihar. The parts in which the "effect of drought [had] been the most serious [was] a tract extending along the border of Nepal, from the Gandak to the Kosi river, 250 miles by 50 miles".\(^{15}\) This region's susceptibility to famine was cited by one and all, making a case for it urgently needing artificial irrigation.\(^{16}\)

The question still remains why the British officers were talking in unison about the absence of artificial irrigation in the same tract of land where pyne irrigation seemed to be the most popular and extensively used system when rains failed. Also why did famines seriously affect the above-mentioned tracts?

There could be two possibilities - first, that pyne irrigation was not as prevalent or popular as the discussion in the previous pages suggest. Second, some new situation might have led to the destabilisation in the working of these 'common property resources'. The fact that in North Bihar, between the first famine recorded in British official records in 1769-70 and the next famine in 1865-66, there was an interval of 88 years when there was not a single famine suggests considerable use of traditional systems of irrigation. Besides, some official British records do accept the prevalence of a system of artificial irrigation in the same tracts, albeit in a limited scale.

\(^{16}\) "...the preparation of a carefully considered irrigation schemes from the Gandak, which could be taken up any time if thought desirable is therefore, in our opinion expedient". Ibid, p. 153.
"...there was an almost total absence of artificial irrigation because of which any shortfall or variation in rainfall caused widespread distress", SSR, Champaran, 1899, p. 107.
An explanation for the decline of indigenous system of irrigation (by *ahars* and *pynes*) in South Bihar is provided by Nirmal Sengupta, who suggests that is was because of the change from *baoli* (in kind) system of rent to *nagdi* (in cash) system. According to him, this change removed any kind of incentive that a *zamindar* had for improving and maintaining the *ahars* and *pynes*.\(^{17}\) In the produce rent (*baoli*) any increase in crop production would also increase the share of the *zamindar*. So the *zamindar* had an incentive to keep up an efficient system of irrigation. This might have been true for Champaran also, where in 1899 the total cash rental was Rs. 31,07,895 and the produce rental was Rs. 3,80,112 only.\(^{18}\)

The *zamindar*, a pivot in the efficient working of the traditional irrigation system, had completely shirked his responsibility for improving and maintaining the system throughout Bihar in the 2nd half of the 19th century.\(^ {19}\) This was one of biggest reasons for the decline and disappearance of *pyne* irrigation in North Bihar.

Apart from the *zamindars* losing interest and incentive, the breaking up of the estates into smaller *zamindaries* also helped in the decline. So, the inbuilt stability within the management structure of the indigenous system of irrigation was broken.\(^ {20}\)

But not all the *zamindars* had ignored the old system of irrigation. The *bandhs* and *pynes* were maintained and working in some pockets where enthusiastic and entrepreneurial *zamindars* took interest. But the complex and intricate balance of conflicting interest between different *bandh* owners must have been disturbed after the breakup, or sub-division,

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\(^{18}\) Champaran DG, 1932, p. 94.

\(^{19}\) See IIC, Bengal.

\(^{20}\) L. Hare, Commissioner, Patna Division, stated, "It is more and more difficult to get them all to agree. One man stands out and block the improvement", IIC, Bengal, p. 90.
of zamindary estates. So in place of the extensive networks of pynes and bandhs which existed earlier, it was only in smaller pockets, where the influence of a zamindar existed, that the irrigation from pynes existed. Also, due to lack of cohesion and understanding, a lot of areas must have gone without water, even if some people had shown interest in irrigation. Thus, it was the breaking up of a centralised authority (big zamindar), the zamindar losing incentive to improve due to change from produce to cash rent, an absence of a legal moral or ethical order as regards water allocation, clash of interest between different zamindaries, as also sheer negligence of some smaller zamindars, which might have contributed to the decline of this system of irrigation.

3. Intermediary Tenures in Champaran

One important reason for the negligence in any improvement in agriculture was the system of farming out villages to intermediary tenure-holders. In Champaran, the practice of farming out the villages was widespread in the Bettiah Raj even before the Permanent Settlement. In the Bettiah sub-division (of Champaran), where pyne irrigation was supposedly very popular, there was no fragmentation of the zamindari estates. In this section a discussion on the intermediary tenures in Champaran would be made to find out if the practice of farming out lands was responsible for the decline of pyne irrigation in the district.

The three big zamindars of Champaran resorted to thikadari system (farming out lands for a fixed period) on a large scale in the 19th century mainly because of the following reasons: (a) they might have been in an urgent need of money, and the initial premium was...
an inducement, and (b) they might have been unable to arrange for the collection of rent and
cultivation of zirat (private land of the zamindar) lands.\footnote{21}{Girish Mishra, \textit{Agrarian Problems of Permanent Settlement: A Case Study of Champaran}, Delhi, 1978, p.50. In this section, I have depended heavily on this work for a discussion on the practice of farming out villages, and its impact.}

Except for cases where the favourites were lessees, the highest bidders at public
auctions were granted leases. The highest Indian bidders were generally rich peasants, petty
zamindars and moneylenders. As soon as the European planters arrived on the scene, they
took advantage of this practice and emerged as the dominant section among the intermediary
tenure-holders.

When the Bettiah \textit{Raj} was brought under the court of wards on 1 August 1897, its
total zamindari income was Rs.18,23,985-2-8\footnote{22}{\textit{Ibid.}, p.58.} (rupees-annas-paisa) out of which Rs.
17,01,156-0-5\footnote{22}{\textit{Ibid.}, p.58.} came from its zamindari possessions in Champaran and over 91 percent of
this latter amount was collected through mukarraridars and thikadars. In 1871, thikadars
(tenure-holders for a specific period) and mukarraridars (permanent tenure-holders) were
still responsible for more than 82\% of the zamindari income of the \textit{Raj} in Champaran.\footnote{22}{\textit{Ibid.}, p.58.}

Planters sought thika and mukarrari tenures not for rental income but for increasing
their profit made from indigo by extending the area under its cultivation. There were two
main system of indigo cultivation, viz., \textit{nij} or zirat (own cultivation) or raiyati or assamiwar
(cultivation through tenants). Under the zirat system, the planter himself grew indigo on
certain holdings at his own expenses and with hired labour. But building up a self-sufficient
organisation by maintaining bullocks, ploughs and labourers was tedious and cult
besides being expensive. Under the assamibar system, ryots grew indigo on a specific
portion of their holdings and delivered it to the planter concerned.

