CHAPTER 6

GOVERNMENT MEASURES

Development generally signifies improvement from an undesirable state of affairs to a desirable one in any field of social living. Disasters unfortunately hamper developmental processes. After the disaster occurs the injured are rescued, property salvaged and the affected begin to rebuild their life once more. Governmental Organizations play an important and crucial role in the rehabilitating process. Raising funds for relief of victims and rushing emergency relief by providing food, clothing and health checkup are standard responses of the government. They also help in rebuilding the community. For these long-term goals, they seek assistance from non-governmental or private organization, as they share a common goal of helping disaster-affected people.

Natural calamities like flood, cyclone, earthquake and heavy rains cause large scale disaster to the people and public and private properties. In order to provide timely relief to the people affected by these natural calamities, the scheme for relief operations is formulated and is issued The works relating to calamity relief are divided into three parts, viz.

i) Measures to be taken before the calamity
ii) Measures to be taken during the calamity and
iii) Measures to be taken after the calamity.

Measures for the prevention and control of natural calamity should as far as possible be attended in advance of the occurrence of the calamity. In this respect, experience gathered in the past and data collected over a period of years will afford valuable guidance. Measures to be taken during the calamity are those intended to mitigate its effects and to give relief to the peoples. The measures to be taken after the calamity will generally be confined to the provisions of rehabilitation assistance as may be immediately necessary to the affected people. The problems created by various types of natural calamity have certain features in common.

- Rescue of victims, salvage of property, debris clearance, restoration of essential services, repairs to buildings and other structures
• Removal of those affected to safer places, clothing of homeless, provision of essential supplies and water

• First aid and medical attention, emergency sanitation, prevention of epidemics, care of animals, identification and disposal of the dead, prevention of panic and maintenance of morale.

The country has integrated administrative machinery for management of disasters at all levels. The basic responsibility of undertaking rescue, relief and rehabilitation measures in the event of natural disasters is the concern of the provincial Governments. The Government supplements the efforts of the provincial by providing financial and logistic support. Therefore, nations should incorporate them in their development plans and ensure efficient follow-up measures at the community: village, district, provincial and national levels.

**Provincial Government**

The role of the Central Government is supportive in terms of supplementation of physical and financial resources. The basic responsibility for undertaking rescue, relief and rehabilitation measures in the event of a disaster is that of the Provincial Government concerned. The Governor of the Province heads a Provincial level committee which is in overall charge of the relief operations in the Province and the collectors who are in charge of the relief and rehabilitation measures in the wake of natural disasters in their states function under the overall direction and control of the Provincial level committee. The collectors are responsible for coordinating and mandating Government’s policies for disaster. Reduction and mitigation, ensuring adequate preparedness at all levels in order to meet disasters, coordinating response to a disaster when it strikes, coordination of post disaster relief and rehabilitation. Distribution of relief materials (food, water purification tablets, clothing, and medicines) control of communicable and preventable diseases, disposal of corpses and animal carcasses.

**District Administration**

The district administration was the focal point for the implementation of all governmental plans and activities. The actual day-to-day function of administering relief is the responsibility of the
Collector/District Magistrate/Deputy Commissioner who exercises coordinating and supervising powers over all departments at the district level. Though it may not be a common phenomenon, there exists by and large in districts also a district level relief committee consisting of officials and non-officials.

Various departments under the respective government implement most of these measures because relief for victims of natural disasters is the responsibility of the government. The policies and programmes on natural calamities are formulated. The Departments concerned with the primary and secondary functions relating to the management of disasters include rescue, relief and rehabilitation measures in the event of a disaster. The various measures to be taken by the major departments and officials who were in charge and the sphere of activity are discussed below.

**Board of Revenue Department**

Revenue Department is an important department in playing a key role during and after the calamity. Revenue Department with other departments carry-out the relief works. As soon as the warning about a calamity is received, the Revenue Department should immediately inform the same through available source of communication to all the departments concerned. After the cyclone, they have to evaluate the damages done by the cyclone in the area.

In addition to that, rehabilitation measures are to be taken up by them during the cyclone flood period; the concerned Revenue Officials should also mobilize local resources for undertaking relief measures.

Their duties include:

- Disbursing money for the relief works, and assessment of the damages.
- Distribution of necessary food grains, and essential commodities to different departments engaged in relief works.
- Collect all particulars about the calamity and communicating the same to the higher officials then and there; evacuate the affected persons to places of safety, provide food and clothing to needy persons.
- Assessment of damages to houses/huts, human lives etc.
• Submission of detailed report on the calamity, relief works undertaken, assessment of damages and alternative measures proposed with approximate expenditure involved in calamity to the Collector.
• Extend courteous and sympathetic treatment and prompt and adequate relief to the sufferers to keep up their morale.
• Assessment of the damages caused to the crops and agricultural implements.
• Take measures to drain out excess/flood water from agricultural lands, to protect standing crops. Forward list of persons affected with extent of financial bases (animal, cattle shed, and food and fodder cultivation). Epidemic surveillance after cyclone. Take suitable steps for disposal of the dead animals.

The Board of Revenue instructed through the Public work Department has to report on the state of the tanks, roads, banks of the river, before the storm, added to that they must to report the bursting of the tanks due to the neglect of the necessary repairs and if so, to whom the blame attaches. There are 350 Revenue stations under the control of the Revenue Board since 1852, to furnish an interesting rain map of the Presidency, showing the comparative influence of elevation above sea level, and proximity to the coast, in a marked and highly instructive manner. New gauges of an improved and uniform pattern were issued.1 The collector of Tinnevelly forwarded an account particular of the repairs carried on the provinces fully to the President and members of Board of Revenue, Fort St. George. The collector requested 8,000 pagodas on the repairs required to be made annually. The Board disbursed only pagodas 7,506 which not only accomplished all the repairs, necessary, but afforded funds also for the completion of the first portion of great Mundoor Annicut, accrued to the Captain Caldwell’s plan, for which a separate sanction of pagodas 2,950 was granted, so all the repairs for the year have been executed for pagodas 3,454.

Revenue Inspectors were ordered to move about the villages making inquiries into and bringing to the notice of the Tahsildars in Pulicat which made all possible arrangements to render aid in every case

1 Report on the administration of the Madras Presidency, during the year 1865-66 p.p.118
that was necessary in the way of relief being done in the quarter. A list of irrigation breaches i.e., 45 major and 28 minor works were sent to the Executive Engineer for early action in the matter of repair. Careful and constant inspection of the dikes of the large rivers and the removal of any superfluous sand banks and gross Islands which spring up in the centre of the rivers were to be placed exclusively under the charge of some persons experienced in the kind of duty.

All the public tanks with the exception of that of Egmore have burst in the Banks during the storm of 1807. The Mylapore Tank had burst, and it procured the assistance of the coolies, to stop the force of the current across the Mount Road near Jah Pillays Chaultry. The Collector requested the President of the Board of Revenue to employ as many people as could be procured for that purpose.

**Public Departments:**

The Public Department has to deliver messages from the meteorological department about cyclone and other natural calamities to the other departments concerned by employing the speediest method.

When the calamity subsides, the public department officers should contact officials of other departments and should engage themselves to bring back the situation to normal. Loss of life, tentative loss of property in all kinds should be assessed immediately and submitted to their higher officials.

They have to extend full co-operation to all the departments involved in the relief operation, repairing of breaches of roads and culverts, restorations of civil amenities like water supply, and take measures to prevent epidemics. With the help of Revenue officers and other officials, the public officers must distribute the food and clothing to the needy persons in full co-operation. Alert the riots about the nature of the impending calamity and the need to stop all agricultural operations till

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2 Board of Revenue dated 5/11/1881, G.O.No.9664mis
4 Board of Revenue Consultation dated 17/12/1807, Vol No. 457B, No. 1,2, p.9621
the calamity is over. Assess the damages caused to the crops, agricultural implements etc. Take measures to drain out excess flood water from agricultural lands; protect standing crops. Reports must be furnished to the Secretary (Revenue) cum collector of the calamity regarding the damages caused to the crops etc, the relief undertaken and the subsidy, relief etc proposed to be given with approximate expenditure involved. Alert all the coastal villages and hamlets particularly fishermen about the impending natural calamity and not to venture into the sea till the calamity free signal is given.

