നമ്മൾ നമുക്കായി

Nedumudi Grama Panchayat

Disaster Management Plan

(Draft)

Nammal Nammukkai

DISASTER MANAGEMENT PLAN- 2020

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District	:	Alappuzha
Date	:	15.01.2020

ജി.വേണുഗോപാൽ
പ്രസിഡന്റ്
ആലപ്പുഴ ജില്ലാ പഞ്ചായത്ത്

ആശംസ

നമ്മൾ നമ്മുക്കായി എന്ന ബഹുജന ക്യാമ്പയിനിന്റെ ഭാഗമായി കേരളത്തിലെ മുഴുവൻ ഗ്രാമ പഞ്ചായത്തുകളും നഗരസഭകളും ജനപങ്കാളിത്തത്തോടെ ദുരന്തനിവാരണ ആസൂത്രണ രേഖ തയ്യാറാക്കുന്ന പ്രവർത്തനത്തിലാണ്. കേരളത്തിൽ ആദ്യത്തെ ദുരന്തനിവാരണ ആസൂത്രണ രേഖ ആലപ്പുഴ ജില്ലയിലെ നെടുമുടി ഗ്രാമപഞ്ചായത്താണ് തയ്യാറാക്കിയത് എന്നറിയുന്നതിൽ അതിയായ സന്തോഷമുണ്ട്. ചുരുങ്ങിയ സമയത്തിനുള്ളിൽ സമഗ്രമായ ഒരുആസൂത്രണ രേഖ തയ്യാറാക്കിയ ഭരണസമിതിയേയും ഒപ്പം നിന്നവരേയും ഹാർദ്ദവമായി അഭിനന്ദിക്കുന്നു. എല്ലാ ആശംസകളും നേരുന്നു

ആലപ്പുഴ
20-01-2020

അഭിവാദനങ്ങളോടെ

ജി. വേണുഗോപാൽ

ഡോ: ജോയി ഇളമൺ
ഡയറക്ടർ ജനറൽ
കില, തൃശ്ശൂർ

ആശംസ

ജനപങ്കാളിത്തത്തോടെ ഒരു തദ്ദേശ സ്വയംഭരണ സ്ഥാപനത്തിന്റെ നേതൃത്വത്തിൽ അവരുടെ ദുരന്തനിവാരണ ആസൂത്രണ രേഖ തയ്യാറാക്കുക എന്നത് നമ്മുടെ രാജ്യത്ത് തന്നെ നടാടെ ആയിരിക്കാനാണ് സാധ്യത. മറ്റു നിരവധി കാര്യങ്ങളിലെന്നപോലെ കേരളം ഇക്കാര്യത്തിലും മാതൃകയാകുകയാണ്. ഇതു സംബന്ധിച്ച് ബഹു.മുഖ്യമന്ത്രി ശ്രീ. പിണറായി വിജയൻ അവർകൾ 2019 നവമ്പർ 21 ന് പതിനാലാം കേരള നിയമസഭയുടെ പതിനാറാം സമ്മേളനത്തിൽ നടത്തിയ പ്രസ്താവനയിൽ നമ്മൾ നമുക്കായി ക്യാമ്പയിന്റെ ഉദ്ദേശലക്ഷ്യങ്ങളും പരിപാടികളും വ്യക്തമാക്കിയിരുന്നു.

ഇതേ തുടർന്നു ഡിസംബർ 4,5 തീയതികളിലായി ബന്ധപ്പെട്ട സർക്കാർ ഉത്തരവുകളും പുറപ്പെടുവിച്ചു. ഡിസംബർ 12-മുതൽ ആരംഭിച്ച പരിശീലന പരിപാടിസംസ്ഥാന തലം മുതൽ ബ്ലോക്ക് തലം വരെ ഇതിനകം തന്നെ വിജയകരമായി പൂർത്തീകരിക്കുകയും ചെയ്തു. അവസരത്തിനൊത്ത് ഉയർന്ന് ആവശ്യമായ വിവരശേഖരണം നടത്തി നെടുമുടി ഗ്രാമപഞ്ചായത്ത് അവരുടെ ദുരന്തനിവാരണ അസൂത്രണരേഖ കേരളത്തിലാദ്യമായി തയ്യാറാക്കിയിരിക്കുന്നു.ഇത് തികച്ചും ശ്ലാഘനീയമാണ്. ഗ്രാമ പഞ്ചായത്ത് ഭരണസമിതിയേയും ഈ രേഖ തയ്യാറാക്കുന്നതിനായി സഹായിച്ച മുഴുവൻ സന്നദ്ധ പ്രവർത്തകരേയും അഭിനന്ദിക്കുന്നു.

തൃശ്ശൂർ
20-01-2020

ആശംസകളോടെ

ഡോ. ജോയി ഇളമൺ

ആമുഖം

ബഹുമാന്യരേ,

അതിജീവനക്ഷമതയുള്ള കേരളസമൂഹം എന്ന മഹത്തായ ലക്ഷ്യം നേടുവാനായി, സംസ്ഥാനത്തെ മുഴുവൻ ജനങ്ങളേയും പങ്കെടുപ്പിച്ചുകൊണ്ട് അവരുടെ അറിവും ആശയവും അനുഭവവും കൂടി ഉൾപ്പെടുത്തിക്കൊണ്ട' നമ്മൾ നമുക്കായി എന്ന പേരിൽ ഒരു ജനകീയ ക്യാമ്പയിൻ ബഹു: സംസ്ഥാന സർക്കാർ ആരംഭിച്ചിരിക്കുകയാണല്ലോ

2018ലെ മഹാപ്രളയത്തിന്റെ ഓർമ്മകളും ഇനിയും ആവർത്തിക്കപ്പെടാനുള്ള പ്രകൃതി ദുരന്തങ്ങളും മുന്നറിയിപ്പുകളും നമ്മെ ചില ഉറച്ച തീരുമാനങ്ങളിൽ കൊണ്ടുചെന്നെത്തിച്ചിരിക്കുകയാണ്. ദുരന്തങ്ങളുടെ പ്രത്യാഘാതങ്ങൾ ലഘൂകരിക്കുതിനായി പ്രാദേശികവും സാമൂഹ്യാധിഷ്ഠിതവുമായ ദുരന്ത പ്രതിരോധ പ്രവർത്തനങ്ങൾ ആവിഷ്ക്കരിക്കാൻ കേരളത്തിലെ ഗ്രാമപഞ്ചായത്തുകളും നഗരസഭകളും മുന്നോട്ടു വന്നിരിക്കുകയാണ് . പ്രാദേശികമായി ദുരന്ത പ്രതിരോധ പ്രവർത്തനങ്ങളും ദുരന്തലഘൂകരണ പ്രവർത്തനങ്ങളും വർദ്ധിച്ച ജനപങ്കാളിത്തത്തോടെ നടപ്പിലാക്കാനാണ് ഉദ്ദേശിക്കുന്നത്. ഇതിന്റെ ഭാഗമായി തയ്യാറാക്കിയതാണ് ദുരന്ത നിവാരണ ആസൂത്രണ രേഖ. ഇതിന്റെ പ്രതിരോധത്തിനും അതിജീവനത്തിനുമുള്ള പ്രദേശികമായ പദ്ധതികളും ആസൂത്രണം ചെയ്ത് 2020-21 വാർഷിക പദ്ധതിയുടെ ഭാഗമാക്കുക എന്ന പ്രത്യേകതയും ഉണ്ട്. ഇതുവഴി പഞ്ചായത്തിന്റെ പദ്ധതി ആസുത്രണത്തിൽ മെച്ചപ്പെട്ട ദുരന്ത പ്രതിരോധവും അതിജീവനക്ഷമതയും ഉറപ്പു വരുത്തുവാൻ കഴിയുമെന്ന കാര്യത്തിൽ സംശയമില്ല.

ലോകത്ത് ആദ്യമായിട്ടാണ് ഒരു പ്രാദേശിക ഭരണ സംവിധാനം ഇത്തരമൊരു വിപുലമായ ദുരന്തനിവാരണ ആസൂത്രണ രേഖ തയ്യാറാക്കുന്നത് അത് കേരളമാകുന്നു എന്നതിൽ നമുക്ക് അഭിമാനിക്കാം. കാലാവസ്ഥാ വ്യതിയാനവും ആഗോളതാപനവുമൊക്കെ ആയുസ്സ് തിട്ടപ്പെടുത്തിയ കൂട്ടനാട് എന്ന പ്രദേശത്തിന്റെ ഭാഗമായി നെടുമുടി ഗ്രാമപഞ്ചായത്ത് ദുരന്തനിവാരണത്തിനും അതിജീവനത്തിനുമായി ഇപ്പോഴേ തയ്യാറാവുകയാണ്. ആദ്യം പ്രകാശിതമാകുന്ന ദുരന്തനിവാരണ ആസൂത്രണ രേഖ ഒരു പ്ക്ഷേ നെടുമുടി ഗ്രാമപ്ഞ്ചായത്തിനന്റേതാണാണ് അറിവ്. വളരെ ചുരുങ്ങിയ സമയം കൊണ്ട് ഇത്രയും ബൃഹത്തായ ഒരു രേഖ തയ്യാറാക്കാൻ കഴിഞ്ഞതിൽ ഞങ്ങൾക്ക് അഭിമാനമുണ്ട്. നിരവധി പേരുടെ കഠിനാദ്ധ്വാനത്തിന്റെ ഉത്പ്പന്നമാണിത്. കിലയുടെ ഡയറക്ടർ ജനറൽ ഡോ: ജോയി ഇളമൺ നേരിട്ട് വന്ന് ഈ രേഖ തയ്യാറാക്കുന്നതിന് ആവശ്യമായ മാർഗ്ഗനിർദ്ദേശങ്ങൾ നൽകിയത് കൃതജ്ഞതാ പൂർവ്വം സ്മരിക്കുന്നു. കിലയുടെ നേതൃത്വത്തിലുള്ള കാൻ ആലപ്പിയുടെ ഒരു പറ്റം യുവ എഞ്ചിനിയർമാരാണ് ഈ രേഖ തയ്യാറാക്കിയത്. ഇതിന് പിന്നിൽ പ്രവർത്തിച്ച ഏവർക്കും നന്ദി. ദുരന്തനിവാരണ ആസൂത്രണ രേഖ ഇനിയും കൂടുതൽ സമഗ്രമാക്കേണ്ടതുണ്ട്. ഗ്രാമസഭയിലും തുടർന്ന് നടക്കുന്ന പ്രത്യേക വികസന സെമിനാറിലും അതിനുള്ള ശ്രമങ്ങൾ ഉണ്ടാവണം. അതിലേക്ക് ഈ ദുരന്തനിവാരണ ആസൂത്രണ രേഖയുടെ കരട് സവിനയം സമർപ്പിക്കുന്നു

എം കെ ചാക്കോ
പ്രസിഡൻറ്
|നെടുമുടി ഗ്രാമപഞ്ചായത്ത്

നമ്മൾ നമുക്കായി

Chapter-1

Local Self Government Institution- General Information

Nedumudi Grama Panchayat

District	:	Alappuzha
Taluk	:	Kuttand
Block Panchayat	:	Champakkulam
Assembly	:	Kuttand
Parliment	:	Mavelikkara
Area	:	25 .98 K.M
No. Of Wards	:	15
Total No. Of Houses	:	4916
Population	:	19701
Female	:	10234
Male	:	9467
SC Population	:	1772
Female	:	10234
Male	:	878
Population Density	:	788 / Sq. K.M
Literacy	:	97 .4 %
No. Of Kudumbashree Units	:	167
Villages	:	Nedumudi, Kainakari

Geography

Nedumudy is a part of the Vembanad watershed in the lower Kuttanad region which resides 2.2 meters below sea level. This grama panchayath could be found along the latitude line 8.5858101 N and longitude line 76.9770813 E. The total area is 25.987 square Kilometres and out of which 20.22 square kilometers belong to Nedumudi village and 5.76 square kilometers belong to Kainakary village.

The prime soil type found in the village is 'Champakulam' soil range. This is spread approximately around 2012 hectors of land. Usually seen in dark ash color or black color, this soil type could be spotted as deep as 150 meters. Another soil type found in the village belongs to the Vechur soil range. The area covered by this is 156 hectors. Due to the presence of salt, this is seen in white color and could be found as deep as 2 to 3 meters. 270 hectors are land fillings, east red sand is generally seen in this area.

Pamba and Pamba's tributary Pookaitha are the two major rivers. Manimala backwaters flow through a small region. Manimala passes through a small region. WIth Champakulam and Pulincunnu grama panchayaths in the west, Ambalapuzha south in the northern border, Punnapra east grama panchayath in the north, Kainakary in the north, Thankazhy grama panchayath in the south, this region includes Nedumudi, Ponga and Nadubhagam watershed. 5023.55 hectors of paddy cultivation is spread around 37 paddy fields. Even though filling of paddy fields is not happening at the state rate, around 5.74 hectors of paddy field is being filled here every year.

History

Kuttanad is one of the most aesthetically pleasing geographical regions in Kerala, the backwaters that garnered the attention of the whole world. The only place in the world where cultivation is done in an area two metres lower than the sea level. Four rivers, Manimala, Achan Kovil, Pamba and Meenachil out of the fourty four rivers confluence in this region. The paddy fields that spread over a large area, a fabulous host to the migratory birds, this land is God's own country to the tourists from all over the world. Kuttanad, knows as the holland in Kerala is 0.6 metre to 2.2 metre below the sea level. Canals and bunds are spread around like the nerves of Kuttanad. Paddy fields were filled to create habitable lands. Kuttanad region is part of Alappuzha, Pathanamthitta and Kottayam districts. Ambalapuzha, Kuttanada, Karthikapally, Cherthala, Thiruvala, Chenganur and Mavelikkara are the seven Taluks of the four districts in which Kuttanad is spread around. 54 villages come under the Kuttanad region. 31000 hectares which are considered as dry land. 66,000 hectares included in the lower region, water spread of 13000 hectares, Kuttanad is a region with a total area of 1.10.000 hectares. Out of the one million population living here, almost half of them depend on agriculture for livelihood.This prosperity of agriculture gave Kuttanad the nickname, rice bowl of Kerala. After a while, the greenery of Kuttanad began to dim. The reclamation of land and the conversion of streams and canals into roads led to a significant reduction in rice cultivation. The buildings and mansions began to appear as Kuttanad's 'headstone'. The significant decline in agriculture and allied agriculture has had an impact on the agriculture-related sector, the dairy sector as well. Kuttanad started slowly trying to say goodbye to agriculture and then got the new fortune in the hopes of tourism development. Such was the influx of houseboats. The lack of fresh water, the decline in agriculture, fertilizer, pesticide overuse and land degradation, and the desolation of Kuttanad tourism as a result of man-made activities, are causing distress in a sense. The problems created by the influx of tourists are also pushing Kuttanad to the environmental disaster.Although Kuttanad is only 10 per cent of the total rice production in the state, more than 20 per cent of the rice production in Kuttanad was at one time. But there is no reason to think that half of it is. Kuttanad is also known as Akshayakhani. Kuttanad also has the story of the abundance of goats along with various kinds of fish.

In many respects, Kuttanad, now unique in many ways, has now been devastated by repeated floods and floods that rekindle agriculture, infrastructure, fisheries, environment, geology and human life. The history of Nedumudi can be considered only from this background.

History of Floods

The floods in Kerala in July and August 1924 are known as the Ninety-Nine Floods.It was called the 'Ninety-Nine Flood' because it occurred in year 1099 (according to Malayalam calender) .The 20th century floods were the biggest floods in Kerala.

The torrential rains and floods that lasted for three weeks from the first day of the month of 1099 Karkidaga caused widespread damage in the lower parts of Kerala.Floods affected central Travancore and southern Malabar.The flood affected the tea plantations of Munnar, which is 6500 feet above sea level. The number of people who died in this flood is very high.There was no such system of calculation at that time.Newspapers and other documents of the day give us an approximate picture of the Flood.Traffic was halted,the postal systems were on standby.Some of the higher areas were filled with refugees.Hunger along with the water overwhelmed the people. Though there were no floods in the 1990s, there were heavy floods in Kerala in 1939, 1961 and 2018.But the floods which have happened in the recent times especially the 2018 floods have been caused due to human interference causing irreparable damage to nature, which is too complex to be elaborated here.It is now recognized that the flooding of the eastern hills, the inundation of the Kuttanad tracts, the unscientific road construction and the public springs that were turned into sewage tanks are the real causes of the flood.