Planters preferred the assamibar system to the zirat system because the former
involved less botheration and risk. Under the assamibar system, if the crop failed as it did in
many cases, the entire responsibility was that of the raiyat and he was liable to be charged
damages if his negligence was proved. However, because of the weak or insufficient
economic inducement to the raiyat to grow indigo, the planters had to exercise extra-
economic compulsions derived from their status as tenure holders.

Indian tenure-holders met their demands either by raising the rents of ryots for
existing holdings or by settling wastelands with them and increasing their jama. Salamis
and abwabs were also realized. The planters differed from the Indian tenure-holders because
they were not interested in earning an income by raising rents. They were interested
primarily in acquiring zamindari rights to force the ryots to grow indigo under the
assamibar system.\(^{23}\)

Thikadars were forbidden from subletting but this was observed more in breach than
in practice. Big Indian thikadars generally sublet their tenures. The sublessee were called
katkinadars. Indigo planters also took advantage of this practice and became katkinadars.\(^{24}\)

In practice tenureholders were zamindars but without any permanent stake in the
zamindari under them. Their main aim was to squeeze as much as possible. In this situation
ryots were the main sufferers.\(^{25}\)

\(^{23}\) Ibid., p. 60.
\(^{24}\) Ibid., p. 59.
\(^{25}\) Ibid., pp. 65-66.
There was no deduction from the rentals of tenure-holders for the cost of collection and to allow a decent margin of remuneration to them. When the term of tenure expired, the landlord, as a rule demanded an enhanced rental from the leaseholders.\textsuperscript{26} Thikadars, on the other hand, had to explore and tap other sources of revenue to compensate to make up for this loss. The burden was transferred to the ryots who were the worst sufferers. In most cases rents were raised either by increasing the rent rate or settling fresh land with them. Salami (present offered to an official on approaching him) and abwabs (cesses levied in addition to ordinary revenue or rent) were realised from them for which no receipt was granted. For example, the Madhubani planter every year earned only Rs. 5000/- as legal remuneration but his income from pyne-kharcha (an abwab for the maintenance of pynes) was Rs. 13,000. Similarly the Sikta planter got Rs. 2600 as legal remuneration but the income from zirat and pyne kharcha amounted to Rs. 4500 and Rs. 9500 respectively.\textsuperscript{27}

Even if the ryot saved and had the capacity to invest he had no incentive to do so, because if productivity of land increased the amount of salami and abwabs were also increased and there was very little increase in their share of production. The absence of occupancy rights always made the future possession of his holding uncertain and he could not resist the illegal demands of the thikadar.\textsuperscript{28}

Very few Indian or European tenure-holders spent money on agricultural improvement or on providing facilities to tenants except during the first half of the 19th century when a few of them helped the extension of cultivation and clearance of jungles and reclamation of waste land. European tenure-holders who had substantial income from

\textsuperscript{\textendash}ibid., p. 69.
\textsuperscript{\textendash}ibid., pp. 67-68.
\textsuperscript{\textendash}ibid., pp. 69-70.
tenures and indigo never cared to extend the area under their *zirat* and invest in irrigation facilities, improvement of land and application of scientific techniques and methods of agriculture. The profit earned by a planter was seldom ploughed back. It was regularly transferred to Europe. So, the intermediary tenures accentuated the negative features of absenteeism. They were just a proliferation of the parasitical class, which seldom participated in the production process and only shared in the surplus product of the tenants.

Thus, with the *zamindar* showing a hands-off attitude towards the well being of his *ryots* and loosing all incentives and interest in agricultural improvement coupled with the mercenary and profit maximising attitude of the tenure-holders most of whom had no permanent stake in agricultural improvement, the result was a complete dislocation and disruption of the community managed irrigation systems.

In fact, there are instances of even big *zamindars* forsaking their responsibility of building *bandhs* on rivers, because of disputes with other *zamindars*. For instance, the tenants of Banaily *Raj* and Darbhanga *Raj* of Rataitha and several other villages in Kharagpore *thana* (Police Station) used to irrigate their fields by diverting the waters of the river Mahaney by constructing earthen *bandhs* at several places. A dispute arose between the proprietors of the two estates over the question of construction of *Katchcha* (earthen) *bandhs* and there was serious litigation between them. When the matter went in appeal before the High Court a compromise was arrived at by which the parties agreed to construct a *pucca* (concrete) *bandh* at a cost of Rs. 1,00,000/-. The Collector of Monghyr stated, "The construction of the proposed *pucca bandh* had been under consideration for the last 10

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29 Ibid., pp. 70-72.
30 Collector of Monghyr to Asstt Secretary to Govt. of Bihar, Rev. Deptt., dated 6th Sept. 1940, File No. XB-1/1942, *B. Progs, PWD(1)*, Bihar, p. 28.
to 12 years since the decision of the High Court in the matter of the dispute. ... On the request of the proprietors of the 2 estates, the district engineer of Monghyr had prepared a detailed scheme costing Rs. 1,56,000/- in the year 1931... [This scheme was supposed to] benefit a very large number of tenants of about 8 to 9 villages". The estimate, after correcting, came down to Rs. 1,31,463/-.

The matter came before the Collector of Monghyr for the first time in November 1937, when the tenants filed a memorial to the Government stating that the proprietors of the two estates were not getting the schemes executed. In this case, it seems that the Darbhanga Raj was trying to create roadblocks. Initially it agreed to get the scheme executed if the Banaily Raj cooperated. When the later agreed in December 1938 to allot Rs. 40,000/- for the scheme the Darbhanga Raj gave a conditional consent to the scheme in April 1939. But the General Manager of Darbhanga Raj stated that "since the tenants had got the rents reduced in some cases below the Khatian (land register containing full description of each holding, including rents and dues) rates ... the Raj was under no obligation to execute the same".

The collector, in reply, stated "... it is an admitted fact that the Darbhanga Raj did not execute the scheme inspite of the fact that the tenants went on filing memorial after memorial for the last 12 years nor did the Raj take any steps towards the construction of the scheme which would have inspired confidence among the tenants. It is therefore natural that the tenants should have sought relief under section 112 A.C (2) of the B.T. Act (Bihar

31 Collector of Monghyr to Commissioner of Bhagalpur Division, 26-8-41, Ibid., p. 48.
32 Ibid., p. 28.
33 Ibid., p. 29.
Tenancy Act). It was further explained that a relief granted under section 112A(2) was a temporary relief and the remission could be restored if the landlord restored the irrigation facilities. In fact, if the landlords registered the scheme under the Bengal Tenancy Act, they had every right to realise the enhancement of rent either by registered mutual agreement or by an enhancement in court.