The public department has to furnish reports to the Secretary-cum-Collector about the damages caused to the government and private boats, fishing implements, assessment of damages to boats, fishing implements etc. The relief works undertaken and the repair, rectification works proposed with approximate expenditure involved should be informed. Storage of adequate quantity of disinfectants such as bleaching powder, chloride liquid, and preparations required for supplying safe water. They should store essential medicines such as anti diarrhea, anti-cholera vaccines administration of aid to the injured on the spot for the medical teams, native doctors and dispensaries. The decomposition and consequent attendant on the decay of mass of vegetable as well as animal matter, left by the flood, and destroyed by the heavy fall of rain, powerfully tend to contaminate the state of the atmosphere and materially to affect the health and comfort of the inhabitants. The Governor in Council instructed the Road Committee that immediate measures may be taken for clearing away the leaves and hedges blown down during the storm of 24th October 1818. The Chief Secretary requested the Public Department to take measures for cleaning leaves and hedges blown down during the late storm.

7 Public Department Consultation dated 27/10/1818, Vol. 459 No.41, 22, p. 3392
Public Works Department

Tracing the historical background of this department, the Administrative Reforms Commission says: “The formation of a separate Department for Public Works in this state, dates back to 1858 before that, public works were being handled by three different agencies, namely, the Mumarat Department under the Board of Revenue, the Trunk Road Department and the Engineering Department of the Military Board. The Mumarat Department was in charge of all roads and bridges not under the control of other two departments. The Trunk Road Department was in charge of the formation and upkeep of all main roads and the Engineering Department of the Military Board of all military works, works in cantonment areas and civil works in the presidency town. On the basis of the report of the Public works Commission in 1852, all the three Organizations were abolished and the Public works Department was constituted in 1853, for the better management of all works, with a staff of one Chief Engineer, 3 Inspecting Engineers, 20 District Engineers and the necessary complement of subordinate staff and a further re-organization was ordered in 1863.

When the Chief Engineer was made Secretary to the Government, many of his supervisory persons, as head of the department were delegated as field Officers. A second Chief Engineer to deal exclusively with all irrigation works was adopted in 1867. Even so, 1,000’s of irrigation tanks scattered all over the country side, received inadequate attention and all minor irrigation works with less than 200 acres of Anaicut, were transferred to the Revenue Department in 1878 and dealt with by special minor irrigation overseas under District Collectors. Similarly, the bulk of District Roads were transferred to the newly constituted Local Boards, the P.W.D retaining only the Trunk Road, now designated as National and State Highways. Around 1890, military works were separated and taken away from the Public Work Department. The public works departments is primarily responsible for maintenance of roads, culverts, bridges, irrigation infrastructure (viz) tanks, canals, rivers, anicuts and Government building both residential and non residential, urban and rural water supply and sewerage installation. The Department has to gear itself and rise to the occasion through advance planning and action by way

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8 Gopalakrishna Gandhi, Pudukkottai District Gazetteer (1983)
of precautionary and preventive measures to meet any eventuality during the period of cyclone, flood or other natural calamities. Instructions are issued to all officers of the departments so that they are in a state of preparedness to meet the maintenance of roads, culverts, bridges, irrigation infrastructure exigencies fully. As regards maintenance of irrigation systems, the respective division should take all such measures deemed necessary to avoid as far as possible any breach to tanks and canals. The Department should also ensure uninterrupted supply of drinking water during such period. Report should be furnished to the Collector regarding the damage caused to the government and private buildings, properties, roads, tanks, rivers, bunds etc., and the relief works proposed with approximate expenditure involved.

The Engineer in charge of maintenance of flood control works should survey all such works in their charge well before the onset of monsoon and report to the higher authorities in case it becomes apparent to them that there is likelihood of the failure/breach of any of the existing works. Such warning should be sent well in advance so as to give the authorities adequate time to take necessary precautionary measures. De-silting of the canals and drainage shall be carried out well before the onset of monsoon and clogging if any in the urban drainage system shall be arranged to be removed to ease the flooding. Patrolling of the tank, bunds, river banks and coastal areas were the important factors. Sand bags were to be arranged for the repair of flood protection embankments. All the officials were instructed to keep strict vigil over take bunds, canals, rivers, roads, and coast lines keeping ready enough materials for closure of any breaches. Arrangements had to be made to drain flood water from flooded areas to close breaches and clear obstructions.

The Officers concerned with Public work Department shall arrange for inspection of all roads and bridges under their jurisdiction and take necessary precautionary measures like strengthening the side beams wherever it is found eroded. Patch works on roads shall be attended before the onset of monsoon, so that the patches would not be aggravated due to vehicular traffic during rains. Required materials shall be collected in advance to attend to breaches on roads and timely action shall be taken for removal of fallen trees and other obstructions on roads so as to allow traffic without any hindrance. The branches of trees extending over the
roof of the buildings also were pruned so that the building was not damaged in the event of heavy wind.

The Public Works Department was not able to protect Tanjore from liability to disaster from uncontrolled floods, it would be a difficult task to justify their continuance here at all; for with the distribution water they have scarcely anything to do; and they cannot hope to bring new areas under cultivation although possibly an isolated project here and there may crop up as at Ponavasal.

Doubtless, the Chief Engineer for Irrigation is aware that Tanjore is not yet sufficiently protected from inundation; the difficulty in finding money for works that are well known to be necessary is one reason Public Works Department. sometimes sought the co-operation of the Collector by requesting him to bring his influence to bear on the people, to point out to them the value of works which were required for the safety or improvement of the Delta, but for the execution of which funds were not available, and therefore asked them to assist either with money or labor. A great impetus might in that way be given to the execution of protective works of the highest value to the people and to the Public purse. The Collector of Tanjore gave suggestions to the Board of Revenue for the improvement of the work in the Country that “in future, whenever a financial difficulty arises in connection with estimates for embankments or few new drainage channels, or for increasing the capacity of irrigation channels or for the improved alignment of a channel, or for other similar works, the collector will be asked whether he can obtain from the people any, and what, contribution, either in the shape of money or labors, to be performed under the supervision of the public works department”. Poondy tank was breached on 19th November 1874. Government relied upon every effort of the Public Works Officers for the mitigation and repair of damages.⁹

**Police Department**

The Commissioner of Police makes all the necessary arrangements for reinforcing the Beach Division of Police, and places the Police Boat establishment at the disposal of the Presidency Port Officer at the time of

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⁹ *Report on the administration of the Madras Presidency, during the year 1897-98*, P.159.
danger signal being hoisted. Each police station would send situation report to the Revenue Department to the police control room. Prepare and update the list of low lying areas, keeping the details of rivers, canals, tanks, bunds, maintenance of liaison with their counterparts in various Departments like revenue, Public work, Public, mobilization of Police service personnel and issue necessary detailed instructions to all concerned to extend assistance to all Revenue and other Officials. The duties of the Police department are as follows:

- Send boats to watch low lying areas and places likely to be flooded.
- Prepare the list of victims and the extent of damages suffered by them along with the revenue Authorities.
- Assist in the restoration of normalcy in the evacuated places.
- Assist in the distribution of compensation if any to the victims.
- Warn the public about impending calamity and the need for evacuations on short notice to safer places by announcement in coordination with the Revenue and fisheries Department.
- Provide relief operations.
- Clear of obstructions of roads in co-ordination with public works department.
- Watch out and prevent the activities of anti-social elements before, during, and after the calamity.

The head of each Police Tannah (station) was required to furnish a report of all that occurred within the limits of his station and the whole of these reports having been collected and considered into the general statement. The acting Chief Magistrate and Superintendent of Police instructed the head of the Police station to submit a general statement of the reports of the disastrous effects of the storm and floods which occurred on the 20th and 21st of October 1846.\(^\text{10}\)

The Tahsildars were away from head quarters but the Taluk Serisadas, appears to have acted with commendable energy and was ably backed up by the Municipal Commissioner while the Town Police Inspector, Head Constable and the Police rendered useful service in

\(^{10}\) Public Department Consultation dated 10/11/1846, Vol. No. 802, (microfilm 468) No. 25
keeping order and assisting the women and children from their tottering houses to places of comparative safety during the cyclone of 24th November 1874, in Tinnevelly.

**Military Board**

Military forces play a very important role during cyclone disasters. The Armed Forces are quickest to reach the affected areas for delivering timely action. Restoration of communication by them is very often a major contribution, assisting in search and rescue, evacuation of affected people, relief supplies and offering assistance in rescue operations as well.