കുറഞ്ഞിരുന്നില്ല എങ്കിൽ 8 ലക്ഷം ഹെക്ടർ ഉണ്ടായിരുന്ന നെൽ വയലുകൾ 3 ലക്ഷം ഹെക്ടർ ആയി ചുരുങ്ങിയില്ലായിരുന്നു എങ്കിൽ അന്ന് ഉണ്ടായിരുന്ന ഒരു ഡാമിന്റെ സ്ഥാനത്തു ഇന്ന് 42 ഡാമുകൾ ഉണ്ടായിരിക്കെ ഇത്തരം ഒരു പ്രളയം പോയിട്ട് കാര്യമായ വെള്ളപ്പൊക്കം പോലും ഉണ്ടാകുമായിരുന്നില്ലെന്ന് ഇന്ന് വിദഗ്ധർ അഭിപ്രായപ്പെടുന്നു.എന്തായാലും മറ്റു പല പ്രദേശങ്ങളിലും സംഭവിച്ചതുപോലുള്ള വെള്ളപ്പൊക്കം മൂലം ആൾനാശം കുട്ടനാട്ടിൽ പ്രത്യകിച്ച് നെടുമുടിയിൽ ഉണ്ടായിട്ടില്ല എന്നത് വസ്തുതയാണ്. അത് പക്ഷേ, സ്ഥിരമായെന്നവണ്ണം വന്നെത്താറുള്ള വെള്ളപ്പൊക്കത്തെപ്പറ്റി മുൻധാരണയുള്ളതുകൊണ്ട് നാട്ടുകാർ സ്വീകരിച്ച മുൻകരുതലുകളുടെ ഫലമായാണ്. തടയാനും താങ്ങാനും കഴിയാത്തവണ്ണം പ്രളയജലം ഉയർന്നു തുടങ്ങുന്നതിനുമുമ്പുതന്നെ ഏറെപ്പേരെയും ഇവിടെനിന്ന് സുരക്ഷിതമായി മാറ്റിപ്പാർപ്പിക്കാൻ കഴിഞ്ഞതുകൊണ്ടാണിത്. എന്നാൽ പ്രളയം സംഹാരതാണ്ഡവമാടിയ നാളുകളിലെ അവസാന ദിവസങ്ങളിൽ നെടുമുടുക്കാരുടേയും കണക്കുകൂട്ടലുകളെല്ലാം തകിടംമറിഞ്ഞു. പിന്നെ കൂട്ടംകൂട്ടമായി രക്ഷാകേന്ദ്രങ്ങളിലേക്കുള്ള യാത്രയായിരുന്നു. ദുരന്തമുഖത്തുനിന്ന് കയ്യിലെടുക്കാവുന്നത് വാരിപ്പിടിച്ച് വീടും നാടും വിട്ടുപോകേണ്ടി വന്നവർക്ക് സുരക്ഷിതമായി അഭയസ്ഥാനങ്ങളിൽ എത്തിച്ചേരാനും, അവിടങ്ങളിൽ പ്രതീക്ഷ കൈവിടാതെ കഴിയാനും ആവശ്യമായ എല്ലാ പിന്തുണയും സൗകര്യങ്ങളും സംസ്ഥാന സർക്കാർ ഒരുക്കിക്കൊടുത്തത് ഇന്നാട്ടുകാർ നന്ദിപൂർവം സ്മരിക്കുന്നുണ്ട്.

നെടുമുടി ഗ്രാമപഞ്ചായത്ത് ദുരന്തനിവാരണ ആസൂത്രണ രേഖ

Viral diseases

Diseases in fish

It has been at least two decades since viral infections began to be reported regularly in Kuttanad. This has been reported in humans and fish. There have been several signals which indicate ecological collapse during past two decades and more. In 1991, the spread of the fish disease in Kuttanadu caused serious damage. In June 1991, the disease was reported in Pookotam Lake, but reached Kuttanad within August. The extent of damage in Kuttanad was appalling. It is estimated that 25 per cent of the fish wealth in Vembanad was lost due to disease. The sight of half-drowsy fish with sores in head and shoulders that were struggling for life were a nightmare. People were also affected. New strains of disease that were not seen previously also started getting reported. In 1996, Japan fever (Japanese encephalitis) was reported with recurrences in 2006 and 2011. In 2006, 70000 cases of Chikungunya were reported in Alappuzha. The records by Health Department indicate that jaundice and diarrhoea are very prevalant in Kuttanad. Whether temporary measures can be used during each outbreak, needs deep thought. 'Kuttanad is a dustbin' has been a phrase heard for long, and Kuttanad needs urgent cleanup. 500 tonnes of pesticides and 15000 tonnes of chemical fertilisers are used in Kuttanad every year. Overuse of fertilisers have caused eutrophication, and since the Thanneermukkam bund restricts the infiltration of seawater, weeds have become a permanent sight in the waterways of Kuttanad. Weeds lead to bugs and parasites which in turn wreck havoc on humans and other lifeforms. Can Thanneermukkom bund be left open on an experimental basis for atleast 2 years? The opposition from farmers is the main roadblock to this. The potential loss that could be faced by them should be fully compensated. Should such a large quantity of pesticides be used in the first place? There are examples within Kuttanad which demonstrate agriculture without use of any pesticides. Even if pesticide use is cut in half, it will lead to a great change. There needs to be a participatory plan for opening up clogged water channels and improving water flow. Such a plan for cleaning up Kuttanad is essential.

Bird flu

There is a certain indifference demonstrated by people of Kuttanad towards small misfortunes. The response to bird flu was also in the same manner. The vital information that the fast spreading disease was the dangerous Avian influenza and that the virus responsible for this, namely in the H5N1 category can also spread to humans through close contact, was not conveyed to people with the required severity. The only way of controlling the spread of this disease is to exterminate the ducks that already have the disease and are at risk. The compensation decided initially for each duck was fixed at Rs 37. The efforts of the farmers now turned towards hiding their ducks from the authorities. Petitions and protests were required to raise the compensation per duck to Rs 200 and by this time, 3 days had passed. The farmers cannot be blamed for not understanding the severity of this disease and the reason for the spread of this disease is definitely the lax attitude of the authorities. This situation also revealed the pathetic preparedness of Kerala administrative machinery towards such outbreaks. Everything, from distributing protective suits to those who had to cull the birds after the designated time, to the confusion regarding disposing the bird bodies revealed the weaknesses in our response. This weak response extended to the way in which preventive tablets for children were handed to the response workers.

What is the nature of this disease which can spread from animals to humans with close contact? What is the extent of disaster caused due to this? Is there any contribution of the environmental problems in Kuttanad towards the spread of this disease? What are the responses possible from our side? Government and research institutions should work deeply to prevent this mishap from turning into a disaster.

Bird flu is primarily spread in two ways. Migratory birds are usually susceptible to the virus. Symptoms may not manifest in them. When they interact with domesticated birds i.e poultry, disease transmission may occur. Duck and poultry rearing in habitats of migratory birds and their feeding areas increase the risk of infection. When habitats of migratory birds are encroached by humans, these birds will enter human habitats and paddy fields for feeding and settlement. There are studies that point to this as a major cause of the spread of the disease. There are also studies that point to the link between wetland destruction and ecological decline in Southeast Asian countries where the disease was first reported.

Another way is through illegal bird smuggling. This activity which is usually carried out without any safety checks or preventive measures invite disease spread. There should be a careful scrutiny to see how far each factor has contributed to disease. If we ignore the warnings sent by nature in the previous days we will fall into complete destruction. If we wish to avoid this fate, we should learn from history.

This chapter covers general information about local self-government institutions. Presented here are the topographical features, historical features, ancient traditions and basic general information about the local government area.

Population statistics were recorded as per the 2011 Census Data Source. In addition, as part of the preliminary data collection, data has also been taken at the ward level from local body data. The details included are - The economic details of disaster mitigation plans, important occupations, livelihoods and jobs, public centers, government aided and unaided educational institutions, Anganwadi Centers, healthcare institutions, Veterinary dispensaries, community centers and halls, religious centers, roads, bridges, public buildings, details of colonies (families, roads leading to colony), irrigation infrastructure and natural water bodies. To make contacting the designated officers easy during an emergency situation, the names and details of program officers have also been included.

Table 1.1: Population Statistics

Category	Female	Male	Transgender	Total
Population	10234	9467	-	19701
Literacy (%)	97.3%	98.5%	-	97.4%
Children 0-6	894	878	-	1864
10-14	535	561	-	1096
14-19	536	506	-	1042
SC	894	878	-	1772
ST	-	-	-	-

(Source : census data 2011)

Table 1.2: Local self government - Public information

Ward	15
Revenue villages	2
Latitude and Longitude data	Nedumudi panchayath is located on the - 8.5878101° north longitude - 76.9770813° east

Table 1.3: Revenue village / panchayath ward deployment

Sl.no	Name of the revenue village	Wards, Number and Name coming under the Revenue Village
1.	Nedumudi	5- Nedumudi south 6- Thekkemuri north 7- Thekkemuri 8- Champakkulam north 9- Champakkulam 10- Manapra 11- Nadubhagam 12- Vyshyambhagam south 13- Vyshyambhagam north 14- Chembumpuram
2.	Kainakari South	1- Ponga South 2- Ponga 3- Chennamkari 4- Nedumudi 15- Pazhayakari

Table 1.4: Financial Status Information

Ward No:	Total no:of families	Total no:of family members	ഉടമസ്ഥർ			
			AAY (Yellow card)	Priority group (Pink card)	Subsidy (Blue card)	APL (White card)
1-15	6394	25856	409	2318	1124	2543

(Source: Food and Civil Department)

Table 1.5: Major occupations (consolidate from ward level list: Appendix 1)

Sl.no	Main Occupation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	Farmers	15	200	40	250	170	50	120	150	120	100	150	300	125	100	150
2.	Farmworkers	200	200	150	150	60	60	170	400	150	85	250	450	75	200	250
3.	Fishing	15	15	2	1	3	-	3	50	-	4	12	6	-	8	10
4.	Traditional occupations	3	5	3	-	10	20	1	100	2	-	-	100	-	-	-
5	Day hires	250	580	200	400	180	150	300	250	90	145	175	400	120	200	100
6	Unskilled immigrant workers	-	-	-	6	10	-	-	-	60	-	-	50	-	-	-
7	Trade / Industry	-	-	-	-	2	-	-	1	-	-	-	-	-	-	-

Sl.no	Main Occupation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
8	Construction workers	10	50	50	20	15	12	45	25	12	2	8	40	50	10	15
9	Small traders	5	15	4	50	9	25	8	15	20	60	70	25	15	14	7
10	Salary Workers: Government	30	25	3	10	12	30	15	7	20	35	150	125	30	50	50
11	Salary Workers: Private	55	20	10	20	12	50	45	7	10	10	50	75	25	150	150
12	Expatriates	15	15	7	15	15	40	20	4	20	150	70	100	75	50	15
13	Others	6	-	-	-	-	-	-	3	-	4	-	-	-	2	

(Source: respective departments)

Table 1.6: Livelihood Occupations

Sl.no	Occupation	The number of units(sheds) Fish ponds / tank etc.	Total number of animals / birds
1	Poultry / Duck farming	8	31015
2	Dairy farm (cow / buffalo)	174	564
3	Pig farming	-	-
4	Goat rearing	-	912
5	Any other pets	-	493
6	Fisheries / Ornamental Fisheries	-	-

(Source: Sections)

Table 1.7: Public Livelihood Infrastructure

Ward. no	Market	Milk collection center	VFPCK Collection center	Krishi Bhavan	Seed farms	Storehouse	Veterinary Clinic	Agri / Horty Nursery	Fish Fed	C.F.C.
1	-	1	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-
4	-	-	-	1	-	-	-	-	-	-
5	-	-	-	-	-	-	1	-	-	-
6	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-
9	-	1	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	1	-	-	-
11	-	-	-	-	-	-	-	-	-	-
12	-	1	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	-	-	-
14	-	1	-	-	-	-	-	1	-	-
15	-	-	-	-	-	-	-	-	-	-

നെടുമുടി ഗ്രാമപഞ്ചായത്ത് ദുരന്തനിവാരണ ആസൂത്രണ രേഖ

Source: Wardmembers

Table1.8: Educational Institutions: Government / Aided

ype	Ward no														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Nursery / Day Care	-	1	-	-	-	-	-	-	1	-	-	-	-	-	1
Primary School	-	-	-	-	-	2	1	-	-	-	1	-	1	-	1
UP	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
Secondary School	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-
Higher Secondary School	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-
Vocational Higher Secondary School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
College	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Research institutions	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hostels	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Special School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Others (ITI, polytechnic etc.,)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(Source: Ward Members)

Table 1.9: Anganwadis

Ward	No:of anganwadis	Location	Own build-	Rent
1	226 107	1) Ponga School 2) Kayalilchiraa 28	226	107
2	18	1)Ponga S.N.D .P	-	18
3	17	1)Chennamkari	-	17
4	65	1)Karumadi kurishadi	-	65
5	21 20	1)Namboothiri madam 2)Kottaram Thottuvathala	-	21 20
6	23	1)Chembumpuram	-	23
7	115 25	1)Paruthikkalam	115	25
8	24	1)Thekkemuri		24
9	28	1)Champakkulam (Thottamattam)	-	28
10	34 32	1)Manapra 2)Nadubhagam	-	34 32

10	34 32	1)Manapra 2)Nadubhagam	-	34 32
11	33	1)Near Kondakkal Ayurveda Hospital	-	33
12	114 30	1)Near LPS Vyshyambhagam 2) Milma Manapra 3) Vazhaparambu	-	114 30 31
13	29	1)Kadukkathara	-	29
14	24	1)Chembumpuram	-	24
15	22 26	1)Chembumpuram road side 2)Near Pookaithayaar	-	22 26

(Source: Ward Members)

Table 1.10: Health care institutions

Sl.no	Name and location	Government / Private	Number of beds	Facility ICU and Trauma Care	Other facilities	Distance from local government center
1.	Government Ayurveda Hospital,	Government	**10**	**-**	**-**	1.5 km
2.	Aayus N.H.M. Primary Health Center, Paruthikalam, Nedumudi	Government	**-**	**-**	**-**	3 km
3.	Health Center, Chembumpu-	Government	-	-	-	7.1 km

Source: LSGI

Table 1.11: Veterinary Hospital / Dispensary

Sl.no	Name	Phone no:	Ward	Location	Government / Private	Distance from local government center
1.	**Veterinary Dispensary**	0477- 2763317	14	Chembumpuram	Government	15 km
2.	Nedumudi Sub Center	-	5	Nedumudi	Government	6 km
3.	Chembumpuram Sub Center	-	10	Manapra	Government	3 km

Source :Veterinary Hospital

Table 1.12: Community Centers / Halls

Sl.no	പേര്, സ്ഥിതി ചെയ്യുന്ന സ്ഥലം	Ward	Government / Private	Square meter area	Facilities				
					Availability of water	Electricity	Kitchen	Toilet	Bathroom
1	Panchayat Community Hall, Manapra	10	Government	-	Yes	Yes	Yes	Yes	Yes
2	Baselikka Parish hall	9	Private	387	Yes	Yes	Yes	Yes	Yes
3	Kallampalli ambalam Hall	11	Private	412	Yes	Yes	Yes	Yes	Yes
4	Kondakkal Church Hall	11	Private	505	Yes	Yes	Yes	Yes	Yes
5	Kurishupalli hall vyshyambhagam	13	Private	-	Yes	Yes	Yes	Yes	Yes
6	SNDP Hall, Manapra	10	Private	-	Yes	Yes	Yes	Yes	Yes
7	Thaichery palli hall	14	Private	170	Yes	Yes	Yes	Yes	Yes
8	Pulikkalkav ambalam hall	14	Private	258	Yes	Yes	Yes	Yes	Yes
9	Mar Slieva Church Hall, Ponga	2	Private	-	Yes	Yes	Yes	Yes	Yes
10	Devamatha palli hall, Chennamkari	3	Private	-	Yes	Yes	Yes	Yes	Yes
11	SNDP hall Ponga	2	Private	-	Yes	Yes	Yes	Yes	Yes
12	Kottaram ambalam hall	5	Private	396	Yes	Yes	Yes	Yes	Yes
13	Anjumoolayil building manapra	10	Private	-	Yes	Yes	Yes	Yes	Yes

(Source: Local Self Government Records)

Table 1.13: Religious Centers

Sl.no	Types	Number	Area	Location
1	Christian churchIndia pen-	17	180	Ponga
1.1	dakosth carmel daivasabha			
	Holy Cross Church		536	Ponga
1.2	St. Thomas Evangelical Church		200	Ponga
1.3	St. Joseph Church		450	Chennamkari
1.4	Badhani church		80	Chennamkari
			410	Chennamkari
1.5	St. Thomas Orthodox Church			Nedumudi
	Marthomma church		80	Nedumudi
1.6	Pendakos mission			
	St.Mary's forona church		40	Chembumpuram

Sl.no	Types	Num-	Area	Location
1.7	St.Thomas church	17	115.8	Champakkulam
1.8	Chembakassery church			Champakkulam
1.9	Chembakassery church		156	Champakkulam
1.10	St. Joseph chapel		100	Manapra
1.11	St.Thomas Church		811	Nadubhagam
1.12	St.Antony's church		61	Chembumpuram
1.13	Holy cross church		577	Vyshyambhagam
1.14	St. Sebastian church		292	Narbonapuram
1.15			221	
1.16			600	