Throughout this controversy, it was the tenants of the area who suffered the most. They submitted another memorial to the government stating that they "have been given hopes for the construction of the ... bandh for the last two years by the Darbhanga and Banaili Rajas, the District Collector and the Divisional Commissioner and even by the Government of Bihar ... but nothing has been done though the year is about to pass away". Since the High Court had decided in favour of making a pucca bandh the construction of any katcha bandh was stopped as the dispute arose between the two Rajas. Thus, it was the tenants who were suffering the dilatory tactics of the zamindars and the bureaucracy.

The colonial government tried to fill in the void created by zamindars' lack of interest towards improvement and management of irrigation pynes by introducing certain measures. But most of these measures proved to be only partly successful.

The Bengal Tenancy Act of 1885 was aimed at putting the zamindar-ryot relations on a definite basis. Two important changes introduced by the Act could have induced the zamindars to give more attention towards agricultural improvement. These changes were:

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34 Ibid.
35 Ibid.
36 Memorial submitted to the Prime Minister of Bihar by Dasrath Pathak and others, Ibid., p. 30.
37 Mishra, pp. 155-56. (emphasis mine).
a) The grounds on which a settled raiyat’s rent might be enhanced were modified and the enhancement of his rent by suit was facilitated; but on the other hand the enhancement of his rent by contract was restricted.

b) If an occupancy raiyat’s rent were once enhanced by contract or suit, no suit for further enhancement of his rent, except on grounds of landlords’ improvement, would lie until after the expiry of fifteen years.

The Bengal Tenancy Act of 1895 went a long way towards safeguarding the interests of the ryot vis-à-vis the zamindars. But it is difficult to assess its effect on the zamindars (and tenure-holders) in improving the agricultural condition. For examples, in the dispute between the Darbhanga Raj and Banaily Raj over the construction of bandh for irrigation, the manager of the former considers the reduction of rents by the tenants below the Khatian rates, as good enough reason for not spending on the construction of the bandh.\(^38\) In fact, the zamindars had opposed the proposed bill (Bengal Tenancy Bill) tooth and nail. In a meeting of the Bihar Landholders Association, the chief spokesman, the MahaRajah of Darbhanga, had described the proposed law as unnecessary.\(^39\) On the other extreme, in some cases the zamindars or their managers were not even aware of the provision of increasing the rents in case of agricultural improvement.\(^40\)

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\(^{38}\) F No. XB-1/1942, B Prog, PWD(\(f\)), Bihar, p. 29.
\(^{39}\) Mishra, p. 153.
\(^{40}\) “Qs. 32, Supposing a new pyne was constructed by a landlord, can he enhance his rent?
Ans: No, he cannot enhance his rent.
Qs. 33. There is a provision in the Bengal Tenancy Act which gives him power to enhance rents where he has constructed irrigation works at his own expense?
Ans: I don't know. I cannot tell you that, when it is necessary to bandh up the river for irrigation, the rayats practically do it; thousands of men turn out and help themselves and we supervise.
Qs. 36. In the bhaoli system you get an enhanced share of the produce on lands converted from unirrigated to irrigated. In the nakdl system, suppose you construct a pyne and give irrigation to the tenant, don't you lay an enhanced cash payment?
Ans. There is no actual increase in the rent. He would have to pay for the labour employed, but that would not affect his jamabandi. I don't think we have the power to increase that.”
Witness 20 - Mr. A. Dunsford Assistant to the Manager, Ramgurwa Concern, Moorla Estate, Motihari, Champaran. IIC, Bengal, p.48.
In fact, the Manager of Bettiah Raj, C. Still, even though aware of the provision of enhancement of rent in the Bengal Tenancy Act, states that rents were not enhanced even when new pynes were constructed in some parts of the Raj.⁴¹

There were many more laws passed by the government to improve the situation. For example, under section 3(b) of the Private Irrigation Act the Collector could call upon any zamindar to construct any sluice, weir, outlet, escape, headwork dam or other work in order to avoid dispute. In the dispute between Darbhanga Raj and Banaily Raj (as discussed earlier) the collector had every right to intervene. But a serious restriction was imposed on his powers by the provision of section 5(1) of the Private Irrigation Act in which it was laid down that the Collector could not authorise any such work if the costs exceeded Rs. 2500/- without the previous sanction of the prescribed authority. It was further laid down that if the costs exceeded Rs. 10,000/- the previous sanction of the provincial government had to be obtained. But before moving the provincial government the irrigation engineer had to be requested to prepare plans and estimates of the scheme.

In short, though various laws and rules were passed to safeguard the interest of the ryots and improve agricultural conditions, it was not possible for the colonial bureaucratic structure to intervene decisively in every small matter of rural life. It was only when the disputes turned to violent confrontations or when the same matter had the potential of turning up as a political uprising (like the Pabna disturbance)⁴²—the colonial local government intervened in the local affairs. For example, when a serious break in rains occurred, the Magistrate used to receive a number of complaints, mostly about somebody constructing a new bandh, or constructing bandh at a new place or the lower end water users not getting enough waters. These complaints came simultaneously from different places and

⁴¹ Qs. 40 to 45, Ibid., p. 52.
⁴² Mishra, p. 155.
it became difficult for the magistrate to go there to enquire immediately. Also, the jurisdiction of the magistrate in these cases was extremely limited, and he could only intervene to avert a breach of peace. He had no legal powers to settle these disputes satisfactorily.