When the Masonry Bridge near Kilpauk had been greatly damaged during the hurricane of October and November of 1846, the Military Board called upon the Superintending Engineer to examine the edifice and to submit a report on its condition. The Superintendent Engineer examined it and found it quite impossible to repair. The edifice was constructed under the sanction of government at a cost of Rs.847-4-5,(P-F-C  P-pagoda, F-Fanam, C-cash)but the Superintendent Engineers estimate for rebuilding the bridge was at a cost of Rs.8501-2-5 and the S.I. Engineer raised the plan which provided for more water way with specification and the estimated amount was Rs.8907-14-7. The military Board was asked by the Government to submit the estimates for repairing and rebuilding the Chindadripet Bridge in 1846.

The military Board recommended the sanction of an estimate amount for rebuilding the compound wall and repairing the roofs of the building occupied by the Leper Hospital damaged by the storms of 1846 .In rebuilding the wall, the height has been reduced from 12ft to 9ft which the surgeon in-charge of the Hospital considered sufficient for the purpose and with the view to greater stability the estimate provided for its being constructed of brick in chunam instead of brick in clay. The military Board prepared to submit the recommend for sanction of estimates for repairs to certain roads in the presidency damaged by the 1st and 2nd storm of 1846. Estimates were prepared for repairing the breaches on the Powder Mill Road, Basin road, Magazine road, Northern road between the Basin Bridge and Poyass Garden.
Local Committee

Restoration of livelihood is an important task of the local government after the cyclone.

After meeting the immediate need for food and clothes, they turn their attention to the restoration of livelihood of the affected families. They have to make significant contribution to this effort and help people resume their normal way of life. Since agriculture is the mainstay of the people in the affected areas, attention must be paid to the resumption of agricultural activity and related occupations by way of providing seeds, tillage support, tools and implements and irrigation facilities. They should extend prompt and immediate assistance to the affected persons and arrange all kinds of relief measures like the construction of individual housing, livelihood support to the affected people, supply of cattle, poultry birds, goats and pigs, veterinary aid and animal health and treatment, supply of boats and nets, prevention of common diseases; psychosocial counseling; ensure supply of safe drinking water and low cost sanitation facilities. The damages in North Arcot amounted to a great disaster which could only be remedied gradually by continuous exertions on the part of the Revenue, Public Work and Forest Department and local fund Board. The Vellore Local Fund Board needed considerable assistance from government before they could replace the great Vellore Bridge.

Operation of the Local Committee in October and November 1846 are given below. The statement marks the extent of operation between the storm, flood, and the hurricane when the sum of Rs. 10,907 had been extended.

**TABLE: 20 STATEMENT OF OPERATION OF THE LOCAL COMMITTEE SUBSEQUENT TO THE HURRICANE OF NOVEMBER 25TH 1846.**

<table>
<thead>
<tr>
<th>Persons Relieved</th>
<th>Houses rebuilt</th>
<th>Houses Repaired</th>
<th>Huts rebuilt</th>
<th>Huts repaired</th>
<th>Persons relieved with clothes and cumbulies</th>
</tr>
</thead>
<tbody>
<tr>
<td>4102</td>
<td>832</td>
<td>659</td>
<td>902</td>
<td>661</td>
<td>291</td>
</tr>
</tbody>
</table>

**Source:** Public Department Vol.NO.808 Madras 16 April 1847

The statement shows the full account of work completed and relief granted after the Hurricane. Several of the local committees have a small balance of cash in hand but the sum advanced for the purpose as detailed in the abstract amount to Rs. 5,875.
Reconstruction

Learning from any process or past experience is one of the many graces of mankind. In this context, the rebuilding is to ensure that the catastrophic events wrought by nature will not be repeated by bringing total devastation of a city and a way of life.

The cyclone affected areas can be classified into 3 categories.

i) **Totally devastated area**: These areas are usually inundated by sea water during the time of cyclone due to ingress of the tidal water. In this category there may be a chance of complete crop loss besides loss of soft plants, animal’s human lives, and infrastructure.

ii) **Submerged area**: These areas are affected by salinity up to a certain extent. Crop submergence occurs mainly due to subsequent accumulation of rain water.

iii) **Water logged areas**: Water logging inundation takes place in the areas due to heavy rain cyclone and poor drainage.

While tropical cyclones may seriously damage settlement, total destruction encourages rebuilding. For example, the destruction wrought by Hurricane on the coast spurred redevelopment, greatly increasing local property values. However, disaster response officials point out that redevelopment encourages more people to live in clearly dangerous areas subject to future deadly storms. Cyclone is the most obvious, as it devastated the region that had been revitalized after cyclone. Many former residents and businesses do relocate to inland areas away from the threat of future cyclone as well. Reconstruction and repopulation are the important phases in the second part of disaster management.

**Reconstruction Phase**

1. Rebuilding and repairing personal houses, multipurpose buildings, restoring drinking water and sanitation facilities livelihood assistance through distribution of seeds, agricultural activities immediately after the cyclone.

2. Veterinary aid and Repair of roads, canals and breached embankments.
The storm of March 1853 did considerable damage to the communication, immediate measures were taken for their repair, when the hurricane swept over it, and almost entirely destroyed the road, breaching it in several places. It became necessary to incur a primary expenditure of Rs. 960-13-7 on emergent estimate to make the road in a state for the mere passage of carts. No.4 road from Trichinopoly to Arealore and Wodiarpolliam was complete and opened in the year 1852. It has not been carried beyond the town of Poovaloor, a distance of twelve miles. The storm damaged the road, and a sum of Rs. 354-15-5 was spent upon repairs under emergent. The five arch bridge over the Cadamoorty river was lost during the gale, and an estimate of Rs. 4,703-3-0 was sanctioned in June 1853 for its re-construction. This bridge has just been built, though not yet ready for the public. The government sanctioned an estimate (No. 530) Rs. 30,949 for repairing damages to masonry caused by the floods of November and for providing the additional waterway. An estimate, amounting to Rs. 30,949 for the reconstruction of bridges which failed during the floods of November 1880 was sanctioned.

The following measures were carried out in the cyclone stricken areas

Protection of drinking water tanks in all the stations, and excavation of wells and tanks in large villages of the district. Burning and burying of corpses and carcasses where not practicable, they were floated out with the tide. The people were advised to make early applications for medicines; and to avoid exposure and fatigue. Police had to see that the bodies of those who died from cholera were burnt or buried, and relatives or friends of the cholera-stricken were advised to destroy bedding, and to bury as soon as possible all cholera evacuations. Uprooted trees and branches in tanks and water courses were removed. Recommending people to be especially careful about drinking water, to be boiled and cooled before using. Attention to conservancy and burning of refuse heaps. Recommended the people in the bazaar and neighborhood to clear up their latrines, or if that was impracticable, that the exposed filth should be sufficiently covered with earth to render it in offensive. Thatched grass fields in stations to be cut down and removed. Drainage outlets had to be cleaned. Personal inspection by the civil surgeon of fish and other supplies
in bazaar on frequent occasions and the fishmongers were persecuted, if they sold fish unfit for use.

**Cyclone Relief Committee**

Government appoints Relief committee after the natural disaster for the disbursement of relief fund to the affected persons and carries out relief measures. This Committee reviews the action taken for response and relief and gives guidelines and directions as necessary. The relief committee recommends the government for further fund who would send reports to the government. The government should draft the services of their staff and utilize them effectively and efficiently. In addition to the evaluation and rehabilitation measures to be taken up by them during the cyclone period, the concerned government should mobilize local sources to the maximum extent possible to undertake relief measures on the spot. They must be extremely diligent and careful in planning all their activities and they should not hesitate to make spot decisions which will be in the better interest of the public.

A government committee was appointed to manage and disburse the Nature Relief Fund of a sum of Rs. 10,000 for the benefit of the sufferers from the Hurricane of 25th November 1846. The Relief Committee offered grateful acknowledgment to Government for the very generous donation on behalf of the poorer classes of the natives.

The huts which previous to the hurricane, had been rebuilt, were almost all on their former sites, their former confusion, and every one of them had been actually flooded a second time, while nearly all had been thrown down by the continued rain and the swampy nature of the ground on which they stood. The number of sufferers in these classes was great. Only those of them who were utterly destitute received any relief at all and the sum that could be spared to each other was too small to induce them to give much attention to the requirement of the relief committee, while many others who got none at all did not think of consulting anything but their own inclination and convenience as the place or manner in which they rebuilt their houses. The relief committee to assure the disbursement of that generous gift entrusted to their care pledged themselves to fulfill to the utmost of their ability, the instruction of government by insisting that all houses and huts rebuilt by Public money should be constructed by lines
of streets of sufficient breath to ensure proper ventilation and promote cleanliness. The relief of the poorer classes who suffered loss by the storm was placed at the disposal of the Relief committee in the General Treasury. The committee prevented the nuisance arising from the objectionable mode of constructing and required a proper selection of locality with a suitable arrangement of the huts or houses so as to secure sufficient ventilation and cleanliness.