Sl.no	Types	Number	Area	Location
2	Temple	10	115	Ponga
2.1	Rajeswari temple		25	Ponga
2.2	SreeNarayanaGuru Mandir		40	Chembakassery
2.3	SNDP 21			Kottaram (nedumudi)
2.4	Bhagavathi temple		308	Mathoor
2.5	Sree Bhagavathi temple		132	Manapra
2.6	Sree mazha lakshmi temple		40	Nadubhagam
	Kareekottaram ambalam		11	Nadubhagam
2.7	KallampallySree Bhagavathi		320	Chembumpuram
2.8	temple		20	Chembumpuram
2.9	Idakkad temple		76	
	Pulikkakavu temple			
3	Mosque	-		
4	Others	-		

(Source : Local Self Government Records)

Table 1.14 Roads

Sl.no	Category	Total Length (km)
1	Local Self Government Road	173.2559
2	District Road	8.5
3	State Road	5.35

Table 1.15 Bridges and Related Structures

Sl.no	Type	Name	Accessibility for vehicle (yes/no)	Current status (Strong / Unsafe)	Repairs needed (yes / no)
1	Concrete	W1			
		1.1Pandarakkulam bridge	Yes	Strong	No
		1.2Ponga bridge			
		1.3Thatheri bridge	Yes	Strong	No
		1.4Mandiram bridge	Yes	Strong	No

Sl.no	Type	Name	Accessibility for vehicle (yes/no)	Current status (Strong / Unsafe)	Repairs needed (yes / no)
1	Concrete	W2			
		2.1Pazhukkara	Yes	Strong	Yes
		2.2Chekkalakkal			
		2.3 Kakkad	Yes	Strong	No
		2.4Chaveli bridge			
			Yes	Strong	No
		W3			
		3.1 Kootumel	No	Unsafe	Yes
		3.2 Pothuvayil			
		W4			
		4.1Nedumudi	Yes (Bike)	Strong	No
		bridge			
		4.2Manimalamut	Yes (Bike)		
		4.3Palathingal			
		4.4Karuthaveetil		Strong	Yes
		4.5 Parassery			
		4.6 Koyikkodu			
		W5			
		5.1Paikkara bridge	Yes	Strong	No
		5.2vypil (On process)	Yes	Strong	No
		5.3Nanadu	No	Strong	Yes
		5.4 Powam	No	Unsafe	Yes

Sl.no	Type	Name	Accessibility for vehi-	Current status (Strong / Unsafe)	Repairs needed (yes / no)
1	Concrete	W6			
		6.1Maveli	Yes	Strong	No
		6.2 Chelakkad	Yes	Strong	No
		6.3Methachery	No	Unsafe	Yes
		W7			
		7.1Pulikkakavu	No	Unsafe	Yes
		7.2 NSS Karayogam bridge	No	Unsafe	Yes
		7.3Puthenpurakkal	No	Strong	Yes
		W8			
		8.1Milma bridge	Yes	Strong	Yes
		8.2 Kochupalli	No	Unsafe	Yes
		8.3 Moonukalam	Yes	Strong	No
		8.4 Muttunkal	Yes	Strong	No
		W9			
		9.1Naalupaara	Yes	Strong	No
		9.2Kandankalathil	Yes	Strong	No
		9.3Aananthavilasam	Yes	Strong	No
			Yes	Strong	Yes

Sl.no	Type	Name	Accessibility for vehicle (yes/ no)	Current status (Strong / Unsafe)	Repairs needed (yes / no)
1	Concrete	W10			
		10.1Manapra Panchayath bridge	Yes	Strong	No
		10.2Ocheri madam	No	Unsafe	Yes
		W11			
		11.1Mangaayil	Yes	Strong	Yes
		11.2 Kalathimutt	Yes	Strong	No
		W12			
		12.1Ezharakkodu	No	Unsafe	Yes
		12.2Thekkumthara	No	Unsafe	Yes
		12.3Munnoottanmpath bridge	Yes	Strong	Yes
		12.4Kariykkal	Yes	Unsafe	Yes
		12.5 Konumuppath	No	Unsafe	Yes
		12.6Parappara bridge	Yes	Strong	Yes
		12.7Palaykkachira	No	Unsafe	Yes

Sl.no	Type	Name	Accessibility for vehicle (yes/no)	Current status (Strong / Unsafe)	Repairs needed (yes / no)
1	Concrete	W13			
		13.1Kudillil bridge	Yes	Unsafe	Yes
		13.2Samskarika nilayam bridge	No	Unsafe	Yes
		13.3 St. Antony's bridge	No	Strong	Yes
		13.4 Muppathinkalam	No	Strong	Yes
		13.5 Meppuram	Yes	Strong	No
		13.6 Bridge behind LPS Vyshyambha-gam	Yes	Strong	No
		13.7 Edakkad ambalam bridge	Yes	Strong	No
		13.8velamparambu palam	Yes	Strong	No
		13.9thekkumthara palam	Yes	Strong	No
		13.10 poonnilam paalam	Yes	Strong	No
		13.11SNDP palam	Yes	Strong	No
		13.12 vaisyambhagom high school palam	Yes	Strong	No
		13.13seevattuthara smasanam palam	Yes	Unsafe	Yes
		W14			
		14.1pulickal	No	Unsafe	Yes
		14.2ambalappalam	No	Strong	Yes

Sl.no	Type	Name	Accessibility for	Current status (Strong /	Repairs needed
1	Concrete	W15 15.thaicherry palam 15.2pandarakkulam	Yes Yes	Unsafe Unsafe	Yes Yes
2	Wooden	1.1manimalamuttu palam 4.1palathitta palam 5.1akkeettu palam 6.1krishnapuram palam 7.1kulappally palam 7.2methacherry palam 7.3 CHC paalam 10.1anchumoola palam 12.1venkidapalam 12.2 moolethara	No No No No No No No No No No	Unsafe Unsafe Unsafe Unsafe Unsafe Unsafe	Yes Yes Yes Yes Yes Yes

Sl.no	Type	Name	Accessibility for ve-	Current status (Strong /	Repairs needed
3	Iron Bridge	2.1iron bridge	No	Strong	Yes
		3.1mechilathara	No	Unsafe	Yes
		6.1gokulam	No	Unsafe	Yes
		8.1kalarickal	No	Strong	No
		11.1valavinchira	Yes	Strong	No
		13.1 kalathra	No	Unsafe	Yes
		15.pangadu	No	Strong	No
4	കലുങ്ക്	3.1manimalathra	No	Strong	Yes
		4.tharamassery motorthara	yes	Strong	Yes
		4.2poochalimoottu	yes	Strong	No
		4.3thachattu varambinakam	yes	unsafe	No
		8.1padikadu	yes	Strong	No
		10.1anchilthara	yes	Strong	No
		10.2 Kuriyalasseri	yes	Strong	Yes
		10.3Nadubhagom kizhakkedam	No	Strong	Yes
		10.4Velamkalam	yes	unsafe	Yes
		10.5kunnathusseri	yes	Strong	Yes
		11.1Pathilpalam	yes	Strong	No
		11.2Kondakkal	yes	Strong	Yes
		14.1Kunnathussery	yes	Strong	No
		14.2Muttel	yes	Strong	Yes
		14.3Nanoorinchira	yes	Strong	No

Sl.no	Type	Name	Accessibility for vehicle (yes/no)	Current status (Strong / Unsafe)	Repairs needed (yes / no)
4	കലുങ്ക്	14.4CHC kalung	Yes	Strong	Yes
		14.5Thattara	yes	Strong	Yes
		14.6Onampalli motorthara kalung	Yes	Unsafe	Yes
		14.7Devasamchira Motorthara			
		14.8 Noottymuppathinchira	No	Unsafe	Yes
		14.9 kavalackal	No	Strong	No
		15.1 Kochukayal motorthara	Yes	Strong	Yes
		15.2 Thathery motorthara	No	Unsafe	Yes
		15.3 80 il-chira motorthara	Yes	Unsafe	yes
		15.4pandarakulam	Yes	Strong	yes
		15.5pazhayakari aatutheeram	Yes	Unsafe	yes
		15.6puthenkari padinjare attutheeram motorthara	No	Unsafe	yes
		15.7 cherupurackal motorthara	Yes	Strong	yes
5	Others	1.1 karuthaveedu	No	Strong	Yes
		1.2 thoppumpuram	yes	unsafe	yes
		7.1kavalackal	yes	strong	No
		8.1kizhakkumvelithara	No	unsafe	yes
		8.2St.martin church	No	unsafe	Yes

Table 1.16 Building Details

Sl.no.	Type	Building Having permanent number (No.)	Building Having temporary number (No.)	Building without number(No.)
1	Commercial / industrial establishments	556	32(total)	-
2	Residential	5512	-	-
3	Government	38	-	-
4	Others	24	-	-

(Source :LSGD)

Table 1.17 Residential Building Information

Sl.no	Type of house	No.of house
1	Grazing house (ola, grass, straw) The runaway house	840 (average)
2	ഓടിട്ട വീട്	1580
3	Asbestos / Sheet	2810
4	Concrete house	2368
5	Vacant house	86

Table 1.19: Low Income Group / Colonies / Residences

Ward no.	Name of colony / residence	Place,main roads to reach	No.of families	No.of family members
1	Ambedkar Colony	Ponga palam	31	120
6	Kottur - Arunnilam Colony	Poopali chambakkulam road	13	55
11	Nadubhagom colony	Champakulam -karikottaram temple	28	110
15	Bhoothapandam KP Colony	Jyothi junction -Thathery palli	22	96
15	Thachattuchira colony	Chempumpuram road	16	70

(Source :Nedumudy panchayath)

Table 1.20: Irrigation and Hydroelectric Systems - Man-made

Ward no.	Type	No. / length	Maintanance status
1.	Irrigation Canals	40 Km	• Need to rejuvenate . • Deeweeding is essential
2.			• Need to rejuvenate . • Deeweeding is essential
3.			• Need to rejuvenate . • Deeweeding is essential
4.			• Need to rejuvenate . • Deeweeding is essential
5.			• Need to rejuvenate . • Deeweeding is essential
6.			• Need to rejuvenate . • Deeweeding is essential
7.			• Need to rejuvenate . • Deeweeding is essential
8.			• Need to rejuvenate . • Deeweeding is essential
9.			• Need to rejuvenate . • Deeweeding is essential

Ward no.	Type	No. /	Maintanance status
10.	Irrigation Canals	40 Km	• Need to rejuvenate . • Deeweeding is essential
11.			• Need to rejuvenate . • Deeweeding is essential
12.			• Need to rejuvenate . • Deeweeding is essential
13.			• Need to rejuvenate . • Deeweeding is essential
14.			• Need to rejuvenate . • Deeweeding is essential
15.			• Need to rejuvenate . • Deeweeding is essential

Source : ward member

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TABLE :PADDYFIELD AND AFFECTED AREA

The Nedumudy panchayath has a total of 37 paddyfield.The list of 31 paddy field and areas affected were included in the list .

SL . NO	NAME OF PADDY	AFFECTED WARDS	AFFECTED AREAS
1.	ManakkadanChurch	14	• From vithupurackal to parayanattuthara on east
2.	Kariyambally	9	• canal west of kocherry thodu on south • From canal jetty to north of payyanadu thodu
3.	Manathrackal Ga-napathy	9, 13, 10	• From north of kaiyyathra house to chaveli on west • From kocherry bridge to kaiyyathra bridge on east
4.	Naaluthottinakam	7	• From alabath to kuzhithara on west • From kuzhithara to maaveli on north
5.	Manapra vadakku	10	• No cultivation • From valiya palam to manapra • Athirappalli veedu on north
6.	Madathimullackal	10, 11	• Karikkinmadam on west • From Kondakkal to southern end • From valiyakalam to nedumudy panchayath office
7.	Kareepadam	12	• From lissy convent to pookaitha river on south • From west milm junction to south end pookaitha river

SL . NO	NAME OF PADDY FIELD	AFFECTED WARDS	AFFECTED AREAS
8.	Mathoor	5, 6, 15	• From bhoothappandam lake in Thottuvathala to manthooram on south • From manthooram to chempumpuram on west • From Chepumpuram to bhoothapandam kayal
10.	Venneli padam	7	• Ponga -Karumady road • From east of Thottakkad junction to south of kavalackal • East of pulikalkavu temple
11.	Oorama	11	• Surrounding kondakkal church • Nadubhagom
12.	Kadannagadu	1	• From parassery palam to thaicherry church • From thaicherry church to ponga bridge
13.	Ponga	1, 2, 4	• From west of ponga to pooppalli • From Pooppalli to paalathikadu biverages, jyothi junction

SL . NO	NAME OF PADDY	AFFECTED WARDS	AFFECTED AREAS
13.	Ponga	1, 2, 4	• From west of ponga to pooppalli • From Pooppalli to paalathikadu biverages,
14.	Chennagary pallipa-dam	-	• From koottuma to pothuvachira • Also affecting Kainakary panchayath
15.	Vadakke idassery	1, 2, 4	• From Puthenparambu to moonnattumukham • From moonnattumukham to nedumudy po-lice station • From nedumudy police station to poopalli junction • From pooppali to kainakary koloth jetty • From poopalli to nalpathilchira palam • From nalpathilchira palam to paarassery palam • From parassery palam to Ponga, kaippalli
16.	Idassery thekk	2, 4	• From pooppalli to nedumudy bbridge
17.	Puthenkari 600		• Not affected yet
18.	Puthenpura padin-jaru	11	• Kondakkal south • Nadubhagom
19.	Padinjare pookaitha	12, 13	• Inside of Gov.LPS school Vaisyambhagom • From sahrudaya vayanasala to boundary of

SL . NO	NAME OF PADDY FIELD	AFFECTED WARDS	AFFECTED AREAS
20.	Munnoottanpathil padam	12	• From Vaisyambhagom konilmuppathu to moolechira • From moolechira to vazhapparambu • From vazhaparambu to pookaitha river
21.	Kizhakke pookaitha	12	• Vazhaparambu to sahridaya vayanasala • Cheethakkodu to vazhaparambu • Cheethakkodu to north of vayanasala • South of pookaitha river
22.	Muttanaveli	14	• Chempumpuram • Entire Ward 14
23.	Valluvankadu	15	• Households on outer bund of field • Around 6 km length
24.	Kalathil padam	13	• Kavalakkal thodu to vaisyambhagom -kanjipadam road • Mupothilkalam thodu from west to sahridaya vayanasala • Kochuparambu to vazhappallikalam
25.	Muthuvanakkadu koorikkadu	13	• Surrounding st antony's church vaisyambhagom
30.	Pazhayakari kochupalli	15	Pazhayankari area fully affected
31.	Ponga poopalli	1	Canal on north of pulikkalkavu temple to field on west

Table 1.22: List of executive officers

NAME	DESIGNATION	OFFICE	OFFICIAL PH. NO
Pradeep A	Agriculture Officer	Agriculture office	9447102471
Jayasree	Headmistress	NSHS Nedumudy	9946674525
Roy U	Ayurveda doctor	Ayurveda hospital	9447319190
Nila	ICDS Supervisor	ICDS	9497633590
Prajeesha Kumari	V E O	Nedumudy panchayath	9645789155
Deepa	Veterinary surgeon	Veterinary hospital	9446926099
Aminadh	Medical officer	Chempumpuram Health Centre	9995048828
Sini S Nair	Dairy farm instructor	Dairy farm	9633138992
Manju Philip	Assistant engineer	Nedumudy panchayath	9495969677

നമ്മൾ നമുക്കായി

നെടുമുടി ഗ്രാമപഞ്ചായത്ത് ദുരന്തനിവാരണ ആസൂത്രണ രേഖ

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Chapter-2

Climate change, Disaster Potential- Analysis

നമ്മൾ നമുക്കായി

Monsoon is the season in which the second crop begins in Kuttanad. The alarming fluctuations in Kerala's climate are adversely affecting the agricultural sector. Since half of the population in Kuttanad depends on agriculture for livelihood, the adversarial effects of climate change are disrupting the daily life of people in Kuttanad. Hence, a detailed analysis of the correlation between climate change and its effects on agriculture and residents of Kuttanad.