When it was found that any one person was appropriating to his own use the whole of the water of any particular stream, the order that was generally passed was that he must make a jhanj and allow half the water to pass on. This proved unsatisfactory, as obviously those who had bandhs high up the stream got a great deal more water than those below. A jhanj could easily be tampered with. Anybody could stop it at night with a few basketfuls of earth. Detection in such cases was very difficult, as it was situated in the locality of people who wished to stop it and far from those persons living lower down the streams who wished it to remain open.43

So it becomes quite evident from the discussion in this section that while the zamindar had completely shirked from his responsibility towards his ryots and lost all incentive and interest in agricultural improvement, the profit maximizing attitude of the tenure-holders, who had no permanent stake in investing back their profits in agricultural improvement, led to a complete dislocation and disruption of the community managed irrigation system. Also, however much the colonial government tried to salvage the situation it could not force the zamindar to perform their traditional duty of keeping up the pynes in good order. The colonial state too failed to either itself fulfill the responsibility of managing the traditional system of irrigation (which the zamindar had forsaken) or provide an alternate institutional structure. In fact as we shall see in section 4 below, the government actively discouraged and banned traditional pyne irrigation in many areas. Some individual tenure-holders did maintain a system of pynes in their estates, but there was no mechanism to

43 Witness No. 22 - Mr. R.G. Killey, Officiating Collector Champaran, IIC, Bengal, p. 49.
resolve disputes between different tenure-holders on the issue of an equitable water allocation between different users of the *pyne* water.

4. *Pyne Irrigation in the Late 19th Century and Early 20th Century*

There was a revival of the *pynes* in small pockets in north Bihar in the late 19th century. This revival was because of entrepreneurial efforts of some individuals, such as, European planters, managers of some *zamindaries*, some British district level officers and even some *zamindars* and tenure-holders.

However, the Survey and Settlement report of Champaran does not acknowledge a widespread practice of artificial irrigation.\(^{44}\) It did mention the practice of damming the numerous hill streams. In 1912-23 4½ per cent was returned as irrigated in Shikarpur *thana*, and over 3½ per cent in Bagaha *thana*. Adapur *thana*, where the Teur canal was situated, returned 4% under irrigation.\(^{45}\)

But these statistics cannot be relied upon as the surveys were conducted during the winter months and these tracts grew mostly *aghani* rice. Also, the survey operations were conducted in 1892-92, when the rains were good. So it is but natural that the temporary irrigation structures, which were built only in years of deficient or untimely rainfall, were not noticed and a very low figure of irrigated lands was returned.

In 1917, while discussing the extension of the Tribeni canal in the Adapur *thana* till the Teur canal, the Executive Engineer believed that the possibilities of irrigation was not at

\(^{44}\) "It is so little practiced that it is unimportant". *SSR, Champaran*, 1900, p. 111.

\(^{45}\) "With numerous rivers in the tract (Adapur), the fields could have been irrigated with little expense ... the people are very apathetic towards irrigation. They do not take the least care in irrigating fields other than those reserved for poppy cultivation". *Ibid.*, p. 11.
all hopeful. Enquiries made during the progress of the survey from the ryots and local planters showed no desire for canal water. It was said\textsuperscript{46}:

At present all water required for irrigation, is obtained by cross bandhs in the network of rivers and streams, by which the whole area is intersected. In the famine year, there was practically no famine in the area to east and west of Telaway river, except in two villages, as sufficient water to save the crops was obtained in all except these two cases, by cross bandhs in the river.

In 1921, while discussing the Tribeni canal extension scheme, it was stated that the time was not ripe for taking up the project as the experience of the previous season had showed that the area proposed to be irrigated by the extension scheme (i.e. the Adapur thana) was favourably situated as regards supply of water. Inspite of the short rainfall a good crop was raised by irrigation from the existing streams.\textsuperscript{47}

On 18 February 1930, the Secretary, Irrigation Department, brought out a notice stating that the local government had decided not to proceed further with the scheme for the extension of the Tribeni canal. One of the important reasons was "in most years the higher portion of the area [was] very favourably situated for private irrigation from hill streams while the lower portion [was] subject to flooding from the Sikrana river".\textsuperscript{48}

Again in 1951, while discussing the practicability of the extension scheme, the Executive Engineer and the SDO, Bettiah re-emphasised that there was no keen demand for canal irrigation as small-scale irrigation from nalas and streams was practiced in the event of scanty rainfall.\textsuperscript{49}

\textsuperscript{46} F. No. II C/8 of 1917, B. Prog. PWD(I), B & O, p. 13.
\textsuperscript{47} F.No. II-C/2 of 1921; B Progs. PWD(I), B & O, p. 10.
\textsuperscript{48} F.No. II-C/2 of 1930, B Progs., PWD(I), B & O, p. 14.
\textsuperscript{49} F.No. B/C11-1-034/1951, B. Progs, Irrigation Deptt., Irrigation Branch, Government of Bihar, pp. 55-56. [\textit{ID(I)}]
In reply to a proposed resolution in the Bihar and Orissa Legislative Council on 8 December, 1927, about any government scheme for permanent dams with sluices in the tract between the Kosi and the Gandak, the government stated that a lot of schemes were investigated, but none of them turned out to be feasible from a financial and engineering point of view.\(^{50}\) It also added that, in this whole tract a "the small and big rivers are utilized in the ordinary way for irrigation by the cultivators by putting bandhs and raising water, after floods go down".\(^{51}\) These temporary bandhs were washed down when the first floods came and did not add to the drainage congestion of the region.

So, it becomes clear from the discussion in this section that a significant amount of artificial irrigation was done by putting bandh across rivers in the northern reaches of North Bihar, especially in the years of failure of rainfall. Government officers started acknowledging the prevalence of, and more importantly, importance of, the traditional system of irrigation. The earlier records of the government, on the other hand, do not give much importance to irrigation from these sources. Significantly, this shift in attitude came about at a time when the early enthusiasm over the performance of the canals built by the colonial state had died down.

5. Canal Vs. Pynes

As has already been discussed, the Tribeni canal was built in an area which was criss-crossed by a number of big and small streams coming from the Nepal hills. These streams became swollen by the rainwater from the catchment area during the monsoon and damaged the canal system, like the syphons, aqueducts, and other masonry works. So, the canal

\(^{50}\) F.No. XVIII C-35 of 1927, C. Progs. Irrigation Deptt. B & O, pp. 5-7.

\(^{51}\) F.No. XVIII C-1 of 1928, C. Progs. Irrigation Deptt., B & O, p. 3.
administration tried to 'tame' and 'discipline' all the streams crossing the canals. Some of these streams were supposed to change their course quiet often. A number of drainage crossings (syphons and aqueducts) were constructed to pass these streams over or under the canals. Since these structures were expensive and not many could be built, a lot of these streams were diverted and made to pass only through fixed crossings.\(^{52}\) The result, as has already been discussed earlier, was that the drainage pattern north of the canal was completely destroyed and this upset the pyne irrigation in the area.