Relief Committee was set up by the collector at Cuddalore, to disburse relief to meet the distress caused by the inundation in Cuddalore in October 1864. The relief distributed was apportioned with the greatest care and economy. Huts have everywhere been built, and all serious damage by the flood has been repaired, and there only remains for consideration and final disposal, at the approaching settlement, the cases of those riots and land-holders whose fields have been either wholly or in part rendered unfit for cultivation in the present season. The remission that was necessitated by the effects of the previous flood was considerable. Rs. 50,000 have been roughly estimated; meanwhile, each individual case was to receive careful consideration, and the majority of such cases received the authority of Government for the final adjustment of the advance of Rupees 1000, without which, it would be seen, that the measure of assistance afforded would have been very limited and far below actual requirements.

The Government, in May 1872, appointed a Cyclone Inquiry Committee to report upon the nature and extends of the damage sustained by the pier in the May cyclone and best method of repairing as well as of protecting the structure. Rs. 5,000 was granted from port funds. The consequence of the Cyclone Inquiry Committee’s report was that the Officers marginally noted were ordered to compile a code for the guidance of all departments concerned on the approach of bad weather, which subsequently received the sanction of Government11.

Commission

During the cyclone of 1884, Pondicherry and Karikal were affected very badly. A commission was set up by the Government to study the

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11 Report on the administration of the Madras Presidency, during the year1872-73 p.131
losses suffered in the territories. A sum of 5,00,000 francs granted by the Government of Indo-China was contributed for the same purpose. While the total loss was estimated at 30,00,000 francs the amount of actual relief obtained amounted to 10,44,000 Francs\(^\text{12}\).

**Native Passenger Ships Commission**

The 3\(^{rd}\) meeting of the Native Passenger’s Ships Commission, was held at the Bengal Office at noon, on the 6\(^{th}\) December 1890. In the meeting, Surgeon Major A.S. Leth Bridge, C.S.I. President, Captain Sir. Henry Morland, Kt. H.M.I.M., Captain A.A. Street H.M.I.M., James L. Machay ESQ, Surgeon Major D.W.D. Comins. B.H. Turner, ESQ, W.B. Bestic, ESQ members participated. \(^\text{13}\)

The President proposed to facilitate the answering of the questions by dividing them under the following heads.

a) General Questions
b) Passenger accommodation
c) Special fittings
d) Relating to the surveying of ships for passengers
e) Medical
f) Load line

A public meeting was convened to collect money for the relief of the destitute, and the municipalities were doing their best to provide funds for the emergency.

**Relief Measures**

After a cyclonic event, the affected people of any region usually gets various types of instant help, of which some common helps are the supply of boiled or dry food, old clothes, pure and safe water, and emergency medicine as relief goods from different government and, local social groups, local elite, relatives.

Francisco Joan De Selva, a Native of Cochin, Charles Philip, a native of Culcutta, Jaze Deliver a native of Malaca, Joan Victoriana, a native of

\(^{12}\) C.AFrancis, *Gazetteer of India, Union Territory of Pondicherry*. Vol. 1 1982 p. 534

\(^{13}\) *Report of the Native Passengers ship commission in Nov. 1890 Calcutta 1891*. P.P. XXXIII.
Manila, Assam a native of China all stress men of the ship Success, were wrecked near Royaporam in the storm of 1818. The ship wrecked persons received the bata at the rate of 4 fanams per diem for the Europeans and 3 fanams for the remaining persons. Rs. 26 was advanced at the Office to twenty one labourers of the ship and Rs. 5 to the Brig family in order to enable them to commence their journey to Calcutta. 5 labourers of the Brig family were detained upon suspicion of murder and their passports were granted to the others. Their case has been stated in Tamil, Telugu and Hindustan languages which would enable them to obtain assistance form charitable persons of their own section. The increased distress occurred among the poorer classes by the hurricane of the 25th and 26th November and a sum of Rs.10,000 was disbursed from the Public Treasury and placed at the disposal of the Relief Committees, from private sources as well as from the Public Treasury to offer assistance to the sufferers by the storm, an inadequate amount to meet the needs of increased distress. Relief was being carefully and systematically administered after the cyclone of 23rd November 1884. Building materials, and passes were the chief requirements of the people. These materials and passes were freely given by the Tahsildar under the orders to those who are known to have had their houses either partially or wholly destroyed whilst others who were proved to have lost all that they possessed were given a money role in addition, passes for building materials was issued for some time, as the quantity of Palmyra leaves required were not obtainable on the spot and had to be brought from a considerable distance for Rs.5,000. With the orders of the acting Tahsildars of Ponneri taluk, two Revenue Inspectors were sent to the Pulicate Lake to ascertain the state of the people there and the damage done by the storm, with instructions to inform that the people who wanted relief should be asked to go to the Red Hills tank to work for their livelihood. A sum of Rs.4 was given to each of them, that, if they should find any people too penniless to support themselves till they reach the Red Hills, they might be assisted by payment of Annas 1½ each adult and ¾ each young person. During the cyclone of November, many poor people had not only lost their houses but also the grain they had and were suffering from want of food. In the initial stage, Rs. 450 was placed at the disposal of the Cuddalore Tahsildar with orders to supply food to those people who were unable to buy it for themselves. Rs.5000 was granted to

the poor people to enable them to rebuild their houses and due care was taken to assist those, who could not rebuild their houses without help.\textsuperscript{15} Rs.1,000 was placed at the disposal to meet emergent demands for repairs of tanks which breached during the recent rains. Added to that, Rs. 2,500 was applied by the Collector for urgent repairs of Monsoon damages and it was sanctioned. A sum of Rs. 50 placed, to relieve real sufferers in village damaged by Sholavaram tank floods and free passes for material, were issued by Tahsildars on the spot. The Tahsildar encouraged the ryots to rebuild and repair their houses, put up ring bunds and return as far as they could, to their cultivation. A further grant of Rs. 2,500 was granted for repairing the damages caused by the heavy rains and the Cyclone of the 21\textsuperscript{st} November for the minor irrigation works of the District. The further grant of Rs.2,500 applied for by the Collector for urgent repairs of monsoon damages, was also sanctioned.\textsuperscript{16}

**Transfers of Funds**

During the reconstruction period funds could be transferred from one department to other department on the discretion of the collector.

The complete report called for regarding the amount required for repairing damages to Irrigation works caused by the Cyclone of November 1880 was submitted. The transfer of funds proposed by the Chief Engineer for Irrigation was sanctioned, subject to the confirmation of the Government of India.

**TABLE: 21 TRANSFER OF FUNDS**

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original works</td>
<td>Repairs</td>
</tr>
<tr>
<td>Reserve under Agricultural works</td>
<td>6000</td>
</tr>
<tr>
<td>Reserve under Irrigation and</td>
<td>8000</td>
</tr>
<tr>
<td>Navigation works for which</td>
<td>14000</td>
</tr>
<tr>
<td>neither capital per Revenue</td>
<td></td>
</tr>
<tr>
<td>Accounts are kept.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14000</td>
</tr>
</tbody>
</table>

\textsuperscript{15} Proceedings of Board of Revenue, dated,19/11/1884, No.3947, p.2

\textsuperscript{16} Proceedings of Board of Revenue dated, 17/12/1884, No4329.
Rehabilitation Assistance

The progress of rehabilitation programmes undertaken by the government was observed in the construction of houses, public building like hospitals government offices, repair of roads and bridges, revival of irrigation sources, restoration of livelihood sources like agriculture, dairy, and fishery. The Government had paid compensation to the survivors of the damaged houses and deceased persons.

Grant of Advances

The storm, the inundation and the epidemic disease have caused a great scarcity of seed grain and the cultivators were without any assistance. The government gave the advance sum of pagodas of 10,000 to the people who were affected by the storm for the purchase of seed. To enable the inhabitants to increase the cultivation and purchase cattle which were drowned in the floods it was necessary to increase the advance.

Relief Fund

The policy arrangements for meeting relief expenditure related to natural disasters are, by and large, based on the recommendations of successive commissions.