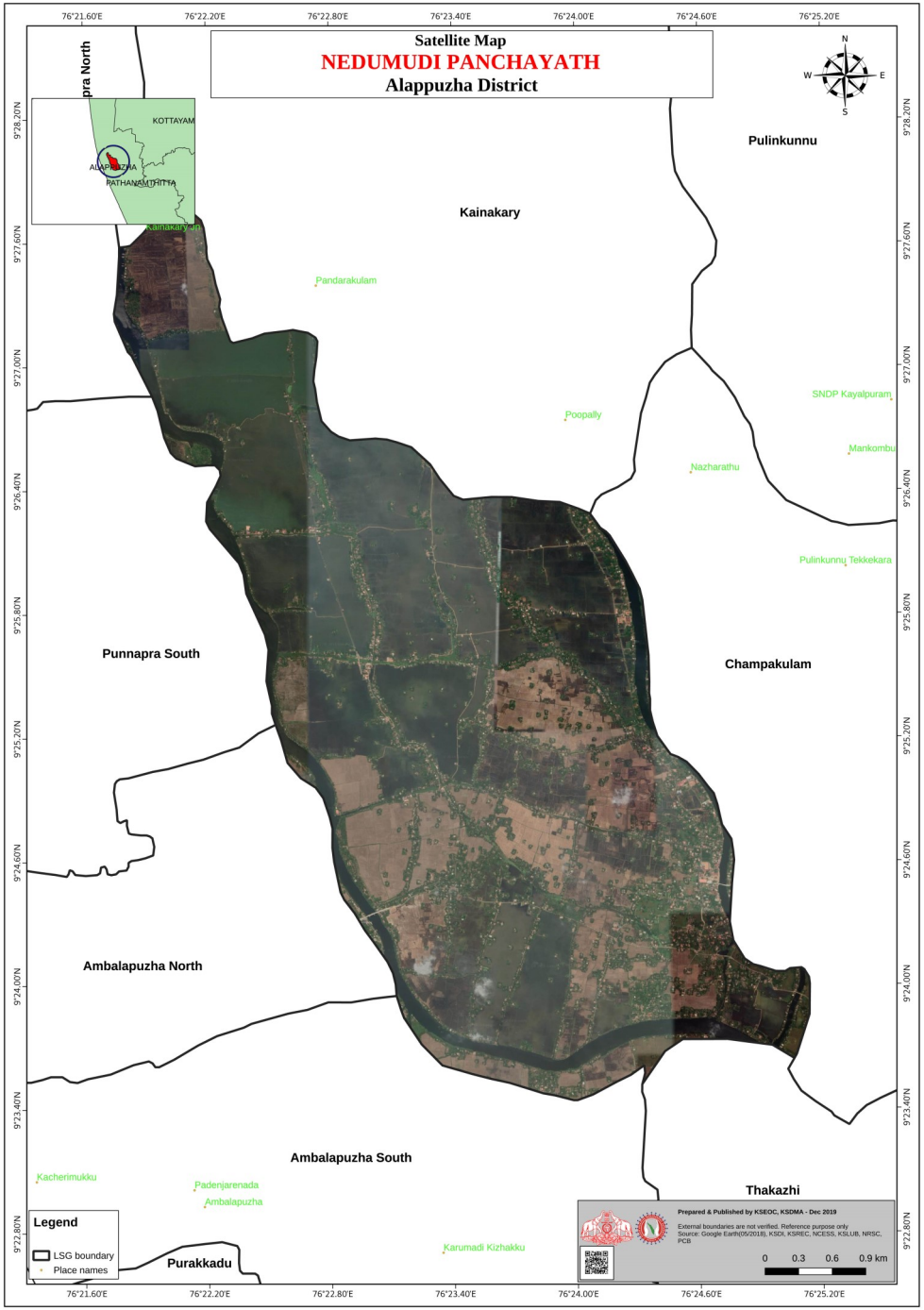
In this chapter, we discuss the effects of climate change and its impact, outcomes, environmental impacts on population and biodiversity are also included. The history of the Central/Kerala government notified disasters faced by the Local Self Government, the periodic cycle of disasters. It also lists the areas of special concern, disaster-prone areas, geographically disaster-prone areas, disaster-prone public buildings, potential disasters and potential threats to public livelihood infrastructure.

Table 2.1: Climate change-changes

This table analyses the regional climate change or changes that have occurred over the last 30 years. The table shows the change in weather factors such as temperature, atmospheric humidity, wind, and rainfall.

Sl No	Weather Factors	Change in the last 30 years		
		Increase	Decrease	No change
1.	Temperature	.2		
2.	Humidity	-		
3.	Course of Wind	17.77 24hrs/km		
4.	Availability of rain			
	South West Monsoon	48.825 mm		
	Thulavarsham		30.2 mm	
	Summer rain	533.8 mm		

There is no doubt about the impacts of climate hange. The source for the above given data was to be collected from Mancompu Rice Institute, but the data before 10 years are not available.



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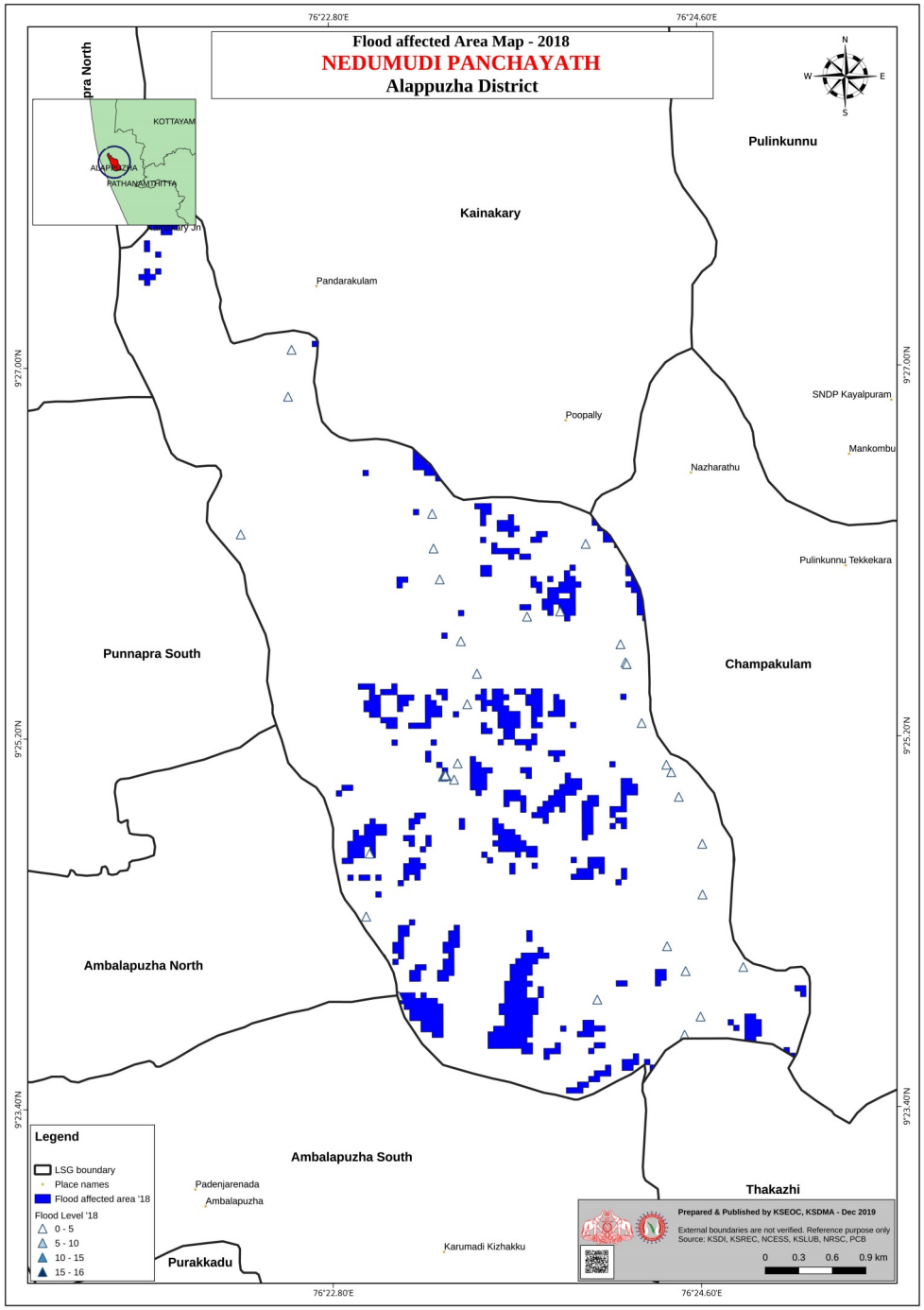
MAP 1. Satellite View of Nedumudi Panchayat



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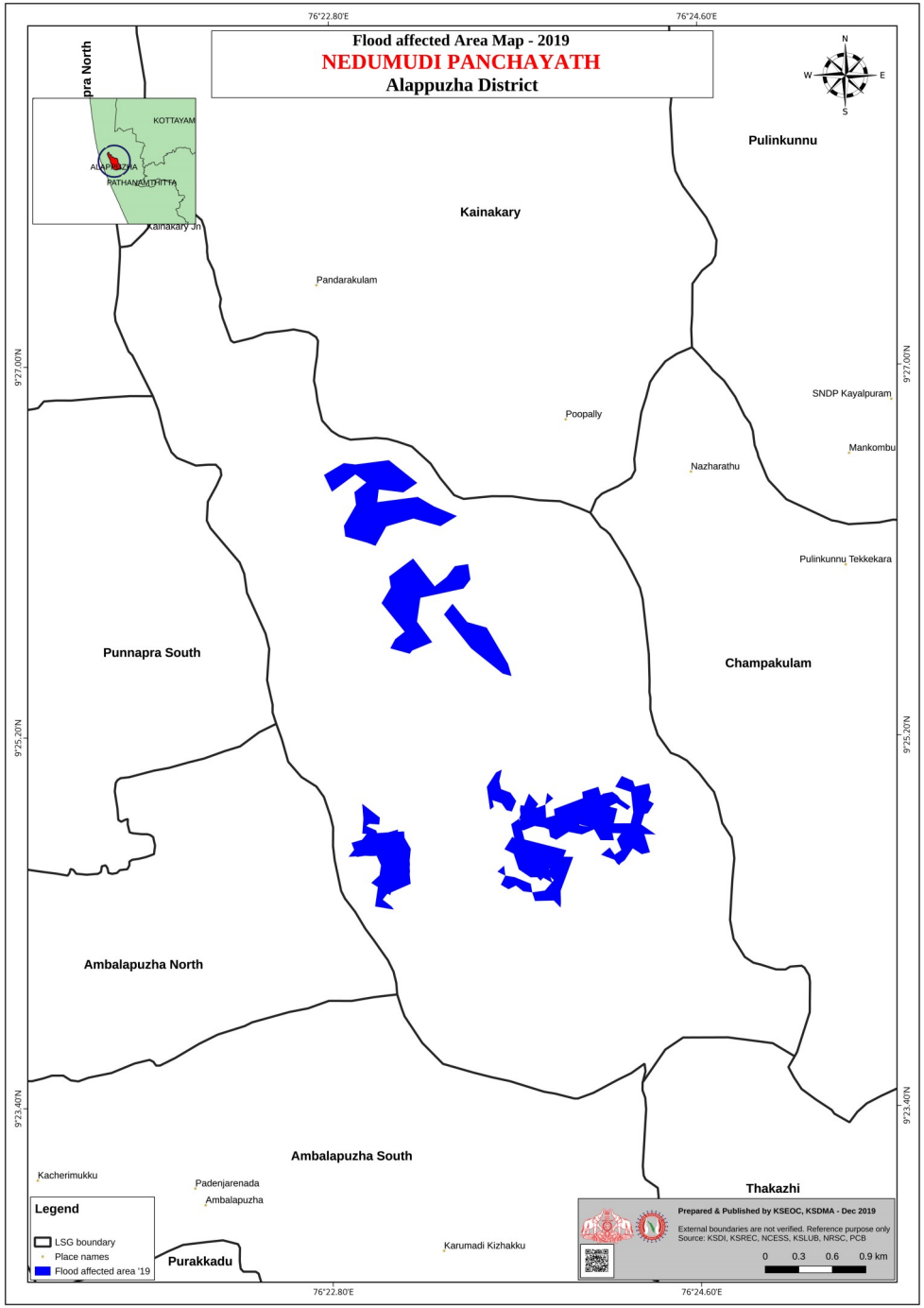
Map 2. Flood Affected Area

The above maps shows the flood affected area. This mp is prepared using the data till 2018. in this map, the flood affected area and flood level are shown.



നെടുമുടി ഗ്രാമപഞ്ചായത്ത് ദുരന്തനിവാരണ ആസൂത്രണ രേഖ

Map 2. Flood Affected Area

The above maps shows the flood affected area. This mp is prepared using the data till 2019. in this map, the flood affected area and flood level are shown. It clearly shows the flood risk was high on 2018 than 2019.

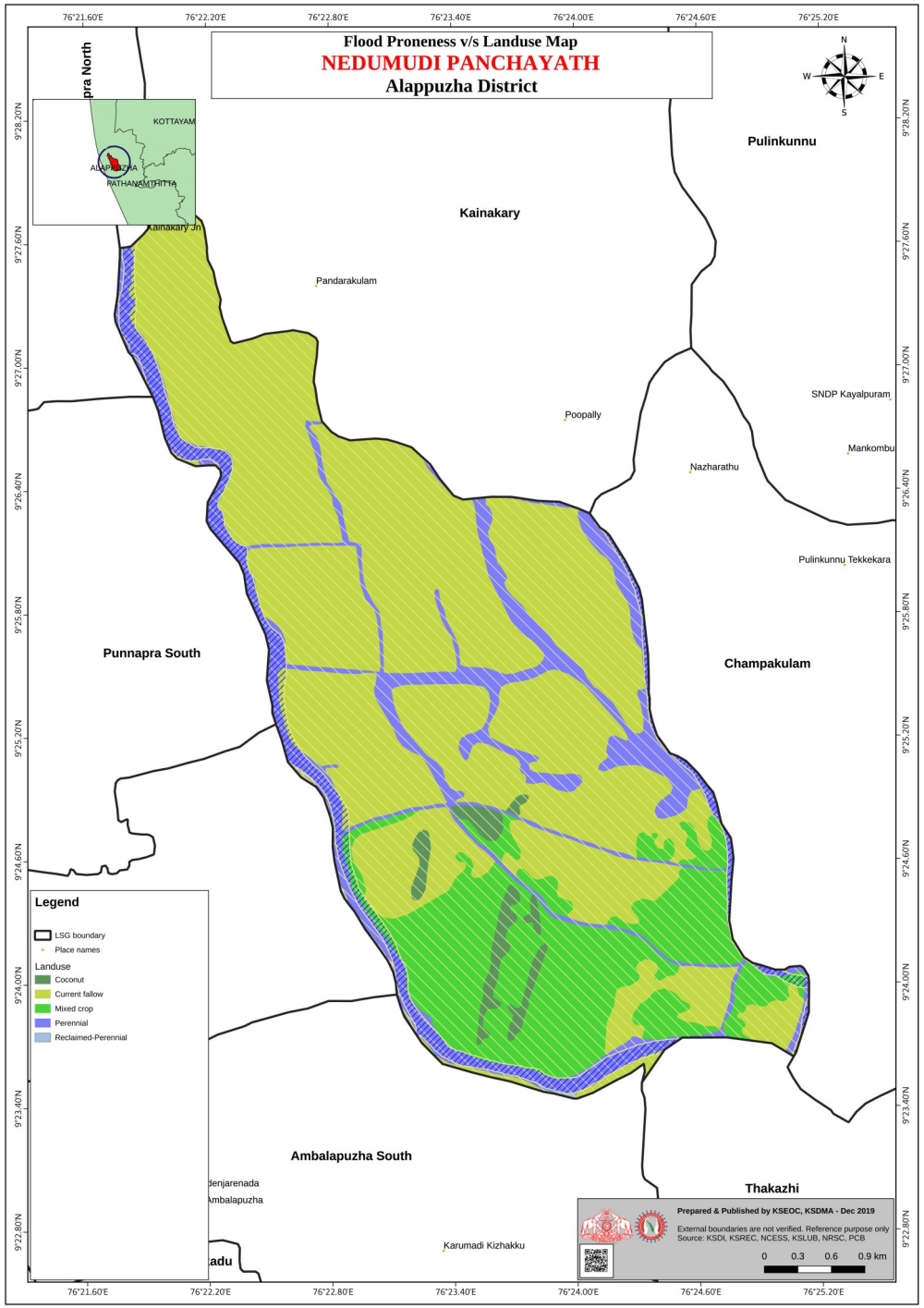
Table 2.3: Climate change - environmental impacts

The list includes environmental impacts due to climate change. Environmental / biodiversity factors, where they exist, their problems and their severity. This list identifies environmental issues due to climate change.

Sl No	Environmental/ biodiversity factors	Area	Climate change / ecological / biodiversity factors	
			Problems	Severity
1.	Water bodies (lake and biodiversity)	Nedumudi is a panchayat with its boundaries surrounded by the Pamba River. Pozhi, Azhi etc. are not in this panchayath.The only backwater is Bhoothapandam, a freshwater lake. It has an area of about 718000m ^ 2. The lake is located close to the countryside. It is located in 1,155 wards of the panchayat.	The pH value, total solids content, water hardness, water soluble oxygen, flows, and iron levels are found to have a negative impact	Climate change, ecological and biodiversity factors are at their worst.