The Colonial Government also brought in rules banning the obstruction of these nalas and streams for the safety of the canals. When the earthen bandhs breached in the first floods of the next season it brought with it a heavy rush of water which could prove dangerous to the aqueducts and syphons, which were made to carry only a specified amount of water. To forestall any such thing happening, all the hill streams and drainage channels were notified under section 76 of the Embankment Act and Section 40 of the Irrigation Act, under which construction of bandhs were prohibited as it could interfere with the working of the canals. The ryots were totally deprived of the supply of water from the streams for irrigation by prohibition of construction of bandhs, and also by the diversion and dislocation of the said streams from their natural courses.

It should be noted here that extensive tracts in the Tribeni canal command area in Bettiah sub-division were formerly in a state of waste and jungle and yielded no revenue. These tracts were leased out by Bettiah Raj and Ramnagar Raj and renewed from time to time. Much of these lands were reclaimed through the exertions and at the cost and under

\(^{52}\) "The Argana river which used formerly to flow into the stream Bhabsa which connected with the Gandak near Rampur, was diverted into the stream Jhikri which in turn was diverted from the Bhabsa into the river Dhoodhaura which ran into the river Harha....", 'Memorial of some proprietors of concerns and ticcadars in the Bettiah subdivision', 8th March 1911, Selections (Tribeni Canal), Vol. 1, p. 266.
the direction of a group of proprietors of indigo concerns and thikadars. A group of these proprietors and thikadars had submitted a memorial to the government on 21 December 1907 highlighting the damages from floods caused by the canal embankment.53

As has already been discussed, the said tract became prone to incalculable damages from floods caused by the diversion and dislocation of the streams and also by the canal embankment acting as the greatest obstruction to the drainage. The ryots of this tract also lost their means of artificial irrigation as the canal water could not reach their lands nor could they exercise the option of any alternative irrigation. As a memorial put forward to the Government stated54:

... the said canal has in fact never yet flowed with water at any irrigation season, nor has it irrigated any of the said mauzas or lands nor can the said canal ever irrigate the said mauzas and lands situated to the north thereof regard being had to the slope of the country from the said foothills to the plains, nor has it in fact a single distributory channel leading to the north.

A factor in the choice between Canals and Pynes was the cost. The ryots were expected to pay the increased water rate for the canal water (approximately Rs. 4/- per acre per year). In comparison he had to pay Rs. 1 and 3 annas per acre for the irrigation from the pynes, which in some cases gave an equally assured supply of water. As one memorial argued, "... no cultivator would voluntarily accept irrigation, however assured, at Rs. 4 an acre if he might sufficiently water his lands in his own way at Re 1-3 as he has done (according to government compilations) for the past quarter of a century at least".55

54 Ibid., p. 229.
55 "The further memorial of the undersigned proprietors of concerns and thikadars in the Bettiah subdivision' (Further Memorial), Ibid., p. 266.
In reply to the said memorialists' doubts about the increased water rate, T Butler, Secretary to the Government of Bengal, Irrigation Department, stated that it was optional for the *ryots* to irrigate their lands from the canal.\(^{56}\) But in view of the prohibition imposed on *bandhs* for the purpose of *pyne* irrigation the *ryots* had the option of either taking canal water or get none at all.

Butler also argued that the supply of the said streams was precarious and usually failed altogether in a dry year, and "it is anticipated that the cultivators will prefer an assured supply from the canal".\(^{57}\) But the said memorialists argued that this contention of Butler was true only of some of the streams and that a very large number of these streams were "perennial and [did] not fail even in a dry year while the closing by the canal authorities of the supply of the streams north of the canal [would] inevitably occasion regular annual famine in the population north of the canal whose lands the canal [could not] possibly irrigate".\(^{58}\)

What appears surprising is that instead of trying to fulfill the just demands of the memorialists or to remove their supposed misconception, the government argued that if the memorialists were only temporary lessees "then ... it is for [the] proprietors and not the memorialists to address the government on the matter".\(^{59}\)

What appears very surprising is fact that the *pyne* system of the Sathi concern was allowed to function without any government measures putting any restriction on its function. In fact, it was only the *pyne* system of Sathi concern which got praise and mention in the

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\(^{57}\) *Ibid.*


record books.\textsuperscript{60} The working of the \textit{pyne} system in other indigo concerns and \textit{thikadaries} were completely ignored and never ever got any encouraging remarks in official records. This partial acknowledgement of facts continued with the canal administration also. Yet, the administration which should have aligned the canal in a direct course from Bagaha to Bettiah (so as to serve the areas subject to drought), instead deviated it in a detour along the Nepal frontier through an area having a good network of \textit{pynes} crossing the watershed and streams at right angles, creating an unnatural alignment of the canal which proved a death-knell to the \textit{pyne} irrigation in the area and made these lands flood prone.

But what were the grounds for the distinction between the \textit{pyne} system of Sathi concern and others. The only superiority, which the said system could claim for their \textit{pyne}-system, was that it was fed by the river Pandai, a stream of greater magnitude than most of those that supplied the \textit{pyne} system of other concerns and estates. But the Belwa concern (who were one of the memorialists) were not exempted from the Government's prohibition on putting up \textit{bandhs} although their \textit{pyne} system was fed by Pandai as well as by the river Maniari which was as large. Similarly, equally big rivers - Masan and Ramrekha, fed the \textit{pyne} system of the Sauriya concern.\textsuperscript{61} The authoritative opinion expressed in official records about the \textit{pyne}-system, of which Sathi concern was only a prototype, should have been applied with equal cogency to the other \textit{pyne}-system as well.

The reason given for the prohibition on putting up of \textit{bandhs} on rivers, viz., the \textit{bandh} would direct the flood discharge of the streams to the north bank of the canal and thereby cause damage to it, seemed to be doubtful. The puny earthen temporary \textit{bandhs}

\textsuperscript{60} Annual General Administration Report of the Patna Division, 1883-84, p. 2 and pp. 9-10; Famine Commission Report of Bengal, Vol. 11, p. 7.
\textsuperscript{61} Selections (Tribeni Canal), Vol. 1, pp. 269-70.
made by the peasants succumbed to the rising floodwaters of the streams in the beginning of the floods and could not possibly affect the drainage of the area or damage the canal. Also, as the British authorities had no jurisdiction in Nepal, the practice of putting bandhs on the river did not stop in villages in Nepal, which were only few miles on the other side of the border.