The sources of private relief have already been drained by the demands made to afford assistance to the sufferers by the previous storm. To induce the proposal to government that poorer classes whose losses must have been very severe, Rs. 10,000 in the first instance be placed in the hands of the committee engaged in distributing the funds raised by private subscriptions in such proportion to each committee.

The board grants advance from the Treasury to the extent of five thousand pagodas for the immediate repair of the breaches in the tanks and also the advance of 5,000 pagodas towards enabling the sufferers to replace the stock and seed of which they have been deprived. The effects of

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17 Guide to S. Arcot District Records Vol.311, 5/1/1818 P.P.5-9
18 Guide to Trichinopoly District Records Vol.3650 25/1/1810
the late calamity occurred in 1810 May in a considerable degree was retrieved in order to promote the attainment of the desirable object.\textsuperscript{19} The governor in Council sanctioned to the Marine board Rs. 500 Pagodas per month for two months in consequence of the effect of the storm of 24 October 1818.\textsuperscript{20}

**Fund for Minor Irrigation Works**

Every year funds are sanctioned for the maintenance of emergent repair of minor irrigation works by the government to the entire country. The Collector of Tinnevelly, applied for a grant of Rs. 10,000 for the repair of the tanks which was found necessary for the protection of the town of Tinnevelly from periodical floods. Rs. 15,000 was allotted for the maintenance of the minor irrigation works for that district and had already been allotted for emergent repairs and there was no fund available for closing breaches that might occur during the monsoon.\textsuperscript{21}

**Re-imposition of Profession Tax**

The roads and streets were very much cut up and the drains and other municipal works injured during the cyclone of 1874. The municipal funds were very low; the allotment for the year had been for the most part expended. The sum remaining in hand was only sufficient to keep up the establishment for conservancy and lighting. It would be a question to provide funds for meeting the expenditure thus unexpectedly thrown on the municipality to recommend Government to sanction the re-imposition of a profession tax. This matter was to be fully considered at a special meeting of the municipal commissioners.\textsuperscript{22}

**Denial of Funds**

Sum of Rs. 15,000 allotted for the repair of minor irrigation works in the Tinnevelly District, had been found to be quite inadequate even for the

\textsuperscript{19} Board of Revenue Consultation dated 14 /1/1811, Vol 535, No.5 , p.p.352-53.

\textsuperscript{20} Public Consultation VOL 459 ,NO.34, 10/11/1818/ p.p.3416

\textsuperscript{21} Board of Revenue Proceedings, dated 18/10/1882,No.2524.

\textsuperscript{22} Board of Revenue Proceedings dated 14/12/1874,No. 3,618, p.9624
ordinary and emergent repairs to the tanks. Deputy Collector applied for
an additional grant of Rupees 5,000 on account of a breach. The Tahsildar
of Sankarankoil reported to the Collector of Tinnevelly regarding the
channel supplying the Aiyamannar tank in Puliyangudi had breached and
estimated Rupees 57 for the repair work. The request was denied on the
basis of no funds available for this emergent work. One month later Rs. 500
was sanctioned for the minor irrigation works.23

Compensation

Kalittokai, an anthology tells us that the Pandya King had provided
the dwelling sites to the people of whose living places had been
encroached by the seas.24 Having a clear and fair compensation policy for
those who have been impacted or displaced by a disaster would allow
people to focus on rebuilding their future, instead of dwelling on their
losses. Procedures should be clear about how victims become eligible;
persons should know if they are included in the final enumeration of
benefits and they should receive information on their entitlements and
opportunities to rebuilding their lives for the long-term. When
governments promise more than they can deliver, the compensation
process could be stalled and then the chances for recovery and economic
growth could also become stalled.

Disbursement of Fund

The Secretary to the Government of India received the report
submitted by the acting Chief Magistrate and Superintend of Police
showing the extent of the loss of life and property occasioned by the
hurricane at Madras on the 25th and 26th November 1846. A request to the
governor in Council that the disbursement of a further sum within
Rs.10,000 to be sanctioned to afford assistance to the sufferers was also
forwarded.25

23 Board of Revenue Proceedings dated10/11/1882, No.2730
24 K.V. Balasubramanian, The Sea level rose in the Coastal Tamil land in the
cankam age Proc Int Quat Seminar on INQUA Shoreline Indian Ocean Sub-
Commission, 2000,pp80-84
25 Public Consultation dated16/2/1847 , Vol.808 No. 28,29
The Collector of Southern Division Arcot advanced a sum of 1,000 Pagodas as Tuckauy to the inhabitants whose habitation had been destroyed. The Governor in Council sanctioned the advance of 1000 pagodas by the Collector of the Southern division of Arcot and authorized the Officers to make such advances as necessary for the security of the revenue and the welfare of the ryots. This was the first grant of Rs. 10,000 distributed for the benefit of the sufferers from the hurricane of November 1846 though only Rs. 7000 was required. The storm of 1846 had breached several of the most important tanks and channels in the district of Tinnevelly. Besides numerous smaller works the Government was to sanction an immediate grant of Rs. 50,000 as a special case, to meet this unforeseen calamity.

The special requirements of the Districts of South Arcot, Tanjore, Trichinopoly and Tinnevelly, were one lakh grant was distributed.

**TABLE: 22 THE SPECIAL GRANT TO TINNEVELLY, SOUTH ARCOT, TANJORE, TRICHINOPOLY**

<table>
<thead>
<tr>
<th>Division</th>
<th>Grant</th>
<th>Expenditure to end of 1800-1881</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Arcot</td>
<td>52700</td>
<td>35,675</td>
</tr>
<tr>
<td>Tanjore</td>
<td>7,388</td>
<td>9,710</td>
</tr>
<tr>
<td>Negapatam</td>
<td>17,696</td>
<td>18,762</td>
</tr>
<tr>
<td>Trichinopoly</td>
<td>9,544</td>
<td>18,176</td>
</tr>
<tr>
<td>Tinnevelly</td>
<td>21,277</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,08,555</strong></td>
<td><strong>82,323</strong></td>
</tr>
</tbody>
</table>

*Source: Public Works Department, dated 25/1/1882, G.O. No. 58 I*

The special grant made to Tinnevelly, supplemented by the ordinary grant of the year 1882, had proved sufficient to repair most of the damage caused by the cyclone, and it was only for the three other districts comprising four divisions that a further special grant was demanded. The acting Tahsildar of Ponneri spent Rs. 700, in excess of the amount assigned to Chingleput for minor irrigation works for 1884-1885.

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26 Public Consultation Vol.No.809, NO:24,25, 30/4/1847,
27 Public Department Consultation, dated 16/2/1847, Vol.No.807
28 Public Works Department, dated 25/1/1882, G.O. No. 58 I
29 Proceeding of Board of Revenue dated, 12/5/1885, No.1415.
Acting Collector of Chingleput requested the Secretary of the Board of Revenue to sanction Rs. 2,670 on account of repairs in the year 1886 of minor irrigation works damaged by the cyclone of the 9th November 1886. But the board regretted that there were no funds at their disposal from which the additional allotment asked for could be sanctioned. They observed from the progress report of minor irrigation works for December 1885, that out of the grant of Rs. 23,000 made for the district, there was a balance of Rs. 14,612 on 1st January 1886. The collector got the right use of his discretion in utilizing a portion of this amount for the repair of monsoon damages.30

The amount of the present estimate of Rs. 25,000 apportioned for Chingleput District allotted for the minor irrigation works was proposed to be repaired during 1885-1886.31 The monsoon damages caused to minor irrigation works in Chingleput during the heavy rains due to the cyclone of 1886 was Rs.11,810. (Saidapet-Rs.150, Ponneri-Rs.6750, Tiruvallur-Rs.1630, Conjeevaram-Rs.300, Chingleput-Rs.800, Madurantakam-Rs.2230)32

Allotment of funds for repairs to minor irrigation works in Chingleput District requested the board to sanction the funds of Rs.30,900 for the works and establishments and contingents charges.33

**Remissions**

- Occasion remissions or these granted with reference to the season (other than waste);
- Fixed remissions or these independent of the state of the season;
- Deductions from the beriz or land revenue demand on account of village or religious institute and etc.
- For lands left waste.
- For losses of a fluctuating nature dependent on the season
- Shavi or withered crops
- Palanastum or short produce’
- Difference between dry and wet assessment where dry crops are raised on wet lands.