Sl No	Environmental/ biodiversity	Area	Climate change / ecological / biodiversity factors	
			Problems	**Severity**
2.	Rivers	The Nedumudi Panchayat houses the presence of Pampa as well as Pookaitaa and Manimala rivers as Pampa's tributaries. .	Though there is a relatively drastic flow, the chemicals and pesti-cides used in the field collections are drastically polluting the river water. There is widespread en-croachment on the banks of the	The amount of coliform bacteria in this area is much higher than that in many cases, and the river's natural flow is often inter-rupted.
3.	Water Pools	The number of public ponds in the Nedumudi village panchayath is very low.	Most of the families live inside the murals or in the outer bunds of the paddy fields, so their private pools have become a storage facility for the chemicals used in the pad-dy fields.	The ponds in the village pancha-yat are not in a position to be used for drinking or other day-to-day use
4.	Waterfront are-as, streams / canals	The panchayath has adequate irri-gation facilities for paddy fields. The four major canals, along with their interlinking channels, are now 40 km long..	Today the practice is to pump from the mud ponds into the streams where the fertilizers and pesticides are abundantly used	The encroachment on the canals are also acute. The floodplains are causing seri-ous health problems to people. The growing number of cancer patients in the Nedumudi Grama Panchayat can be read in con-junction with this.

Sl No	Environmental/ biodiversity	Area	Climate change / ecological / biodiversity factors	
			Problems	Severity
5.	Paddy fields	37% of the land available today in Kerala is used for nhm coconut cultivation. There is not even half of it in Nedumudi Panchayat. It is estimated that the productivity of coconut is less than five hundred hectares per hectare.	One of the major problems facing paddy cultivation is the unwanted effects of the weather. Various diseases affecting paddy cultivation due to climate change and environmental degradation. Excessive fertilizer application and pesticide application can adversely affect soil fertility. As a result, there may be crop losses as well.	Extreme flooding often results in loss of crops. It is common for pests to destroy crops due to lack of pests.
6.	Coconut trees	37% of the land available today in Kerala is used for nhm coconut cultivation. There is not even half of it in Nedumudi Panchayat. It is estimated that the productivity of coconut is less than five hundred hectares per hectare.	Due to lack of productivity of coconut palms in Panchayath, very few coconuts are available. adequate care is not given to the coconut. Many trees are also damaged	Unless governmental and local governments manage and conduct special programs, coconut production will be significantly reduced.
7.	Sacred grove and bird sanctuaries	There are 46 sacred groves in the Nedumudi Grama Panchayath. There is only one sacred grove in the government. On the fifth ward, Paddy Math is only Onamkavu. The rest belong to temples, families and Karayoga. Though these have been made a habitat for migratory birds, there is no recognized bird sanctuary in Nedumudi Grama Panchayat.	Many of the Kavu of Nedumudi Panchayath are on the path of weeding	In addition to water conservation, it is also useful for crop protection and soil conservation. The destruction of sacred grove is causing serious damage to the rich biodiversity of Nedumudi Grama Panchayat.



Map: 3 Flood potential area vs land use map:

Above is a map of Nedumudi Panchayat flood prone area vs land use map. It consists of 10% coconut and 15% perennial water and 25% mixed crop.

Table 2 .4 : Climate change - Analysis of the impact on people's lives

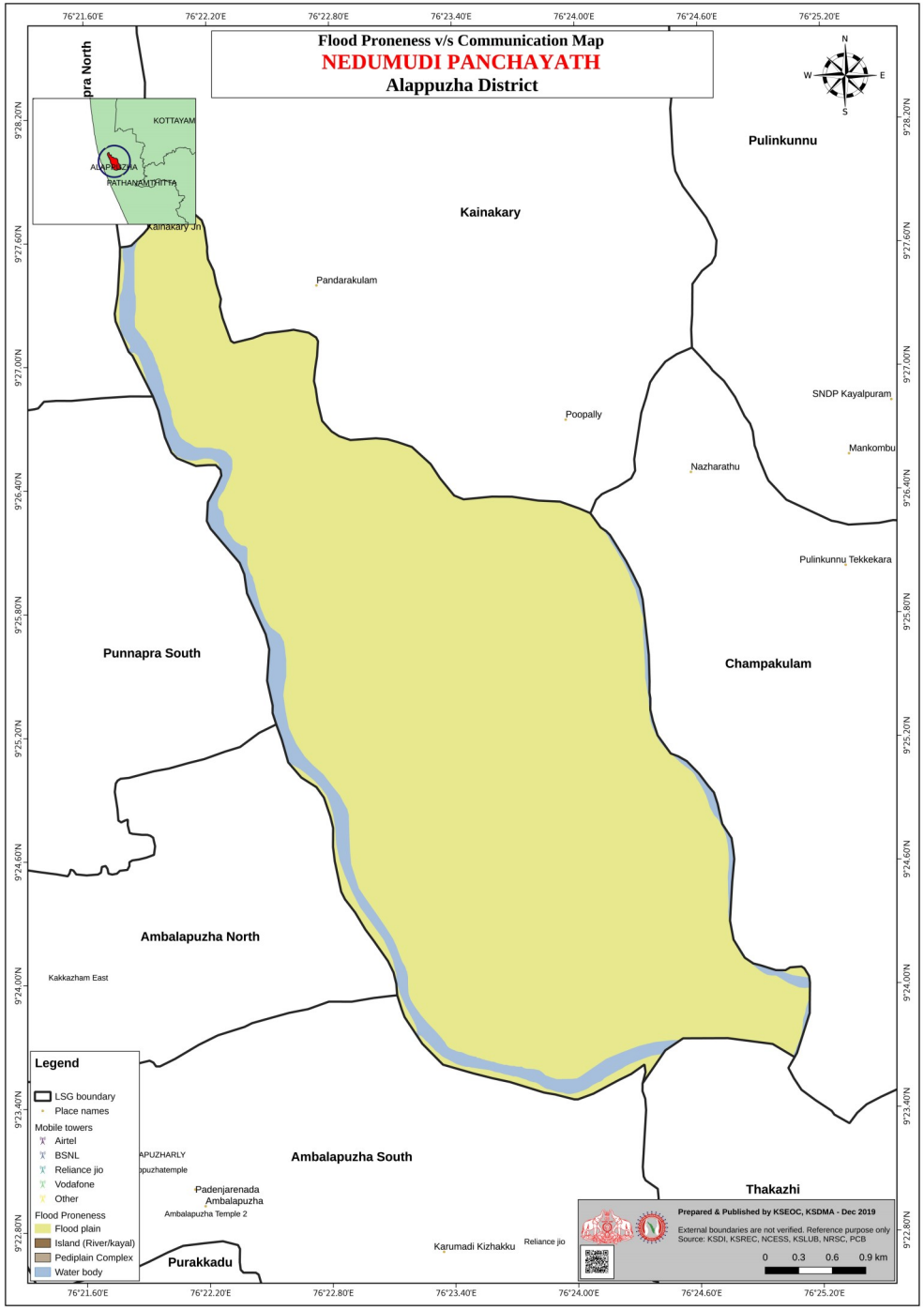
Sl No	Develop-ment Sec-	Changes in the past thirty years	Current Condition	Affects who?	Affects how?	Increase in severity/ No change/ Decrease
1.	Agriculture	Monsoon season is the sowing season of the second crop. Over the years, there has been little or no rainfall. Extreme rainfall during the farming season and the intense heat of it all alter the structure of the soil. Severe dew, overcrowding, unseasonably hot weather and unpredictable weather have been the catastrophe in agriculture for the past 30 years. Coconut, a long-standing crop, has been adversely affected by extreme rainfall and extreme heat.	The above changes in the climate adversely affects the health of the crop and at the same time creates a favorable environment for diseases. Extreme heat changes soil organic matter and, consequently, increases soil acidity and damages soil microorganisms. At the same time, the amount of elements such as iron and aluminum, which the lamp does not need, is increasing in the soil.Thus the imbalance of the elements can cause crops.	Farmers	Unnatural changes in the climate can disrupt the normal life of the crop. Due to this, rice cultivation is declining, especially in the punja season, up to half a kennel yield per acre is reduced.. Climate change affects pollination in the case of coconut. Moreover, one bunch per month usually occurs in coconut. Natural cold and humidity are essential for a healthy coconut blossom.	Climate change is increasing the incidence of diseases like dull cheeses and hemp cheeks. About 30% of coconut is destroyed. Vegetable and banana cultivation is also severely affected by pest disease and extreme heat. This adversely affects the income of the farmers and their income and family budget. Agricultural production cannot be increased by a single barrier without overcoming this severe crisis.

Sl No	Development Sector	Changes in the past thirty years	Current Condition	Affects who?	Affects how?	Increase in severity/ No change/ Decrease
2.	Livestock	Nedumudi village panchayat houses around 10% households involved in livestock raising Climate change is seriously affecting the dairy sector. Farmers say milk production is significantly reduced with warmer temperatures, and increased frost and rain temperatures are making cattle sick.	At present, 291 families are involved in raising cows in Nedumudi Grama Panchayath. The number of buffalo rearing is minimal. About 80% of the people involved in cow rearing are Holland breed, a Holland breed or hybrid. Although they are the leading producers of milk, they are not able to withstand excessive heat or cold. Prolonged warming season reduces the milk yield by about 20%. During the rainy season, day and night mosquitoes adversely affect their health. Although vaccination has prevented hoof infection to some extent, they have shown an increase in the incidence of ocular infection in the body and chickenpox over the past few years.	Livestock farmers	This affects the income of dairy farmers and their family budget	-

Sl No	Development Sector	Changes in the past thirty years	Current Condition	Affects who?	Affects how?	Increase in severity/ No change/ Decrease
3.	Fishing	Climate change is having an impact on the fishing industry. This is due to the rise in the temperature of the water Fishermen say climate change is adversely affecting fish breeding.	Fishermen say that there is a 20 to 50% reduction in the number of inland fish.	Fishermen	It causes damage to those who depend on the inland fisheries industry.	Fishes have a tendency to go deeper during the warmer months, to the coast during the colder months. Irregular weather conditions can adversely affect fish's natural life, travel and breeding. Inland aquatic habitats, including pools, mosses, and pollutants, have steadily decreased in size, resulting in a sharp decline in fish resources.
4.	Water transport	-	The main problem of Nedumudi is that irrigation is not the same as in other places in Kuttanad. Streams of paddy and molasses are creating a disturbance to irrigation to the pavement and to the outflow of the pavement.	Farmers	This adversely affects the lives of farmers	-

Sl No	Development Sector	Changes in the past thirty years	Current Condition	Affects who?	Affects how?	Increase in severity/ No change/ Decrease
5.	Drinking water	In terms of drinking water availability, Nedumudi Grama Panchayath is far ahead of other Panchayats in Kuttanad. According to the Department of Health, there are 588 families affected by the water shortage. This is just 11% of the total number of households in the village panchayat. One of the most vulnerable areas for drinking water is Chennamkeri, which belongs to the Third Ward.	The Nedumudi Panchayath has seen tremendous progress in drinking water in the last 30 years. The drinking water supply in the panchayath is administered by about 18 wells.	Farmers	The entire population will descend into it.	Changes in climate are likely to reduce groundwater supplies and lead to a far-reaching future and a severe water shortage.
6.	Health	In the Kuttanad area, which includes Nedumudi, viral infections have been consistently reported for at least two decades. This has been demonstrated in birds, both in humans and in fish. More than two decades have been a sign of environmental degradation. In 1991, the Kuttanad outbreak of fish disease caused great destruction. It is estimated that 25 per cent of the fish wealth in Vembanad is lost due to disease. The deadly Japanese fever was reported in 1996. This was repeated in 2006 and 2011. In 2006, 70000 people were diagnosed with chikungunya in Alappuzha.	The Department of Health itself testifies that yellow fever and diarrheal diseases are widespread in Kuttanad and Nedumudi.	The natives	Diseases of various kinds	

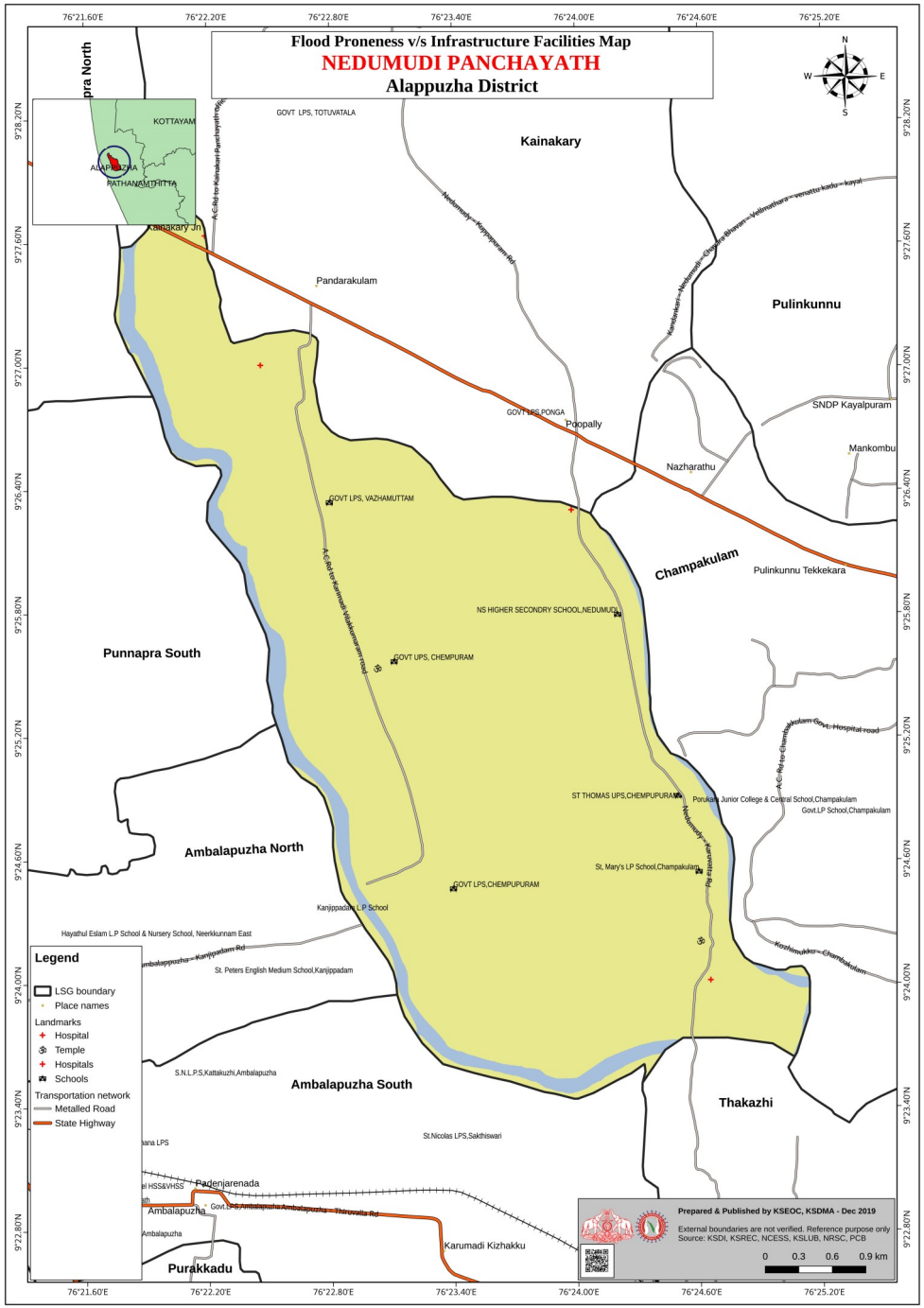
Sl No	Development Sec-	Changes in the past thirty years	Current Condition	Affects who?	Affects how?	Increase in severity/ No change/ Decrease
7.	Egg production	In Nedumudi Grama Panchayat, 41% of the people are rearing poultry at home.	Estimated monthly production is 12,000 eggs. The number of duck breeders is low. Massive ducks are still dying for unknown reasons.	Farmers	The deadly bird flu epidemic in November 2014 also bankrupted Nedumudi farmers. The disease was described by the scientific world as a virus virus that could be transmitted to humans by close contact.	Ducks are still flocking together for unknown reasons. These may be the first victims of climate change; But investigations into that level are generally sparse.



Map: 4

Flood Potential Area vs. Communication Map:

Shown above is the flood map of Nedumudi panchayat vs the communication map. This map includes the flood area, river, backwaters, peripheral complex, and water bodies. From this we can see that the flood area is more than the water bodies.