In March 1913, a suit was instituted by the inhabitants of mouza Baila Bishunpurwa, tappa Chungwan, pargana Majhua, of Champaran district against the government for closing up their pyne by the Tribeni canal which, running east to west, intersected the pynes of mouzas Kundia and Baila Bishunpurwa. This pyne drew its supply from the river Masan and had been in operation for a long time irrigating the lands of these two mouzas.62 To keep off the overflow of the river Masan, the canal authorities had erected a high bandh parallel to it, intersecting and closing up the pynes. The inhabitants had earlier filed a petition to the collector on 24th Jan. 1909 setting forth their grievances and the authorities had removed the obstruction by putting a water pipe under the bandh to connect the pyne and some water pipes also under the banks of the canal to connect the Masan river branches, and also erecting two bandhs in the bed of the canal in Baila Bishunpurwa to the east and west of the pynes. By these means the flow of water through the pynes and the Masan river branches was restored and the lands of these mouzas were irrigated till 11th Nov. 1911.63 But when the canal was complete and in working order, the canal authorities shut up all these pynes and the Masan branches by removing the water pipes and the temporary bandhs in the bed of the canal.

62 F.No. 2P/7 of 1913, B. Proc. of PWD(I), B & O, p. 22.
63 Ibid., p. 24.
The people again put in a petition dated 27 March 1912 asking for construction of two *syphons* or underground bridges under the canal connecting the water-courses and *pynes*, but nothing came out of it.  

This is when a suit was instituted against the Government. In response, the Government admitted to the existence of the *pynes* and the obstruction caused by the canal authorities. But it argued that everything was done under the provisions of the Irrigation act III B.C. of 1876. The government pleader believed that the suit cannot be maintained successfully against the government.

It may be noted that not only were the *bandhs* prohibited in the steams north of the canal but even in the south of the canal, or the canal command area, the erection of *bandhs* was prohibited in almost all the streams and drainage channels. The argument given in favour of such an action was that the distributaries and sub-distributaries of the canal drained the excess water into these streams, and any obstruction in the latter could affect the drainage of the command area.

For example, on 20 August, 1921, the government prohibited the construction of any obstruction in the Teur canal by declaring the river under section 40 of the Bengal Irrigation Act of 1876 from the Nepal frontier to the southern boundary of village Dihmahuahi. This was done because "lately a case occurred in which this river was *bandhed* for irrigation and the water headed up to such an extent that the Teur canal escape channel was rendered useless and the canal thereby endangered. Water was also headed up still further and passed under a drainage syphon under the canal rendering that useless for drainage and at the same

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66 *Ibid.*, p. 69. On 12th July 1915, the government by notification, prohibited the construction of any obstruction to the rivers and *khals* to the east of Masan. There were 18 such rivers and *nalas*, including the Masan, which crossed the Tribeni canal at the 34th mile and the Thetri *nala* which crossed it at the 62nd mile. F. No. II/8/1 of 1915, A. Proc. PWD/I, B & O.
time flooding irrigated and irrigable areas to such an extent as render assessment extremely difficult.  

Similarly, on 5 April 1922, the government prohibited the construction of bandhs in the Dhaka canal command area because "injury to the Dhaka canal with its branches and to the lands for which irrigation from the said canal is available, has arisen and that further such injury is likely to arise from the obstruction of the Lal Bakeya river, Kachua Nala, Mardhar Nala, and Matia Nadi...." 

In most cases, the peasants were not even aware of these notifications until the time when it was actually implemented by some over zealous officer, as no notice was sent to the users of any particular bandhs. These notifications were published in the gazette which was not available to peasants, and in most cases no opportunity was given to file objections.

The inhabitants of Bhagwatpur Bhaluahi village in Dhaka police station, Champaran, were sent a notice from the Executive Engineer in 1928 for removing the bandh and were also asked to pay unauthorised tax for the use of that water. The inhabitants of this village used the waters of Kachhua and Sihorna nalas by erecting a bandh. Kachhua nala was notified under sec. 40 of Bengal Irrigation Act III of 1876, in April 1922. Several petitions were filed to the local authority, but in return criminal cases were instituted against a few of them for erection of bandhs. The inhabitants brought a suit in 1929 against the government stating that they had a right over the said nala and that the tax imposed on them was illegal and unauthorised.

The government responded by stating that it had no objection to the bandh in the Kachhua nala and irrigation of the fields from the drainage water provided the inhabitants of the said village obtained annual sanction in March. In return, the inhabitants were asked to

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67 Supdt. Engg. to the Secretary, PWD(I), F. No. IIC-9 of 1921, A. Proc. PWD(I), B & O. (emphasis mine).
68 F. No. IIC-2 of 1922, A Proc. PWD(I), B & O, p. 3.
69 F. No. IIP-20/1930, B. Progs. PWD(I), B & O, p. 11.
70 Ibid., p. 10.
withdraw the civil suit against the government. What needs to be mentioned here is that the areas irrigated by the said bandh could not be irrigated by the Dhaka canal. What became very clear from the above-mentioned incident, and some examples to follow is that there was a competition between the canal bureaucracy and people using the pynes - on the one hand the canal bureaucracy wanted to increase the area under canal lease, and it could do this only by prohibiting the bandhs; on the other hand, the bandh owners, especially those whose lands were situated at the tail-end of the distributaries, and where the canal water did not reach or the supply was irregular and insufficient, always lay claim to a right to erect bandhs in the nalas and streams passing their village. In most cases the bandh users were allowed to erect their bandhs. This was a tacit admission of the fact that the government canals had failed to reach to the areas which had been intended in the planning stage.

Many of the problems in the working of the Tribeni canal have already been discussed above. In May 1910 all the natural drainage channels in the command area south of the Tribeni canal were notified under section 40 of the irrigation Act of 1876 as canal drainage works in which obstructions were prohibited and the existing obstructions were to be removed. Irrigation officers always experienced considerable difficulty in enforcing the law in this connection especially where removal of the existing bandhs deprived of private irrigation areas that could not be irrigated from the canal. It was also conceded by the Chief Engineer in his inspection note in 1929 that:

...these temporary obstructions have been customary for very many years and that it has not been definitely established that they cause deterioration of the drainage channels or increase the danger of flooding and water logging.... If there is really no appreciable harm in occasional bandhing of these hill streams and provided that

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72 F. No. XB-4/1929, series 1-4, B. Prog. PWD(I), B & O, p. 2.
73 Ibid. (emphasis mine).
private irrigation by means of them does not interfere with government irrigation ... there may be a case for permitting a few bandhs which are much sought after....