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30 Proceeding of Board of Revenue, dated 20/1/1886, No.153.
31 Board of Revenue, dated 4/2/1886. No. 308
32 Board of Revenue, dated 7/1/1886. 127mis.
33 Proceeding of Board of Revenue, dated 22/12/1886, No.2754
- Second crop not raised on second crop land
- Remission of water rate.
- Loss by flood.
- Miscellaneous items.

Occasional remissions: Amounting to Rs. 2,098 was granted as specified below:

**TABLE: 23 OCCASIONAL REMISSIONS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shavi</td>
<td>637</td>
</tr>
<tr>
<td>Submerged or inundated</td>
<td>1,038</td>
</tr>
<tr>
<td>Tirvakammi</td>
<td>403</td>
</tr>
<tr>
<td>Fasalkammi</td>
<td>1</td>
</tr>
<tr>
<td>Other remissions</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,098</strong></td>
</tr>
</tbody>
</table>

Source: *Report on the settlement of the land revenue Madras Presidency (1869-1870)*

The remission under these heads in the year amounted to Rs. 1,159. The increase of Rs. 939 was due to the Cyclone, which caused Shavi and entire damage by submersion and silting to some extent. A sum of Rs. 102 being the assessment on 99 acres taken up for public purpose chiefly on account of the Buckingham Canal was remitted. Out of the wet waste Rs. 2, 564 being the assessment on 865 acres, was remitted against Rs. 1,517 in the year, and the rest charged as being due to neglect of the riots of the wet remissions granted on account of waste Rs. 142 related to the marginally noted minor irrigation works in the taluks of Madurantakam, and the rest to imperial works provision had been made for the repair during the current year. The abstract given below comprises the actual cultivation and waste charged and remitted in Fusly 1298 (1889) with those in the previous Fusly:

**TABLE: 24 THE ACTUAL CULTIVATION AND WASTE CHARGED AND REMITTED IN FUSLY1298 (1889)**

<table>
<thead>
<tr>
<th>Fusly</th>
<th>Actual Cultivation</th>
<th>Waste charged</th>
<th>Waste remitted</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
</tr>
<tr>
<td>1297 (1888)</td>
<td>6,98,659</td>
<td>82,278</td>
<td>347</td>
<td>7,81,284</td>
</tr>
<tr>
<td>1298 (1889)</td>
<td>6,85,826</td>
<td>99,268</td>
<td>441</td>
<td>7,85,096</td>
</tr>
<tr>
<td>Increase</td>
<td></td>
<td></td>
<td></td>
<td>3,812</td>
</tr>
<tr>
<td>Decrease</td>
<td>13,272</td>
<td>16,990</td>
<td>94</td>
<td></td>
</tr>
</tbody>
</table>

Source: *Report on the settlement of the land revenue Madras Presidency (1889-1890)*
Compared with Fusly 1297 (1888), there was a decrease of 13,272 acres or 1.8 per cent in the area actually cultivated. 20.6% under “waste charged.” The birth of the extent of waste charged consisted of portions of fields left waste, for which remission are not admissible under the strict rules. The proportion of waste remitted to total waste is therefore very small, the actually remitted on wet lands in Rs. 2,261 or Rs. 914 more than in the previous year. The net increase is due to the fact that heavier remissions were actually found necessary in the taluks of Walajapet accruing to the damage caused to a few tanks by the cyclone in October 1888, which rendered it necessary to grant remission on waste and for loss of produce to a certain extent.

**Occasional Remission**

The total remission other than waste granted during the year 1888 owing to failure of rains or of water supply or damage caused by floods amounted to Rs. 2,100 against Rs. 717 in the previous Fusly as shown below:

**TABLE: 25 REMISSION DURING 1888**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Items</th>
<th>Fusly 1297 (1888)</th>
<th>Fusly 1298 (1889)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Remission for withered crops or loss of produce</td>
<td>71</td>
<td>1,136</td>
</tr>
<tr>
<td>2</td>
<td>Remission of the difference between wet and dry assessment on lands sown with dry crops owing to failure of water-supply</td>
<td>390</td>
<td>234</td>
</tr>
<tr>
<td>3</td>
<td>Remission of second crop charge</td>
<td>207</td>
<td>194</td>
</tr>
<tr>
<td>4</td>
<td>Remission for damage caused by floods</td>
<td>46</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>Lands taken up for public purposes</td>
<td>3</td>
<td>520</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>717</strong></td>
<td><strong>2,100</strong></td>
</tr>
</tbody>
</table>

(SOURCE: Madras land Revenue Records 1888-1889)

The large increase under remission for withered crops is due to the partial failure of the north-east monsoon. The remission under item (4) the damage caused to certain tanks by the cyclone in October 1888.

The condition of crops was not as good as in the preceding year. The decrease of 9 percent under 16 annas and increase of the same percent under 4 annas was not satisfactory which the result of the cyclone was. The
prices of all staple articles of goods, except Varagu, rose during the year. The rise in the price of paddy and ragi was due to the cyclone of October 1888 and the consequent bad outturn. Gumbu and Cholum were grown on a small scale in this district, but were seldom brought to market, and hence the rise in the price of the former and the total disappearance of the latter from the market. The rise in large gram was due to fall in the supply from other districts, and the fall in the price of Varagu was attributable to more extensive cultivation of Podigal lands.\footnote{(34)}

The Collector gave a statement of arrears for Fusly 1219. A sum of state Pagodas 30,289 in due of which the Collector recommended the remission of State Pagodas 12,391. He gave a statement of the extent of cultivation destroyed by storm and inundation. The remission proposed was determined on an attentive and minute investigation of the ability and means of the renters.\footnote{(35)}

In the four taluks of Vedugrainam, Sriviakuntum, Alwear Tinnevelly and Punchamahl in consequence of the inundation of November 1827, remission to the full extent of 20% of the grass produce was deducted from the government share in favor of the ryots to the amount of Rs. 1,459-6-5 in cases where the lands were again cultivated. In case where the lands were only partially damaged remission of 10% was allowed amounting to Rs. 1,680-7-10. The principle of remission was also extended to Punjab lands and Palmyra topes.\footnote{(36)} The amount issued in the 4 taluks of Srivaikuntum, Alwar Tinnevelly, Punjamahl and Vidugrumam previous to the inundation was 20.613 about Rs. 37,000. \footnote{(37)} The storms of the 21st October and 25th November were felt throughout the greater part of the District and numerous tanks were destroyed, crops were submerged and the loss of cattle was great. The total amount of remission granted on in the Ryotwari Villages was Rs. 31564-12-9 or less than that of the preceding year. The large supply of water ruined the Punjab Crop and sambah was destroyed.

\footnote{(34) Madras Land Revenue Records Fusly 1298 1888-89, settlement report of Chingleput and North Arcot.}
TABLE: 26 REMISSION DURING 1846

<table>
<thead>
<tr>
<th>Gross settlement</th>
<th>Remission</th>
<th>Net Rev.</th>
<th>Net in fusly</th>
</tr>
</thead>
<tbody>
<tr>
<td>9,21,397-6-3</td>
<td>31564-12-9</td>
<td>8,89,832-9-6</td>
<td>1256</td>
</tr>
</tbody>
</table>

(SOURCE: Revenue Department Consultation, dated, 21/3/1848) 38

Owing to the destructive floods and heavy rains which visited the Trichinopoly district at the end of the November 1858, the crops on some Punjab lands had been completely destroyed and washed away.39 Collector of Trichinopoly sanctioned the remission of Rs. 3,000 for dairy and garden products were destroyed by the heavy floods.40 The consequence of cyclonic storm in Tanjore on 21st November 1880 was more serious and resulted in the remission of two and a quarter lakhs of land revenue.

TABLE: 27 REMISSION FOR DAMAGE CAUSED BY 1880 CYCLONE

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Fusly 1296 1886-1887</th>
<th>Fusly 12 95 1887-1888</th>
<th>Difference (Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shavi or withered crops</td>
<td>7,740</td>
<td>1,209</td>
<td>+ 6,531</td>
</tr>
<tr>
<td>Panypuduthy or land flooded</td>
<td>130</td>
<td>592</td>
<td>- 462</td>
</tr>
<tr>
<td>Payamali or land injured by water</td>
<td>751</td>
<td>129</td>
<td>+ 622</td>
</tr>
<tr>
<td>Teerwa commi or difference between wet and dry</td>
<td>417</td>
<td>387</td>
<td>+ 30</td>
</tr>
<tr>
<td>Fasal cammi or remission of second crop assessment</td>
<td>554</td>
<td>49</td>
<td>+ 505</td>
</tr>
<tr>
<td>Total</td>
<td>9,592</td>
<td>2,366</td>
<td>7,226</td>
</tr>
</tbody>
</table>

(SOURCE: Report Revenue collection, local road and agriculture, 9th May 1888, No.208)

In the latter part of the year 1888, the cyclone caused the salt water of the canal to flood the standing crops and breach a number of tanks, which was not possible to repair within the year for want of funds. The remissions granted in the year amounted to Rs. 9,592 as particularized in the subjoined statement against 2,366 in the previous year.