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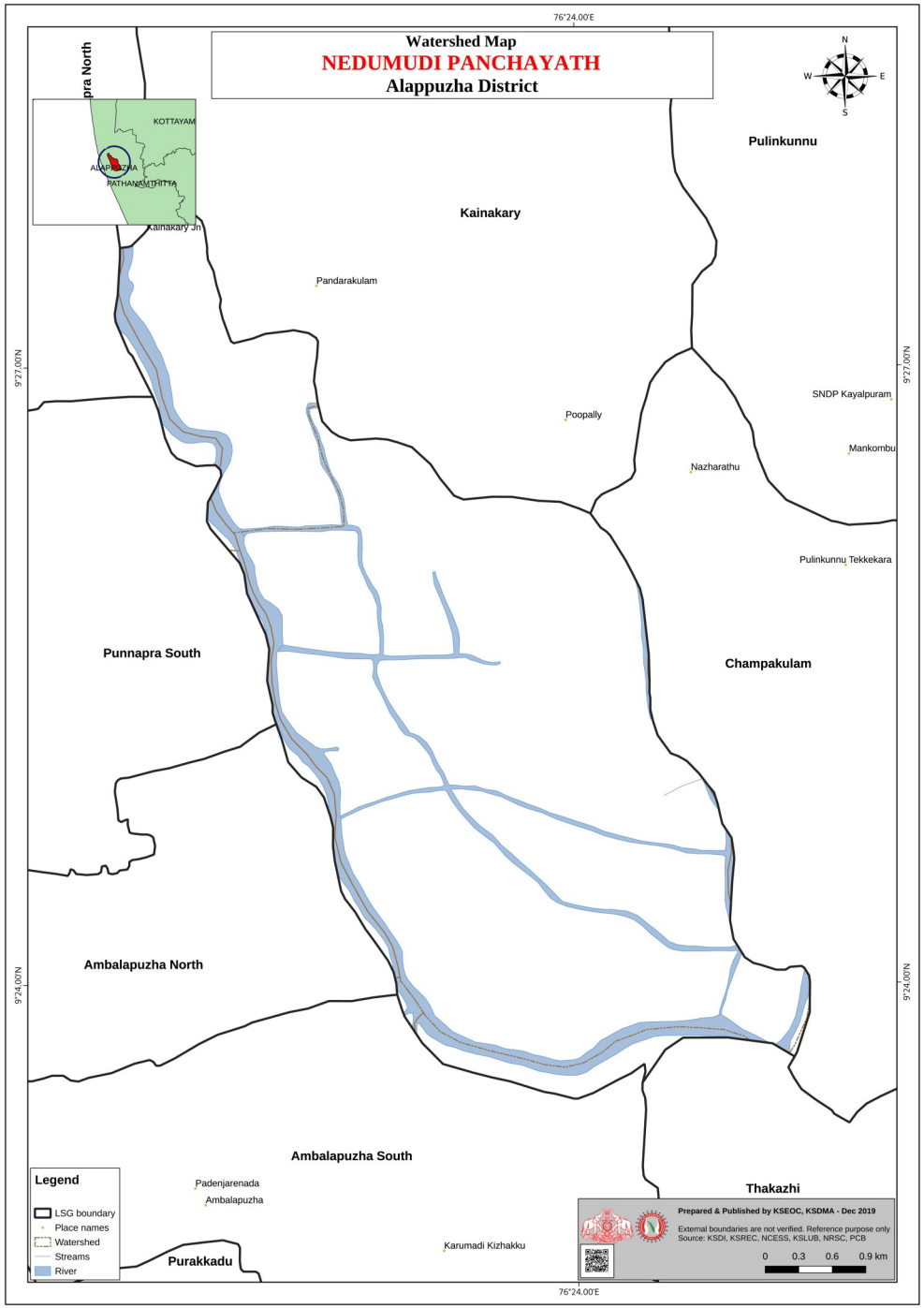
Map: 5

Flood potential area vs infrastructure map:

Above is a map of Nedumudi Panchayat flood prone area vs infrastructure. Of these, hospitals are shown as temples, schools, metal roads and state roads. Most of what appears to be the current fallow land.



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Map 6 : Watershed Map

The given map is the watershed map of Nedumudi Panchayat. The maps are prepared using data till 2019.

Table 2.4 History of Disasters faced by Local Self Government

(Listed by Central / Government of Kerala) (at least since January 2015)

This list shows the history of disasters and the year of disasters encountered by the local body.

Sl No	Disaster	Year and month	The impact														Number of people who lost their Livelihoods
			Casualties					Number of deaths due to infectious diseases	Pets	Damaged houses		Infrastructure			Cultivation (Hectares)		
			Male	Female	Transgender	Children	Total			Partially	Entirely	Road type and distance	Bridge / Kalunk Type and number	Non-domestic buildings Number	The ones with insurance	No insurance	
1	Flooding	2018 July - August	–	–	–	–	–	–	23910	7000	92	37.633 , Gravel	–	–	785.06	1133.794	–
2	Flooding	2019 August	–	–	–	–	–	–	–	–	–	0.2 Gravel	–	–	60.5	–	–

Table 2.5 History of local Disasters / Major Disasters

(Listed by Central / Government of Kerala) (at least since January 2015)

This list shows the history of disasters and the year of disasters encountered by the local body.

Sl No	Disas-ter	Year and month	The impact															Number of people who lost their Livelihoods
			Casualties					Number of deaths due to infectious diseases	Pets	Damaged houses		Infrastructure			Cultiva-tion (Hectares)			
			Male	Fe-male	Trans gender	Chil dren	To-Tal			Par-tially	En-tirely	Roa d type and dis-tanc e IN KM	Bri dg e / Cu lve rt Ty pe an d nu m be r	No n-do m est ic bui ldi ng s Nu m be r	Th e on es wit h in-sur an ce	No in-sur an ce		
1	Floodi ng	2018 July - August	-	-	-	-	-	-	23910	7000	92	37.633 ,Gra vel	-	-	785. 06	1133. 794		-
2	Floodi ng	2019 August	-	-	-	-	-	-	-	-	-	0.2 Grav el	-	-	60.5	-		-

Table 2.8: Frequency cycle of disasters

Disaster	Year	January	Febru-ary	March	April	May	June	July	August	Sep-tember	Octo-ber	November	December
Flooding	2018						YES	YES	YES	YES			
Flooding	2019						YES	YES	YES	YES			

This table is intended to record the recurring cycle of disasters that have occurred at the local level. Recurring disasters will be recorded periodically.

2.9 Sections that need special consideration

This table lists the categories of areas that are most likely to be affected in the event of a disaster in the area.

Elderly living alone	Female	6	3	2	0	6	2	13	3	10	6	96	7	7	3		164
	Male	0	1	0	0	1		1	6	3	1		3	1	1		18
Migrant labourers	Female	0		0	0			0	10					0	0	0	10
	Male	0	1	11	0			0		66	4	10	9	11	0	0	112
Population residing in care homes	Female	0	0	0	0		0	0		1				0			1
	Male	0	0	0	0		0	0		1				0			1
Houses where women are stew-		5	0	5	9		5	25	24	7	55	96		7	11		249
Pregnant women		10	6	14	_	7	9	_	6	3	4	6	_	3	_	8	76
Destitute	Female	6	7	3	6	6	8	8	_	4	10	15	17	0	0	_	90
	Male	0	1	0	_	_	_	_	1	_	_	_	_	0	0	2	4
Population above sixty years of age	Female	131	90	128	87	130	90	139	78	114	166	89	106	92	96	128	1664
	Male	105	82	123	80	173	60	130	64	135	115	89	110	108	90	123	1587
Palliative care	Female	10	6	1	3	1	_	4	7	_	4	9	7	6	11		69
	Male	7	2	3	_	3	8	1	4	_	4	10	7	2	3		54
Differently abled	Female	7	_	2	1	6	_	14	2	_	_	_	2	1	8	6	43
	Male	2	_	3	2	6	2	4	4	_	_	13		3	3	6	48
Children below the age of 5	Female	35	36	34	27	29	_	58	7	18	26	46	42	32	38	37	465
	Male	35	36	34	19	25	34	40	8	30	24	25	49	30	20	35	444
Ward Number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	ആകെ

Table : 2.9 Disaster Risk Areas

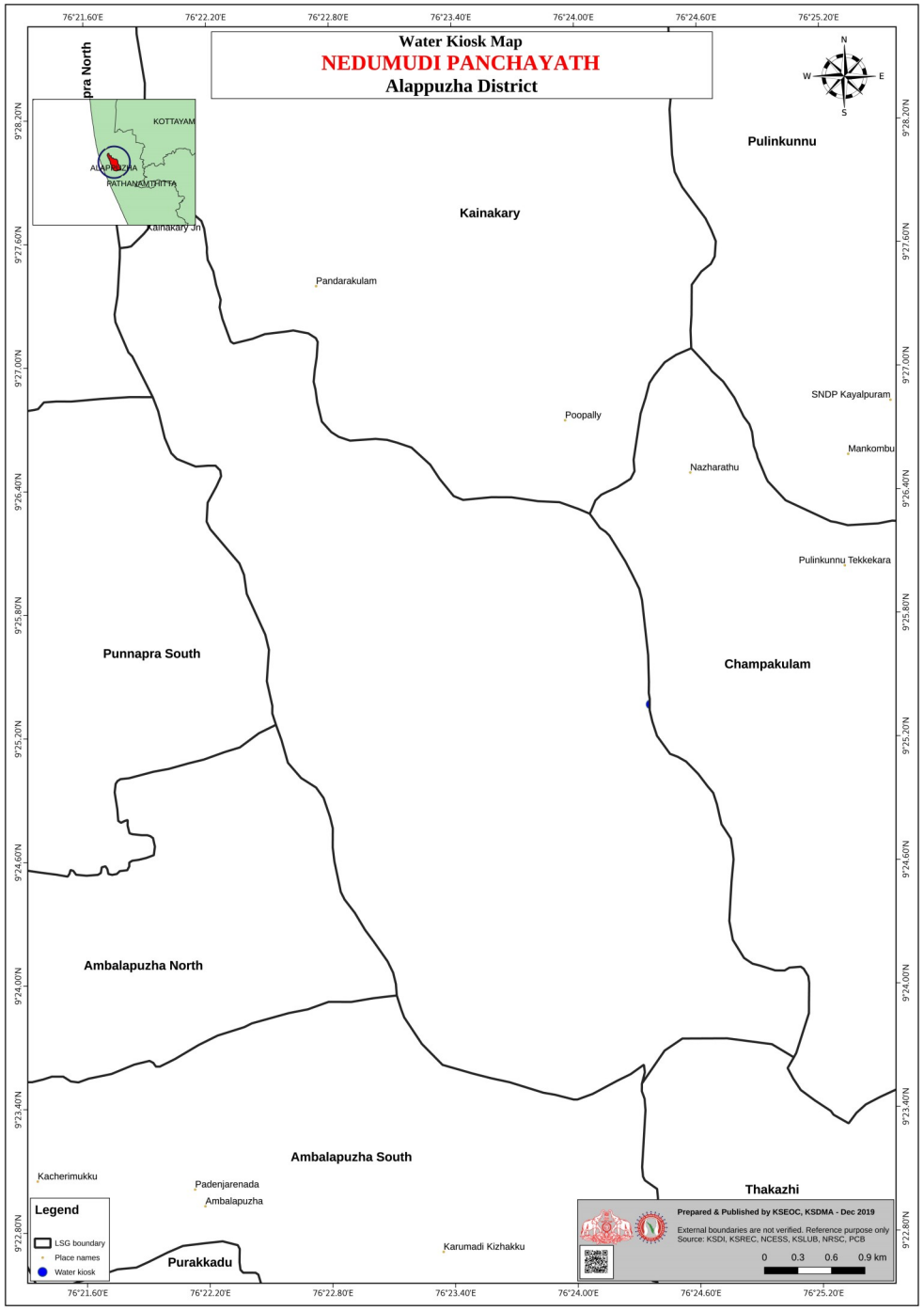
This table contains information on disaster prone areas and areas affected by them, wards, and public buildings for homes affected by disaster.

SL No	Diaster potential	Applica-ble Area,	Houses (Numbe	Public Buildings	
				Type	Count
1.	Flood	1 -15 ward	4916	1. School 2. Anganwadis 3.The hospital 4. Places of worship	15 23 6 27
2.	Fire incidents	10th	20	-	-
3.	Death due to	1 -15	Possibil-	-	-
4.	Electorcution	1 -15	Possibil-	-	-
5.	Torrential rain	1 -15	Possibil-	-	-

Table 2.11: Geographically disaster prone areas

This list contains detailed information on geographically disaster prone wards, areas, infrastructure, road bridges and their water bodies.

Disaster potential	Disaster threatening wards	Disaster prone area	Road condition in the area	Status of bridges in the area	Water bodies in the Area (number)	Water eco-systems / Colonies of the area (Nos)	Population facing catastrophic threat	Others
Floods	1 – 15	Majority of the areas	Most of the roads are flood-damaged	-	-	-	19701	-



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Map 7: Water Kiosk

The given map shows the water kiosk in Nedumudi Panchayat. Data till 2019 December is used to prepare this map

2.12 Disaster-threatening public places

This list contains information on disaster prone public buildings, disaster risk and disaster risk wards, public buildings, Anganwadi schools, health institutions and others.

Disaster vulnera-bility	Wards with disaster threat	Anganvadis	Schools	Public health insititutions	Commu-nity Hall	Others
Flood	1	1)Ponga school 226 2) 107 bunds in backwaters 28	-	-	-	Leo XIII library Cham-pakulam
	2		-	-	-	Vignana Poshini library Chempunpuram
	3	1)Chennakari	-	-	-	Kasturba library, Ponga
	4	1) Karumadi Kurishadi 65	-	-	-	Sahrudaya library Vaishyambhagam
	5	1)Paikkara bridge 2)Aakkittumadam bridge	Govt NSS LPS Nedumudy	-	-	Kairali Library Thekkemuri
	6	1) Chempunpuram 23	Govt UPS Ne-dumudi South	-	-	Desha Sevini library Ne-dumudi
	7	1) Paruthikkulam 15 2) Chempunpuram 25	-	-	-	Panchayath Cultural Centre chempunpuram
	8		-	Homeo	-	

Disas-ter vul-nerabil ity	Wards with dis-aster threat	Anganvadis	Schools	Public health insiti-tutions	Community Hall	Others
Flood	9	1) Champakulam (Thottamattam)28	-	-	-	
	10	1) Manapra 2)Nadubhagam			Panchayath HAll	
	11	1)Kondakkal Ayurveda Hospital near 23		Ayurveda Hospital, Kondakkal	-	
	12	NEar Vaishyambhagam LPS Vazhaparamb	Gov LPS Na-duhagam		-	
	13	Kadukkathara	Govt LPS Vaishyambhagam	-	-	
	14	1) Chembunpuram 24	Govt LPS Chempunpuram	Health Centre, Chempunpuram, Vetinery Hospital		
	15	1) Chembunpuram Road side 22) Near Pookaitha backwater	Govt LPS Ponga			

2 .13 Economic Weakness

This table reveals the economic weakness. Disaster Risk Wards This table lists the types of disaster risk and economic vulnerability categories.