What the canal bureaucracy was realizing (after around 15 years of experience of the operation of the Tribeni canal) was that a more satisfactory irrigation could be effected in many places at the tail ends of some distributaries, by allowing bandhs in the rivers and nalas. Even the Superintending Engineer Son circle, felt that the "government would have no objection to allowing bandhs and relinquishing portions of distributaries provided a fixed payment was made by the Raj (Bettiah) to government to compensate the latter for loss of revenue in irrigable areas. Such revenue was to be fixed by taking the average area of canal irrigation over a period of say seven years, and the water rate to be equivalent to that charged for long lease".74

What the canal bureaucracy forgot was that when the Tribeni canal (or any other canal) was built, and the obstruction of streams and nalas was prohibited, the government never paid any compensation to the bandh users in any form. In fact, these people had to pay a higher water rate for the canal rate.

Another important point in this whole drama was that no permanent permission was given for the bandhs. The permission was given provided the cultivators "agree permanently to apply for water yearly, and the permission to erect it (bandh) may be given yearly only on their submitting the Sutta (written agreement or contract) and agreeing to pay water rate at season lease rates for the whole of the area irrigable from the bandh.75 So the peasants were now being forced to pay for their own traditional irrigation methods.
Furthermore, no permanent permission was given because the canal administration was waiting for developments after the extension of Semarkol and Bhataura distributaries. So, the intention of the canal bureaucracy was actually not to encourage bandh irrigation, but to get some collection of water taxes from areas which could not be irrigated by the existing network of distributaries, and at the same time ensure a secure agriculture in these areas.

The Champaran Embankment Committee, in its meeting in Sept. 1928, recommended that a survey be made of the entire notified area south of the canal in order to see whether bandh irrigation could supplement canal irrigation in areas which are not adequately irrigated now. "There appeared to be grounds for believing that sufficient water cannot in many cases be given, up to the end of the larger distributaries." 77

The canal administration apparently objected on principle on any bandh being constructed in the notified area. "They do not even contemplate enquiring whether a particular bandh is a source of danger to the canal or distributaries or whether, even if it is likely to damage a distributary, is it likely to do more good than harm". 78

In fact some members of the Embankment Committee stated that: 79:

...cultivators owning lands at the end of the larger distributaries take leases from the canal department though they know they are almost certain not to get any canal water, simply because they also know that if there is rainfall when irrigation is going in higher up in the distributary, they will be charged penal rates for alleged unlicensed irrigation if they have not got leases.

78 Ibid.
79 Ibid
6. Extension of the Canal

The early euphoria over Tribeni canal and its projected contribution in giving a fillip to agricultural development in the region also led to a plan for its extension further east in the future. Even the Indian Irrigation Commission suggested this proposed plan. The canal proper and other masonry work, like the syphons and aqueducts were designed in such a way that they could carry the excess water required when the extension of the canal was completed.

At the instance of the Government of India the Government of Bengal took up a proposal for the extension in 1904. In the following years various surveys of the area where the canal was to pass were done. In June 1917 the Superintendent Engineer submitted estimates, with plans, amounting to Rs. 12,34,860 for the extension of the Tribeni canal from the river Telaway to the area commanded by the Teur canal. The most noticeable item in the estimate was the high cost of the land to be acquired for the canal works (Rs. 500 per acre) as this tract was heavily cultivated, and the high cost of masonry works (the length of the proposed extension was only 16 ½ miles, but in this short distance 17 rivers and drainage crossings had to be provided).

Even in 1917, with just six years of experience on the working of the canal, euphoria had given way to caution. It was believed that the proposed extension scheme was not a good 'commercial proposition'. The Executive Engineer, Champaran Division, reported that there was no desire for any canal water from ryots and planters. The whole command area of the proposed scheme was irrigated by putting cross-bandhs in the network of rivers.

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80 F No. IIIC/8 of 1917, PWD(I), B&O, p.10.
81 Ibid., p.12.
82 Ibid., p.10.
and streams, by which the whole area was intersected. In the famine year, "there was practically no famine in the area to east and z report in the Searchlight\textsuperscript{83}:

The failure of the \textit{hathiya} rain in northern parts of the Bettiah sub-division...has done incalculable mischief to the standing \textit{aghani} crops...A greater part of the paddy producing area of the sub-division is irrigated by the Tribeni canal and if an extension of it is made up to the Sikrana river it will go a great way in alleviating the miseries of the poor people.

Either the report is referring to an extension of the distributaries southwards, towards the river Sikrana (or Burhi Gandak), or the bureaucrats got completely confused and thought that it was referring to the proposed extension of the canal eastwards. The first one seems to be correct as, according to the newspaper report the famine had occurred in the Bettiah sub-division.

On 18 February 1930, a notice was published by the Secretary, Irrigation Department, that "the local Government have decided to proceed no further with the scheme." The reasons given were the same as earlier – a) the higher portions of the area was favourably situated for ‘private’ irrigation; b) the experience of silting in the canal and damage by floods in hill torrents was against any expansion of the area dependent on canal irrigation; and, c) the "canal has proved a disappointing irrigation work and the proposed expensive extension would not improve the working while on the other hand there is ample room for further expansion of irrigation in the area now under command."\textsuperscript{84}

In 1949, further investigation and surveys for the extension scheme were done, and the conclusions were the same. The sub-divisional officers observed that in the event of scanty rain the cultivation suffered to a great extent, but the \textit{ryots} had filed several petitions for cleaning of the \textit{pynes} and damming up of the streams. He further added that canal

\textsuperscript{83} Searchlight, 15\textsuperscript{th} November 1929,\textit{ibid.}, p.k.w.
\textsuperscript{84} \textit{Ibid.}, p.14. (emphasis mine)
irrigation work was not absolutely necessary as there was no land in the area that was fallow for want of water.85

The SDO also confirmed that floods occurred regularly in the hill streams crossing the area, and their course had changed several times in the last 40 years, "leaving some railway bridges high and dry. The floods came up quickly, covered most of the area and receded within one to five days. But it was said to leave a good deposit on land, and did not cause much damage to the village huts."86

Another problem that the SDO foresaw was the closeness of the Nepal border in the area under review. In the existing Tribeni canal area, the canal authorities had banned the bandhs north of the canal, and to some extent ensured the safety of canal works. But north of the area under consideration, the zamindars and the cultivators in Nepal constructed bandhs on streams according to their convenience and this resulted in a sudden and unexpected release of water when several such bandhs breached in succession.87