38 Report on the Administration of Madras Presidency during the year 1886-1887. p.p112-113
40 Report on the Administration of Madras Presidency during the year 1886-1887. p.214
The Increase is, of course, due to unfavorable characters of the season. 64% of the total remission were granted in the two taluks of Saidapet and Ponneri, the latter of which particularly suffered much in the year from the effects of a cyclone which breached a large number of tanks and caused salt water from the Buckingham canal to overflow the cultivated fields, and also from want of rain in the latter part of the year to refill the tanks which had lost their supply by cyclone breaches.41.

Petition for the Remission

The Saltoo Vodian and Caroopoo Pillay inhabitants of the village of Veragolase in the Taluk of Lalgoody in Trichinopoly District complained of certain acts of aggression by the Tahsildar of Lalgoody and prayed to be relieved from the demand for the loss arising from inundation and that the Collector was ordered to collect only the actual tax upon the land. This petition was forwarded to the Collector of Trichinopoly for consideration and report.42

The revenue collection of Mannargudi taluk was badly in arrears so the Collector deputed (Mr. Cockburn) Head Assistant Collector, to investigate and report the reason. The Head Assistant Collector reported that the taluk sustained a heavy loss on account of the late inundation and that he had personally examined the loss for five miles in every direction around Manargudi. He recommended the grant of remission in many cases and asked for permission to suspend the collection of lists on such lands which was completely destroyed by floods.43

Repairs of Damaged Water Courses

The Board of Revenue requested the Collector to begin at once the repair of all tanks damaged by the rains, in order that they may be in a state to receive water by the next monsoon. The Superintendent of Tank repairs gave instructions: “In repairing breaches in the banks of tanks the following mode should be observed in order that the work may soon attain a proper solidity, the earth should be thrown up in layers about 3

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41 Board of Revenue (Revenue settlement, Local Roads and Agriculture) 9th May 1888, No.208.
42 Board of Revenue Consultation dated 19/10/1820 Vol. 869, p.p. 8767-8
feet thick and broken down by the feet of coolies which should also moisten it occasionally with water, the absorption by the hot weather will then render it equally strong with the old works but by the common way it will require some years to acquire this strength and the bank is always liable to give way at the same place. 44

The flood damages in Trichinopoly were very severe during 1810. The board regretted to find that the damage sustained was more considerable than it had anticipated. It entirely approved the promptness in executing the temporary repairs which was essential to the security of the revenue.45 The Government sanctioned Rs. 6,500 to repair the damage caused by the inundation.46 Assistant Collector of Madura placed at the disposal of the Collector to assist in carrying out present emergent repairs to irrigation works after the cyclone of 1869.47 Collector of Tinnevelly was directed to exercise his discretion in making emergent repairs to the damaged works.48

The Governor in council sanctioned the disbursement of Rs. (392-14-10) for the reconstruction of Metto Huts and Major Cutchery at St. Thomas Mount. The storm of 30th October had materially injured the whole of the Mettoo Huts and Major Cutchery at St. Thomas Mount such that none of them could afford the necessary accommodation to the watching peons, whose constant attendance at their respective stations, was indispensable for the security of the Public revenues49.

The estimate expenses of repairs required by the different public building at the presidency consequent upon the storm of October 1818 amounted to Rupees 629-0-33 as recommended by the Military Board.50 Estimates for repairing the doors; windows and roofs of the government

44 Guide to the Trichinopoly District Records, dated 30-6-11, Vol 3587 p.p 204-8
46 Guide to the Trichinopoly District Records, dated16/10/19, Vol.3659, p.p 385-408
47 Public Works Department dated 7/12/1869, G.NO. 3129
48 Public Works Department dated 23/11/1869, G.NO. 3030
office in Fort St. George were damaged occasioned by the late storms of 26th November 1846 amounting to Rs 554'3'6. The estimate prepared by the S.I. Engineer presidency for repairing, washing and painting the doors, and windows of the building and out houses occupied by the Majesty’s Supreme Court on the North Beach damaged by the storms amounted to Rs. 149-01-45. Part of the compound wall and some of the out-building of the Madras Cutcherry had been injured by the storm. Request was sent to the members of the Board of Revenue that the attention of the Civil architect was necessary to take proper measures for the early repair of the Building.

The Chief Engineer in his report mentioned that cutting a trench from the River towards the sea, such a trench would have kept open until the water rose sufficiently to flow through it, but a trench is to be made in fine weather, but the surf soon filled it up by washing sand into it to be of any use in stormy weather, such a trench, should be cut a few minutes before the river rises to fill it to keep it open. The main failures to open the Bar during the last 30 years had been a failure to keep upon such a trench.

From the bank of sand in front of the Coovum River a large quantity of sand was taken away to fill up the hollow near the marine villa and the approaches to the bridges was lower that was ever seen before in Madras, and there was a large quantity of water in the east ward of the bridges tending to facilitate the flow of the river which rose considerably on the bursting of many tanks which threw an enormous quantity of water into it.

The Board had perused with deep regret the account of the extensive mischief occasioned by the heavy storm of 1810 and inundation. It authorized the Collector to make an advance from the treasury to the extent of Pagodas 5000 for the immediate repair of the breaches in the tanks, and water courses as also the further advance of pagodas 5,000 to enable the inhabitants, who had suffered to replace their stock and seed.

The value of the anchor boat lost in the storm which happened in May 1811, amounted to Pagodas 1,221,5,72. When the ship Atlas wrecked in the late storm the whole of the crew were for the most part destitute of clothing except a shirt and trousers and that the charges made in the Bill

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51 Public Department Consultation, dated 16/3/1846 Vol. No. 809 No.18-19
52 Guide to the Record of the Tinnevelly Dist 1796 to 1835, dated 31/12/1810, Vol. 3572, p.p 10-12
for supplying them with necessaries. In respect to the charges for Boarding, each person received 4 panams per day for 14 days.  

**Flood Embankments**

There are two problems regarding the managements of the Cauvery delta owing to the fact that are not led much below the level of the plain and that the fall of the rivers is very gradual. The country would be flooded if high embankments were not raised along all the larger channels. Thus the town of Kumbonam is mostly below the level of both the Arasalai and the Cauvery rivers which enclose it. It is necessary therefore for the rivers to be well embanked through out the delta, and for the banks to be constantly looked to. There are upwards of 1,700 miles of such banks, and their maintenance is far from easy. Scarcity of earth and labour, universal encroachment by the riots and the high value of adjacent land as well as the shortness of the working season also exist. The result is that the banks have not been in the past maintained at a standard height above full supply level. It is still not possible to deepen the delta entirely free from the influence of abnormal flood and when these occur there is still a danger of breaches and inundation. Proposals are under consideration to provide still further means of disposing of the surplus, and it is hoped that these will remove this danger. The embankment of river was, it is said, the Chief work of the great Karikala Chola (A.D. 50-90), and in the earliest times the country was called “the land of floods” from the absence or insufficiency of such banks.

Embankments are mainly of two types: Those that attempt to bar the passage of water by artificial means such as disks, bulkheads, seawalls, and revetment; and those that seek to strengthen the natural defenses of beach, done as groynes and jetties, or the transfer of sand and re-vegetation to build or stabilize beaches and dunes. The Groynes which are situated between the southern extremity of Fort St George and North of the Boat men’s village at Royapooram extending over more than a mile, (North and South of the line of Beach) gives a greater base of sandy beach

52 Public Consultation dated 30/6/1820, Vol.475 No.33-35, p.2492
in advance of the coping stone for operations with, the shipping. By
affording a wider ground work and protection to all the noble Beach
Buildings which are occupied as Court Houses, Public and Mercantile
Office, Banks and Private residence, which had previously been
endangered by the encroachment of the sea on the coast, half the years,
even the Bulwark itself had not been sufficient to prevent the sea washing
over the Beach road and finding its way into the lower apartments of
houses in its vicinity during gales of wind. Another fact mentioned
namely, at a later period off the marine villa, where the sea at one time had
encroached so much as almost to undermine the Governor’s Bungalow
there; and to save which, the Master Attendants Department was urgently
called upon on the 19th Dec. 1847 to secure a number of laden Masula boats
to seaward to serve as a temporary barrier.