Disaster threatened wards	Disaster risk	Market	Milk Co-operative societies	VFP collec-tion center	Common Facility Center	Agricul-ture Bha-wan	Awws pro-duction Center	Godown	Veteri-nary Clinic	hortinurs ery	Other
1 ,2 ,3 ,4 ,5 ,6,7 , 8 ,9 ,10 ,11 ,12 ,13 , 14 ,15	Flood		4		1	1					

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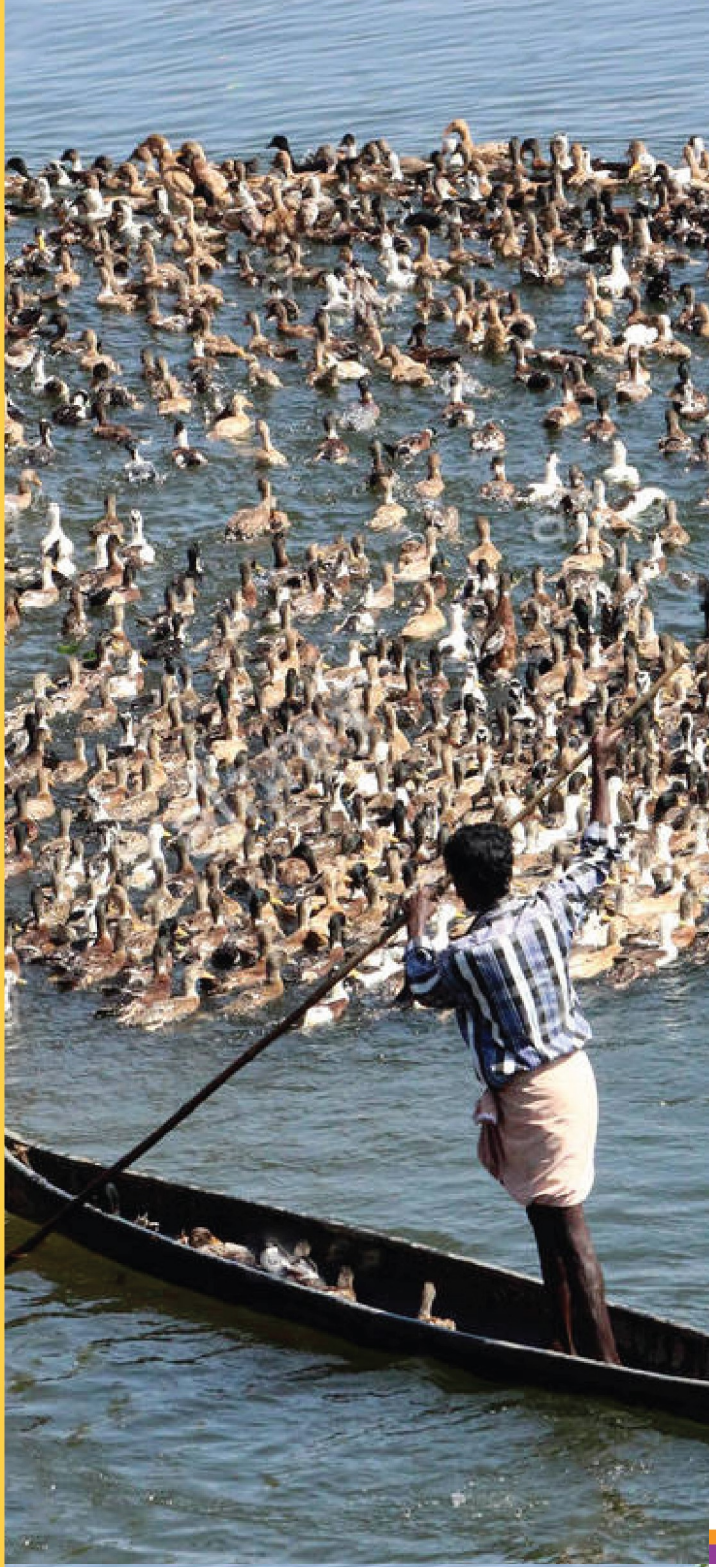
നമ്മൾ നമുക്കായി

Chapter-3

Disaster Response Plan



നമ്മൾ നമുക്കായി

In the event of a disaster, the Steering Committee of the local government will be responsible for coordinating the entire process. The responsibility for forming a response plan and team at the Panchayat level lies with this committee. The preparation of the response plan and the team may include the panchayat representatives and the administrative staff representing the various functional areas of the community. Individuals or residents of the area who have a correct understanding of the Panchayat can be assigned to the Response Team. Depending on the disaster, the Response Team should consist of the Warning Team, Investigation, Operational, Discharge Team, Shelter Management Team, and First Aid / Basic Life Support Team. This chapter will include the contact details of all the aforementioned members.

We are considering Higher Secondary Schools/Colleges at the local body level. In these, we are looking at members of NSS, Scout and Guide groups, Youth welfare boards, Nehru Yuva Kendra groups who are trained to work during disaster response and relief. This chapter includes a list of such volunteers and the list of organizations and trustees to contact in case of an emergency.

On the event of a disaster/potential of disaster the local body can start evacuation procedures according to the disaster mitigation plan with the help of the emergency response team. For this, the evacuation team must have an idea of disaster prone wards, safe paths, rehabilitation centres in the same locality, public institutions which need evacuation, safe centres for animals etc. These details along with the team members and materials needed for disaster response have been included here.

Table 3.1 Gram Panchayath/Municipality Steeriong Committee

The members of the Panchayat Steering Committee shall have full control over all the activities in the disaster area. The Steering Committee should be a team capable of coordinating all activities fast and efficiently. Therefore, it includes the representatives of the Panchayat and other officials in the field.

S.no	Designation	Name	Mobile Number (Whatsapp)
1	President/Chairperson/Mayor	M.K.Chacko	9495069752
2	Standing Committee Chair-person	1. Ruby Anthony 2.V Sasi 3.Yasoda Sukumaran 4.K P Aniyappan	9567808100 9497335317 9645306828 8943378807
3	Secretary	Leenamol	9496043665

Table 3.2 Potential invitees

The committee should include members who can hold important posts such as President and secretary. It can also include ward members and talented departmental officers. ADS and CDS chairpersons who know the area well can also be invited. For getting information from the grassroots, we need to involve people who work at the local level.

S.no	Designation	Name	Mobile Number (Whatsapp)
1	Ward Members	1.Sridevi C 2.Yasoda Sukumaran 3. Sudha Jacob 4. Jameela Mohandas 5.AK Radhakrishnan Nair 6.M Hemalatha 7. Maryam job 8.V Sasi 9.Chacko MK 10. James Thirunilam 11.Binu Sreekumar 12.K P Aniyappan 13.Muraleedharan AV 14.Pushpa Panicker s 15. Ruby Anthony	9539462341 9645306828 9847949817 9072601966 9946731330 9497634540 8547585340 9497335317 9495069752 9961589375 9747482557 8943378807 9496886435 9446203298 9747003897

S.no	Designation	Name	Mobile Number (Whatsapp)
2	Assistant Secretary	Leenamol	9496043665
3	CDS Chairperson	Kavitha	9048844409
4	Agricultural Officer	Pradeep A	9447102471
5	Veterinary Doctor	Deepa S	9446926099
6	Medical Officer Ayurveda Allopathy	Roy K Unnithan Amineth	9447319190 9995048828
7	Education - Principal/HM	Jayashree	9946674525
8	Scheduled Caste Development Officer	Lini	8547630054
9	Local self governance engineer	Manju Philip	9495969677
10	Village Extension Officer	Prajeesha Kumari	9645789155
11	Integrated Child Development Scheme Supervisor	Nila	9497633590
12	CDS Chairperson	Kavitha	9048844409
13	Literacy Prerak	Vinod	9495380387
14	SC/ST Promoter	Jishamol	9645158989

Table 3.3 Warning Team

The warning team includes ward members and people who have knowledge of all areas of the ward. These members should understand the potential for disaster and take steps to warn others according to its severity. This team will be able to make decisions quickly and execute without waiting for directions from above.

S.no	Name and address	Gender	Age	Phone Num-
1	Sudha Jacob, Poopally	Female	42	9847949817
2	Jacob P.J, Aikkarathara	Male	50	952681404
3	Latha Sudheer	Female	45	
4	M.K.Prakashan	Male	52	9656587103
5	Madhusudhan	Male	56	
6	Sudhamani Ambalayam,	Female	58	9496232457
7	Sreedevi, Ponga	Female	42	9539462341
8	M.Hemalatha, Ponga	Female	45	9497634540
9	Kavitha Mohan	Female	46	9048844409
10	A.K.Radhakrishnan Nair	Male	60	9447763133

Table 3.4:Search-Rescue-Evacuation Team

S.no	Name and address	Gender	Age	Phone Number
1	Jayaprakash Pournami, Ponga P.O	Male	45	9946451274
2	N.S.Kunjumon, 40th Chira Poopally	Male	56	9947627479
3	E.S Shashikumar Swathinivas, Chembumpuram	Male	49	9846218123
4	Krishnankutty Thathery, Ponga P.O	Male	55	9539905733
5	Kannan Vanjipuraickal, Ponga P.O	Male	48	
6	Sibichan K.J	Male	53	9947159754
7	Jacob P.J	Male	49	9847949817
8	M.K.Gopalakrishnan	Male	50	9656492813
9	Joseph Thomas	Male	58	9746370138
10	P.S.Purushotthaman	Male	56	

This team is comprised of people who have proved their potential by working in the frontlines and saving people's lives during the last flood.

Table 3.5 Shelter Management Team

S.no	Name and address	Gender	Age	Phone Number
1	K.Shashikumar Adivakathara, Ponga P.O	Male	50	9846469178
2	Muralidharan Pillai, Kalathil, Poopally	Male	50	9446143924
3	K.S Sreekumar Thuruthichira, Chembumpuram P.O	Male	55	9069814440
4	Abhilash Kannanchira, Ponga PO	Male	35	
5	Rana Diva	Female	48	9846965605
6	Ponnamma	Female	51	
7	Saritha	Female	44	9961776285
8	Omana	Female	45	8136895090
9	Deepthi	Female	40	9207061452
10	Ajesh	Male	38	

Table 3.6: First Aid/Basic Life Support team

This table includes people who have the technical know how to work in the disaster response team of Nedumudy Panchayat, and those with volunteership. This also includes details of centres to get first aid kids and other facilities, and associated health workers.

Sl.no	Name and address	Sex	Age	Phone Number
1	Sudhamani Ambalayam Ponga P.O Female	Female	57	9496232457
2	Ambily P Chengulam	Female	40	8547725201
3	Shiny Nalpathin Chira Chennankary PO	Female	44	7994235090
4	Mollykutty Aaruvan Parambu Chennankary PO	Female	65	9995836370
5	Ambily Kuzhikatti Thekkechira Thottu Vaathala Nedumudy PO	Female	40	9995844725
6	Sinimol Memana Veedu Nedumudy PO	Female	45	7356407910

Sl.no	Name and address	Sex	Age	Phone Number
7	Thankamma Varghese Vani Purackal Thekkemuri PO	Female	56	8281063198
8	Praseetha Satheesh Kochu Parambu Chambakulam PO	Female	41	9946035419
9	Mini Sebastian Chittadi Chambakulam PO	Female	45	8281947337
10	Valsala Cholathara Chambakulam PO	Female	50	9745581309
11	Shashikala Pathinaril Chira Nadubhagam Chambakulam PO	Female	42	8606522891
12	Salima Padinjarekattamballi Chambakulam PO	Female	52	8547175680
13	Kala Shankar Puthiya Veedu Vaishum bhagam PO	Female	42	9745804651
14	Salinamma Embathil chira Chembumpuram PO	Female	55	9946573028
15	Sindhu Santhosh Kareethra Chembumpuram PO	Female	35	8606018610

Table 3.7 : Volunteers

This table includes names and details of people from service and volunteer organisations such as SPC, Scout & Guide, Youth Welfare Board, Nehru Yuva Kendra.

S.no	Name and address	Phone Number	Gende	Age
1.	Krupa Mariyam Panavelil Ponga PO, Alappuzha	9526487266	Female	17
2.	Meenu Sajan Thayyil Chambakulam PO, Alappuzha	9946304736	Female	17
3.	Abhijith PS Puthuvalputhanparambu Chambakulam PO, Alappuzha	9645411639	Male	17
4.	Amal Sibichan Pathinalilchira Nadubhagam Chambakulam PO, Alappuzha	9446944162	Male	17
5.	Jobin S	8078226323	Male	17
6.	Varun Kumar V	7356580529	Male	17
7.	Shibin Sibi	8086513233	Male	17
8.	Sobin Sibichan	9446925759	Male	17

S.no	Name and address	Phone Number	Gende	Age
9.	Tom Varghese Valadithara Chambakulam PO, Alappuzha	8593817484	Male	17
10.	Anila Rameshan Kollamveli Chambakulam PO, Alappuzha	8086930330	Female	17
11.	Navya Prasad Ayikunnam Nadubhagam Chambakulam PO, Alappuzha	9745461577	Female	17
12.	Mariya Joseph Thekkethirunilam Manappra Chambakulam PO, Alappuzha	9961963053	Female	17
13.	Salu Babu Muppathinalichira Vaishyambhagam PO Alappuzha	9846591873	Female	17
14.	Akhilamol Joseph Chooravadi Chambakulam PO, Alappuzha	9446376283	Female	17
15.	Sandra Santhosh Kalluthara Thakamuri Chambakulam PO, Alappuzha	8547203852	Female	17

S.no	Name and address	Phone Number	Gende	Age
16.	Ashin Cheriyan Puthanpura Manappra Chambakulam PO, Alappuzha	9746564330	Female	17
17.	Shalini Ajith Nandanam Chambakulam PO, Alappuzha	9446818661	Female	17
18.	Santo Thomas Chackal Chambakulam PO, Alappuzha	9656891196	Male	17
19.	Mahi Rajendran, Kochukonthan Chira Manappra Chambakulam PO, Alappuzha	8606871226	Male	17
20.	Kribin Sebastian Thirunilam Chambakulam PO, Alappuzha	8086430571 9446930621	Male	17
21.	Jesna Matthew Anjil Nadubhagam Chambakulam PO, Alappuzha	9446537626	Female	17
22.	Sisimol S Varghese Arathil Chambakulam PO, Alappuzha	9745570735	Female	17

S.no	Name and address	Phone Number	Gende	Age
23.	Anjali R, Chirayilparambu Chennankari PO,	9744840095	Female	17
24.	Anish S, Ettilchira Chennankari PO, Alappuzha	7558851543	Female	17
25.	Dickson Joseph Kakattupathil Ponga PO, Alappuzha		Male	17
26.	Sachumon Chellappan Nalpathilchira Chambakulam PO, Alappuzha		Male	17
27.	Rosemol Sakkariya Padinjare Vaipumatam Chambakulam PO, Alappuzha		Female	17
28.	Meera Suresh Mohanam Nedumudy	9645003308	Female	17
29.	Treesa Maria Siji Thaithara Chambakulam PO, Alappuzha	9495352334	Female	17

S.no	Name and address	Phone Number	Gende	Age
30.	Riya Idikula Panthapattuchirayil Chennankari PO, Alappuzha	9847743812	Female	17
31.	Avani Aravind Akshara Thottuvathala Nedumudy Alappuzha	9495035033	Female	17
32.	Joyal K.J Kattuparambu Chennankari PO, Alappuzha	9605420121	Female	17
33.	Ashbin K Babu Kanakakunnu Chambakulam PO, Alappuzha	9048087130	Male	17
34.	Ashna K S Kadukkathra Chambakulam PO, Alappuzha	9048488539	Female	17
35.	Athulya S Nilayil Thottuvathala Nedumudy Alappuzha	7034499435	Female	17
36.	Pavithra P Sreedevi Mandiram Ponga Nedumudy, Alappuzha	9495272622	Female	17
37.	Jayalakshmi J Palluviruthi Thekkemuri Nedumudy	8281572416	Female	

Table 3.8: Institutions and people responsible to contact in case of an emergency

This list contains information about people and organizations that need to be contacted when an emergency situation arises during disaster response.

S.no	Activity	Ward Member	Departments Concerned	ERT
1	Warning	V.Sasi	Nedumudy Panchayath Revenue Department	Ambily P
2	Pre-emptive evacuation	K.P.Aniyappan	Nedumudy Panchayath Revenue Department	Salima
3	Search and rescue	M.K.Chacko	Nedumudy Police, Panchayath	Mini Sebastian
4	Camp management	Sreedevi	Nedumudy Panchayath	Sudhamani
5	Waste management	M.Hemalatha	Nedumudy Panchayath	Sinimol
6	Disaster relief materials (Collection and distribution centres)	Mariamma Jolly	Civil Supplies	Thankamma Varghese
7	Removal of dead bodies/remains	A V Murali	Nedumudy Panchayath	Kala Shankar
8	Health monitoring and care	Sudha Jacob	Primary Health Centre	Shiny
9	Water distribution	Pushpa Panicker	Kerala Water Authority	Salinamma
10	Media	Binu Sreekumar		Sasikala
11	Animal protection	Ruby Antony	Veterinary Department	Sindhu Santhosh
12	Psychosocial care	M.K.Radhakrishnan Nair	Government Approved Counsellors	Ambily
13	Miscellaneous	Jameela Mohandas		Mollykutty

3.9 Evacuation plan for flood

a.Evacuation plan: Facilities for rehabilitation							
Wards with disaster risk	**Population**	**Rehabiliation area within ward**	**Population which can be rehabilitat**	**Road**		**Shelter**	**Animal shelter**
				1	**2**		
1	1677	Chennankary		AC Road		DM Highschool	
2	1526	Chennankary				DM Highschool	
3	1604	Chennankary				DM Highschool	
4	147	Chennankary				DM Highschool	
5	1088	Kottaram Ambalam		Thottakad Kottaram		NSHSS School Nedumudy	
6	1577	Kottaram		Thottakad		NSHSS School	
7	1594	Kottaram Ambalam		Thottakad Kottaram		NSHSS School Nedumudy	
8	1641	Champakulam		Moonukalam - Milma		St.Thomas UP School	

a.Evacuation plan: Facilities for rehabilitation							
Wards with disaster risk	**Population**	**Rehabiliation area within ward**	**Population which can be rehabilitat**	**Road**		**Shelter**	**Animal shelter**
				1	**2**		
9	1384	Champakulam				BK English Medium	
10	1515	Champakulam				St.Mary's HSS School	
11	1259					-	
12	1122			Kanjipadam - Champakulam		St.Mary's HSS School Champakulam	
13	1139			Kanjipadam - Champakulam		St.Mary's HSS School Champakulam	
14	1138	-		-	-	-	-
15		-		-	-	-	-

b .Evacuation plan for public institutions							
Wards with disaster	**Anganwadi/Nursery**	**School/College/ Hostel**	**Hospital/Care home**	**Road**		**Shelter**	
				1	**2**	**1**	**2**
1	1)Ponga School			AC Road			
2							
3	1) Chennankary			AC Road			
4	1) Karumady Kurishadi		Nedumudy Sub				
5	2)Aakittu	Govt NSS LP School Nedumudy					
6	1) Chembumpuram	Govt UP School					
7	1) Paruthikulam						
8			Homeo				
9	1) Champakulam						

b .Evacuation plan for public institutions							
Wards with disaster risk	**Anganwadi/Nursery**	**School/College/ Hostel**	**Hospital/Care home**	**Road**		**Shelter**	
				1	**2**	**1**	**2**
9	1) Champakulam						
10	1) Manappra 2) Nedumbhagam		Chembumpuram Subcentre	Champa kulam Kanjipad			
11	1)Near Kondakkal		Ayurveda Hospital, Kondakkal				
12	Near Vasihyambhagam LP School,Near	Govt LP School Nadubhagam					
13	Kadukkathara	Govt LPS Vasihyambhaga					
14	1) Chembumpuram	Govt LP School Chembumpura m	Veterinary Dispensary, Chembumpuram				
15	1)Chembumpuram roadside	Govt LP School Ponga					