The Commissioner, Tirhut Division, who had a previous experience in the district as District Officer, was of the view that "the canal should be extended to its full capacity...[but] the extension should be on the ...south of the existing canal to irrigate areas which are not at present getting water from the canal."88 He believed that by the southward diversion of the canal the difficulty of crossing the hill streams would be solved automatically. While there was no pronounced demand for canal water in the area under consideration there were innumerable petitions demanding canal water in south of the

85 Ibid.
86 SDO to Additional Collector, Champaran, dated 7-9th Feb 1949, F. No. B/CII-11-1-034/511, ID(I), Government of Bihar, p.56 (emphasis mine).
87 Ibid.
88 Commissioner, Tirhut Division to Superintending Engineer, Gandak Circle, dt. 5th June 1949. Ibid. p.54
canal.\textsuperscript{89} Even the opinion of the local people was against the construction of the canal in the said tract.\textsuperscript{90}

But surprisingly the District Development Committee passed a resolution saying that "the extension of the Tribeni Canal is necessary and pending the extension alternative scheme for irrigation...such as bandhing up of streams should be executed immediately."\textsuperscript{91}

The problems encountered by the canal bureaucracy in the existing length of the Tribeni canal made them wary of investing more on the extension scheme. They were now more careful, and conducted extensive surveys and took the local opinion more seriously. It also needs to be noted that even till 1950, the Tribeni Canal bureaucracy was not able to extend the area under irrigation in the proposed command area, which it had intended to in the beginning. This fact reflects on the maintenance problems in, and working of the canal.

7. Working condition of Tribeni Canal

As reported in 1949, the main canal and its distributaries were in a most neglected condition. The local officers had absolutely no idea what discharge should be run in either the different reaches of the canal or any notion about the correct bed width of the canal. Discharge observations were not taken anywhere except at the Head. The section of the canal below Ramnagar had narrowed down very much by continuous neglect and it was said, "at present

\textsuperscript{89} Ibid.
\textsuperscript{90} "...I do not think the extension of the canal should be proceeded with until local opinion has been taken on the subject." Manager of Bettiah Estate (Court of Wards) to the Collector of Champaran, No. 6378/E.L, dt. 19th Nov., 1917, F.No. IIC-8/1917, B prog. PWD(I). B&O, p.36.

"...I trust that no attempt will be made to extend canal irrigation in places where it is not wanted by anyone and will do more harm by upsetting a good local irrigation system and interfering with natural drainage." Manager of Bettiah Estate to Collector, No. 6076/E.L, dt. 8th Nov. 1917./bid, p.39.

"...I would be entirely opposed to the canalisation of the above region (situated in the elaka of Hardia, Moorla and Sikta factories) on three main grounds: the existing system of irrigation is admirable, canal embankments would interfere with natural drainage and tenants of this region are opposed to this scheme." J.E. Rutherford, 1st Assistant Manager, dt. 14 October 1917, \textit{Ibid}, p.40.
\textsuperscript{91} Ibid, p.56

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the channel can hardly take 650 cusecs against about 800 cusecs that it should take according to the present capacity." 92

Considering their past history, the masonry works of Tribeni canal were not fit for taking more than 2500 cusecs at the head of the canal unless big alterations were carried out on them. The Superintendent Engineer suggested some measures for improving the conditions but even then he felt that "we are left with only 500 cusecs discharge to extend irrigation to the new area." 93

Actually on the Tribeni canal there was a huge wastage of water and the Superintendent Engineer believed that "if that wastage is stopped by putting in proper size of outlets on distributaries, it is quite easy to manage with [the existing supply of water at the Head]... There are some areas in the present command of Tribeni canal where irrigation is badly wanted and...irrigation [should] be extended to these areas." 94

There had been difficulty in feeding the Tribeni canal to its required discharge in the hathiya period on account of the shoaling up of the left branch of the river (which was the feeder channel of the canal) "but during the last seven years there has been no such trouble.... But unfortunately the Tribeni canal is not being maintained to its sanctioned section and is at present narrower and shallower than what it should have been. Probably on account of the financial stringency in the past and general neglect no attempt was made to bring the canal to the desired section during the last ten years or so." 95

92 Superintendent Engineer to Chief Engineer, dated 9 August 1949, F No. B/CII-1-034/511, ID(I), GOB, pp.59-60.
93 Ibid., p.63.
94 'A Note on the scheme for Tribeni Canal Expansion', N P Mahesh, Superintendent Engineer, Gandak Circle, dt. 11 December 1949, Ibid., p.76.
95 Ibid.
In another note the Superintendent Engineer observed that the system of distribution of water in Tribeni canal was extremely defective. There were heavy leakages on aqueducts and at some places there were unnecessarily big outlets or open cuts for doing irrigation. So, even if this loss was controlled there could easily be a saving of about 200 cusecs. He also argued that it was “incorrect to say that there is shortage of supply at the head of the Tribeni canal in the critical period...discharge of about 1800 to 2000 cusecs should always be normally available...in October....But serious difficulty is felt in feeding it in the month of April.”

Conclusion

In conclusion it can be said that the canals built by the colonial government in North Bihar were not very successful endeavours. It was also not very popular among the peasants. Irrigation by means of pynes, on the other hand, suited the agro-ecology of the region because it did not interfere with the river regime. The canals permanently altered the drainage network of the region. The only problem with the traditional system of irrigation was with its management. It was the zamindar’s responsibility to maintain these pynes. But because of the changes brought about by the colonial rule the zamindars lost interest in the maintenance of these pynes. Also, there was no mechanism by which the zamindars could be forced to fulfill their responsibility.

Some entrepreneurial planters, managers of some zamindaries, and Government officials revived the pyne irrigation in some pockets. But the canal bureaucracy, who banned the construction of bandhs, provided the final death-knell to pynes.

96 'A Note on the availability of supplies at the head of the Tribeni canal in the month of October when the demand is keenest', Superintendent Engineer, 20 February 1950, Ibid., p.80.
The final answer to the *pynes* versus canal debate was provided by the canal bureaucracy itself, which discouraged the extension of the Tribeni canal, which was proposed at the time of the construction of the Tribeni canal. The importance of *pyne* irrigation was acknowledged, and was the most important reason for not taking up the extension scheme.