A committee recommended the Government for protecting the town
of Tranquebar from the encroachment of the sea. They consisted merely of
rough stone Groynes of various lengths thrown out at right angles to the
coast line, and their construction was in every way satisfactory. The effect
of these works as it appeared during 1852 was reported on the 20th Jan.
1853 as follows. No advance of the sea has taken place along the entire
front of the town during the present heavy monsoon, and the groynes are
now in very good order, but considerable encroachment occurred to the
south of the citadel during the stormy weather of Dec.1881. For the
protection of the town of Tranquebar, the government wanted to add in
length and thickness to the groyness. During the 1851 under review a
violent set of the current took place in the south west monsoon on
Northern part of the beach and it was found necessary to strengthen the
sea wall called the Kings Bastion by additions of rough stone. The
hurricane of March 1853 caused considerable damage to the works.

Set back in the Revenue and Deduction

The revenue of the government was disturbed by the calamities.
Cyclones affected the economic conditions of the country as well as the
society. The amount of the revenue for fusly 1220 (1818) was Pagodas
4,52,576; the year 1818 was affected by a storm, in consequence of which
the balance remaining was Pagodas 36,715. The revenue had suffered

considerably from two causes. First the epidemic diseases had been so universal through out the province that people could not attend the cultivation. In many villages, people responsible for the payment of the revenue had been swept away. Second the rains were so heavy, that much of the peshanum crop was destroyed and whole of it was damaged. The immense damage to most of the irrigation works and large extend of arable lands was made unfit for cultivation. The minor difficulties affected materially the land revenue of the district.56

Public Criticisms

The majority of tropical cyclones which make land fall in a populated area are followed by public accusations which are misleading or criticism of ineffective community action. Sometimes the criticism may be justified. In other situations it represents a well known aspect of disaster psychology and is often a defensive reaction on the part of those inexcusably caught unprepared or unconvinced, or by those who maintain a regular attitude of denigrating the civil emergency system. The criticism may spring from individual, local government or representatives. Public criticism, accepted coolly, usually serves to highlight some deficiencies of a tropical cyclone warning system or role of the government. Once a tropical cyclone has occurred a critical review of the overall effectiveness of the warnings in their relation to community preparations is essential for the purpose of identifying deficiencies and planning improvements in the warning programmes. In such a situation an exhaustive enquiry or even a commission is to be established to review the performance of all the national resources employed in managing the crisis. The major investigations often result in significant changes in the overall administration.

The groynes erected by the Marine Department have stood the test of the monsoon admirably, which is said to be effectually protected from the encroachments of the sea. The channel for the waters during the monsoon owing to its low situation, and the torrents which come down from the northward during the Monsoon through the Arches in the Blacktown Wall has no canal which can be made on the ground, without occupying the principal part and incurring an enormous expense in its

56 Public Consultation dated1/11/1818 Vol. No. 459,No:17, P.P. 3270
construction. But this alone will suffice for carrying of the floods as they are received during the heavy rains. This canal was always intended as amply sufficient in height and width for the rains which fell within the Black Town Wall; and the stagnated water which remained for some months after the monsoon on the ground before it was raised, as well as on all the ground to the Northward of it within the Black Town, had been a matter of great inconvenience to passengers, and a nuisance as well as injury to the inhabitants whose houses were situated near it.

The great rush of water at Palavaram, on the 5th mile was owing to the Mambalam Tank having breached in three places. The owner of the tank had been officially warned by the collector “thus where as you are the owner and have the management of the tank situated in the Mootah Village aforesaid, and whereas the said tank is in a state of utter disrepair and contains no Calingulah for the discharge of the surplus water. As it clearly appears that the Calingulah constructed by you for the Mambalum Village tank is not in accordance with the plan furnished by the Public work departments, thereby exposing the railway below to great danger by the occurrence of a breach therein during the rainy season, you are hereby required to commence the repair of the tank and the erection of the Calingulah within the 5th October and complete the work at an early date. In the event of any damage accruing either to the tank or the road, you will be held responsible. He sent order under Sec.521 of the code of criminal procedure to Zaminder.”

Employing the necessary number of laborers for the purpose of repairing with all practicable dispatch the breaches in the banks of the tanks and preserving the supplies of water, the Board inspected the estimates of the expense which it may be necessary to incur on the occasion and recommended to the Government to authorize the employment of the crops of pioneers of such laboring poor as are entertained under the direction of the commandment of the crops of repairing the damage which the public tanks within the limits have sustained during the Hurricane.

In May 1872, the best part of the salt manufacturing season, the districts were visited by a cyclone which destroyed a large quantity of salt

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57 Public Works Department, dated, 4 /8/1877, G.O No. 289 R
58 Public Works Department, dated, 27/6/1877, G.O No. No.173 R.
at the pans in the month of June, and August. In salt charges there was a decrease of Rs. 30,929 which accounted for the extent of Rs. 20,072. By the reduced outturn of salt, consequent on the manufacturing, operation had been checked and impeded by the repeated and untimely rainfalls. The remaining portion of the decrease appeared mostly in “petty construction and repairs” under which head there was a more than usually large outlay in the precious years, owing to the damage caused to salt works by the storm of November 1871. Further the Budget allotment for the year 1870 was not fully utilized. Owing to the delay on the part of the officers of the Public Work Department in preparing the necessary estimates for certain original works.59

The cyclone not only devastated the coastal regions but also severely affected the national economy. An integrated approach of the government and non-government organizations for cyclone disaster management and regional development planning in the entire cyclone prone region had been delineated as a special problem region. Planning efforts had been aimed at increasing the efficiency and capability of the cyclone disaster, management system, improving socio-economic conditions of the people. In general, the government response to the problems of disaster has changed little from those traditionally adopted, in the form of engineering solutions such as bigger embankments or cross dams, construction of cyclone shelters, or provision of temporary relief materials like food, clothes and medicine. From the viewpoint of organizational behavior, the national level response should concentrate on four basic areas: mobilization of personnel; management of information; exercise of authority; and organizational coordination.

During reconstruction, the community can become proactive in reducing their susceptibility to hazards by taking notice of how to build any natural environment interacts. Municipalities, the private sector and community groups created can improve drainage systems and waterways by removing impediments and structures in the flood zones. Communities can also work together to reduce their susceptibility to hazards by putting in place self-monitoring mechanisms to ensure that unsafe building

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practices and other dangerous behaviors are stopped. Safety considerations during the reconstruction phase invariably will call for better designed housing and infrastructure to protect citizens and allow communities to be more resistant to disasters. Natural and human-caused disasters continue to be regular events in developing countries. Some of the original damage is avoidable; some of the damage comes after the initial disaster, as water supplies are polluted and perhaps food supplies are interrupted. The relief efforts themselves can cause additional damage. This may happen if the basic food supply is not affected by the original disaster, and a sudden inflow of donated food distorts the agricultural produce markets. This kind of common event means a second economic disaster for the farmers.

Much of the huge loss of life from a disaster can be attributed to people living in makeshift homes on land not appropriate for such structures. To reduce vulnerability in the future, cities must relocate people away from land that is vulnerable to disasters and ensure that new families do not create informal settlements. Poorly planned relief activities to complex emergencies can have a significant negative impact on a variety of players in the disaster relief arena—from the donor to the disaster victims and the relief agencies in between.

After a disaster, it is important for city residents, local government, businesses and non-governmental organizations to resume normal activities and to participate in reconstruction efforts. In the rush to re-build, however, local officials and citizens must understand why the damage occurred and then consider how to reduce the city vulnerability to the next disaster. Population density, ecological imbalance and inappropriate construction are creating more urban areas that are increasingly vulnerable to disasters.

Chennai City and its environs are very flat, and traversed by three rivers viz. Adyar, Cooum and Kosasthalaiyar. Mean annual rainfall is about 120 cm, and mean rainy days are 52 days. Records have shown that there were several catastrophic floods in Chennai in the 19th century caused by heavy rain associated with cyclonic activity. Flooding of less catastrophic nature occurs regularly in low-lying areas of the City and its suburbs because of inadequacy or inoperativeness of local drainage infrastructure.