C .Operational team and inventory				
Ward no	**Ward Team Leader**	**ERT Members**	**Vehicles/Carriers**	**Other equipments for rescue/ clearing blocks**
1	Sreedevi C	Jayaprakash Sasikumar	Boat, Taurus, Car, Tractor	Tugs, Wood cutter, Generator, Bamboo, Light, Muppali
2	Yashoda Sukumaran	Muralidharan Pillai NS Kunjumon	Boat, Taurus, Car	Light, Axe, Tarpaulin, Bamboo, Generator, Tug, Wood cutter, Muppali
3	Sudha Jacob	K Sasikumar ES Sasikumar	Boat, Taurus, Car	Light, Axe, Tarpaulin, Bamboo, Generator, Tug, Wood cutter, Muppali
4	Jameela Mohandas	KS Sreekumar Krishnankutty	Boat, Taurus, Car, Tractor	Light, Axe, Tarpaulin, Bamboo, Generator, Tug, Wood cutter, Muppali
5	MK Radhakrishnan Nair	Abhilash Ambly	Boat, torus, car, mechanized boat and tractor	Light, ax, tarpaulin, bamboo, generator, rod, wood cutter, Inflatable rubber boat, Muppally
6	M. Hemalatha	Ranadiva Cinemaol Sibichen. K	Boat, car, tractor and motorized boat	Light, ax, tarpaulin, bamboo, generator, rod, woodcutter, life jacket, inflatable rubber boat, fork
7	Mariamma Jolly	Ponnamma Thankamma Varghese	Boat, mechanized boat	Light, ax, tarpaulin, bamboo, generator, rod, woodcutter, life jacket, inflatable rubber boat, fork

C .Operational team and inventory				
Ward no	**Ward Team Leader**	**ERT Members**	**Vehicles/Carriers**	**Other equipments for rescue/clearing blocks**
8	V.Sasi	Saritha Prasitha Satheesh	Boat, mechanized boat, car	Light, ax, tarpaulin, bamboo, generator, rod, woodcutter, rod, life jacket, inflatable rubber boat, fork
9	Chacko M.K	Jayan Mini Sebastian	Boat, torus, car, mechanized boat	Light, ax, tarpaulin, bamboo, generator, rod, woodcutter, rod, life jacket, inflatable rubber boat, fork
10	James Thirunilam	Deepthi Valsala Purushothaman	Boat, torus, car, mechanized boat	Light, ax, tarpaulin, bamboo, generator, rod, woodcutter, life jacket, inflatable rubber boat, fork
11	Binu Sreekumar	Awesome Information	Boat, torus, tractor	Light, ax, tarpaulin, bamboo, generator, rod, woodcutter, life jacket, inflatable rubber boat, fork
12	K.P.Aniyappan	PV Venugopal Salimma	Boat, tractor, and mechanized boat	Light, ax, tarpaulin, bamboo, generator, rod, woodcutter, life jacket, inflatable rubber boat, fork
13	Muralidharan AV	Ajesh Art Shankar	Boat, tractor, and mechanized boat	Light, ax, tarpaulin, bamboo, generator, rod, woodcutter, life jacket, inflatable rubber boat, fork
14	Pushpa Panicker S	MK Gopalakrishnan	Boat, tractor, and mechanized boat	Light, ax, tarpaulin, bamboo, generator, rod, woodcutter, life jacket, inflatable rubber boat, fork
15	Ruby Antony	Sindhu Santosh	Boat, tractor, and mechanized boat	Light, ax, tarpaulin, bamboo, generator, rod, woodcutter, life jacket, inflatable rubber boat, fork

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Chapter-4

Preparation, Mitigation and Social Empowerment

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This chapter covers preparations, mitigation measures and social science initiatives to prevent future disasters.Preparatory measures include the use of biological technologies such as disaster prone wards, access to the area, flow of water to the area, measures to facilitate transportation, and coir geotextile.Along with that, the management of the water resources and the maintenance of the water bodies ,the nature of the innovation is identified and documented.

The main function of disaster mitigation measures is to protect the soil, water, and streams of the affected area. Most of these protection activities should involve local residents to the maximum. The committee is responsible for water conservation, soil restoration, soil conservation, groundwater conservation and watershed management.

4.1 Preparation activities

This list contains information that should be known as a precaution before a disaster strikes. Information about disaster-prone wards, ways to get there, inevitable interventions, flood-affected camps, and other proposals will facilitate rescue operations.

Flood disaster probability							
Disaster prone	Route for the rescue team to reach at disaster prone	Boundaries of the affected area	Bridges and culverts in disaster	Safe / non-	The inevitable interfer-	Camps for flood victims	Suggestions for augmentation of
1 ,2 ,3 , 4 ,5 ,6 , 7 ,8 ,9 , 10 ,11 , 12 ,13 , 14 ,15	AC Road Pandarakulam - Pulikkal Road, Kanjipadam - Champakkulam Road, Thachery Road, Mankara Karuwata Road, National Highway	1. Bhoothapandam Lake / Pandarakulam 2 paruthikalam / kalarikkal 3 Chembakassery Church / Padikkadu / Colony 4 . Vaishambagom/ Janardhan Shop / FCC Convent 5. Kondakkal Church / Mangayi Bridge	W1 1.1 The Pandarakulam Bridge 1.2 Ponga bridge 1.3 Thatheri Bridge 1.4 Mandiran Bridge W2 2.1 Pazhukkara	Yes Yes Not at all Yes Not at all	1. To increase the height of bridges 2 Removal of obstacles in the aquatic environment 3 Ensure availability of boat etc.	1 Carmel International School Punnapra 2. TDSchool Alappuzha 3.Jyothinikethan School Punnapra 4.Mar.Gregorious College Punnapra	1 Keeping all classrooms clean in school make it fix for accommodation 2. If the floor is broken or the walls are damaged, repair should be done in advance. 3 It is better if the buses of the schools in which camps are running can be used to facilitate travel needs.

Flood disaster probability							
Disaster prone wards	Route for the rescue team to reach at disaster prone areas	Boundaries of the affected area	Bridges and culverts in disaster area	Safe / non-secure	The inevitable interference	Camps for flood victims	Suggestions for augmentation of facilities
1 ,2 ,3 , 4 ,5 ,6 , 7 ,8 ,9 , 10 ,11 , 12 ,13 , 14 ,15	AC Road Pandarakulam - Pulikkal Road, Kanjipadam - Champakkulam Road, Thachery Road, Mankara Karuwata Road, National Highway	6 .Chembumpuram Hospital / Motorthara 7 .Pulikkakavu / Community Hall	W3 3.1 koottummel 3.2 pothuvaayil W4 4.1 Nedumudi Bridge 4.2 Manilamuttu 4.3 paalathinkal 4.4 karuthaveettil 4.5 Parassery Bridge 4.6 Koikodu W5 5.1 Paikara Bridge 5.2 vaippil (bridge under constructi) 5.4 Powam	 Yes Yes Not at all Yes Not at all Not at all Not at all Yes Not at all Yes	1. To increase the height of bridges 2 Removal of obstacles in the aquatic environment 3 Ensure availability of boat etc.	1 Carmel International School Punnapra 2. TDSchool Alappuzha 3.Jyothinikethan School Punnapra 4.Mar.Gregorious College Punnapra 5 MMAU PAS Chathanad	1 Keeping all classrooms clean in school make it fix for accommodation 2. If the floor is broken or the walls are damaged, repair should be done in advance. 3 It is better if the buses of the schools in which camps are running can be used to facilitate travel needs.

Flood disaster probability							
Disaster prone wards	Route for the rescue team to reach at disaster prone areas	Boundaries of the affected area	Bridges and culverts in disaster area	Safe / non-secure	The inevitable interference	Camps for flood victims	Suggestions for augmentation of facilities
			W6 6.2 chelakkadu 6.3 methachery W7 7.1 pulikkakavu 7.2 NSS karayogam bridge 7.3 puthenpurakkal W8 8.1 milma bridge 8.2 kochupalli 8.3 moonnukalam W9 9.2 kandankalathil 10.1 manapra panchayath bridge 10.2 ocheri madom	 Yes Yes Not at all Yes Not at all Not at all Not at all Yes Not at all Yes		1 Carmel International School Punnapra 2. TDSchool Alappuzha 3.Jyothinikethan School Punnapra 4.Mar.Gregorious College Punnapra 5 MMAU PAS Chathanad 6. St. Michael's College Cherthala 7.SV NVHS Kannikulangara 8.College of Engineering Punnapra	1 Keeping all classrooms clean in school make it fix for accommodation 2. If the floor is broken or the walls are damaged, repair should be done in advance. 3 It is better if the buses of the schools in which camps are running can be used to facilitate travel needs.

Flood disaster probability							
Disaster prone wards	Route for the rescue team to reach at disaster prone are-	Boundaries of the affected area	Bridges and culverts in disaster area	Safe / non-secure	The inevitable interference	Camps for flood victims	Suggestions for augmentation of facilities
1 ,2 ,3 ,4 ,5 ,6 ,7 ,8 ,9 , 10 ,11 ,12 , 13 ,14 ,15			W11 11.1 maangayil W12 12.1 ezharakodu 12.2 thekkumthara 12.3 monnoottambathu paalam 12.4 karikkal 12.5 konmuppathu 13.3St Antony's bridge 13.6 bridge behind vaishambagom LPS 13.7 edakkad temple culvert 13.8 velamparambil 13.9 thekkumthara 13.10 poonilam bridge 13.11SNDP bridge 13.12 Vaishambagom highschool bridge 13.13 sheevattuthara smashaanam bridge W14 14.1pulikkal 14.2ambalam bridge W15 15.1Thalicherry bridge	Not at all Not at all Not at all Yes Yes Yes Yes Yes Yes Yes Not at all Not at all Yes Not at all Not at all Yes Yes		9. Leo 13th School Alappuzha 10. Carmel School Muhamma 11.SN College Cherthala	

4 .2 Preparation Activities

The management of water sources and water bodies in disaster prone areas are included in the table. Reclaiming water bodies that need renovations can reduce the severity of flood disasters to some extent.

Drought Disaster Risk - Source and Performance of Water Resources							
Drought prone wards -	**Water bodies that need renovation**		**The nature of innovation**				**Rain harvesting**
			Clearing of clay	**Removing barriers and**	**Increasing depth**	**Coast Guarding**	
-	Starting point	Ending point	Needed	Needed	Needed	Needed	
	North of Nedumudi Panchayath Office	St. Joseph's Chapel Manapra (Pookaithayar)	Needed	Needed	Needed	Needed	
	North of Kondakkal Bridge	Kallurum (Pookaithayar)					
	North of FCC convent	Vazhaparaparambu (Pookaithayer)					
	Janardhanan's shop	Lake resort					
	Near to vaishambagom Post Office	(Pookaithayar)					
	Kurishupalli	To the Kanjipadam jankar					As per the 2011 census of Nedumudi Panchayath, there are 4916 houses. If rain harvesting is promoted in such a large number , a large percentage of the rain water will

Drought Disaster Risk - Source and Performance of Water Resources							
Drought prone wards	**Water bodies that need renovation**		**The nature of innovation**				**Rain harvesting**
			Clearing of clay	**Removing barriers and cleaning**	**Increas-ing depth**	**Coast Guard-ing**	
	Pongavaankalam	pongavaankalam temple road					The wells can be recharged during the rainy season
	From the Ra bridge to the north	SNDP					
	Puthuvana	Moonukalam bridge					
	Janardarans shop	Near to St. Martin's church					
	Kondakkal	Ganapathy temple champaku-lam					
	Chembumpuram hospital	Motor thara					
	Pulikkakavu temple	Heaven lake resort					
	Zero Malabar church (mathoor-thsicherry road)	House boat link					
	Pulikkakavu temple	Paruthikalam (Pamba river)					
	West of Thottakkad junction	North of Mathur Temple					
	Thottakkadu	Paruthikkalam					
	North side of Nedumudi Pancha-yat Office (Pampayar)	Bhoothapandam lake					
	Champakulam (amichekkary)	Pullangaadi resort					

Drought Disaster Risk - Source and Performance of Water Resources							
Drought prone wards	**Water bodies that need renovation**		**The nature of innovation**				**Rain harvesting**
			Clearing of clay	**Removing barriers and cleaning**	**Increasing depth**	**Coast Guarding**	
	Pooppally heritage homestay manimalamutt (pambayaar)	Manimalamutt bridge					
	Manimalamutt bridge	Bhoothapandam lake					
	Manimalamutt bridge	Near to ponga chettikalam temple					
	Near to ponga chettikalam temple	Bhoothapandam lake					
	Near to ponga chettikalam temple	SIFFS office					
	Pandarakulam	Pandarakulam mini kalpakavadi toddy shop					

4 .3 Preparation Activities

This list contains information on the renovation of buildings that are supposed to be relief camps and shelters. Buildings selected as camps must have basic amenities.And these buildings need to be renovated every year.

Camps /Shelter homes	Ward numbers	The nature of renovation						
		Repairs	Electrification	Drinking water	Culinary restaurant	Toilets	Bathrooms	Road facilitation
DM High School	3	Fractures on the wall and floor	Not required	The need for more storage tanks	There is no restaurant	More toilet's are required	Bathrooms are few and far be-	Not required
NSHS School Nedumudi.	5	Minor cracks in the walls and areas where the water is tied should be gravelled. Fractures on the floor	Not required	Currently using tanks are limited	The culinary is old, seated, and has no restaurant	It has to be rebuilt and the existing toilets are both cracked and seated	Bathrooms are limited. New ones are to be constructed.	Boat jetties should be reconstructed
St. Thomas UP School Champakkulam	8	Cracks in the walls and few windows of classrooms	Not required	Availability is limited	No restaurant	The number is limited and there is no way to dispose	Cracks are present, renovations are required	Not required
BK English Medium Champakulam School	8	Cracks on the floor and walls	Damaged fans and lights must be repaired	Availability is limited. There is a need to find another way for this.	There is no restaurant and culinary space and comfort should be increased	The number is limited	Bathrooms are less compared to toilets	Not required
St. Mary's HS School Champakkulam	9	should adopt a method of draining the water in the school yard, Fracture in verandahs and steps should be repaired	Complaints of light must be repaired	Drinking water is scarce. Water should be purchased in consultation with private agencies	Culinary space should be increased, currently no restaurant present, for this verandah	Number of toilets should be increased, presently it is found in water logged areas	There is only limited number with less space and area.	Not required

4.2. Disaster mitigation activities

The key to disaster mitigation is to protect the soil, water, natural resources and natural boundaries of the area.Widespread encroachments, including rivers and streams, have taken place during this period.Earlier the main route for walking in this panchayat was the main street near Chambakkulam- Nedumudi river. From kochupalli bridge to paruthikalam bridge about 1.5 kms encroachment is found. Tourism resorts are completely occupied by the coast and is used as private property.The same situation appears on the banks of the tributary of Pookita River.It also provides a Google Earth map that provides a comparative analysis of how much encroachment of Riverside has been subjected to in the 25 years (1995 to 2020).

നെടുമുടി ഗ്രാമപഞ്ചായത്ത് ദുരന്തനിവാരണ ആസൂത്രണ രേഖ

There are many obstacles in the tributaries that affect the natural flow of water.

1) The width and depth have decreased.

2) high eutrophication

3) Organic and inorganic wastes are deposited.

Nedumudi is an area where flood disasters are getting bigger and smaller each year. We should not neglect the intervention to increase the intensity of disaster. Any deed we do to our soil, water and nature will have to pay a heavy price.Planning at the local level can also foresee the risks that each project may create.Therefore, it is important that the working group should carefully and cautiously prepare the plans as they are constantly haunted by past deeds.

Drought is also a threat to us.It should be possible to keep soil, ponds, streams, fields and rivers for long periods of time, preventing excess water from reaching the sea during the monsoon season.

The ecological relevance of our fields, which we call natural wetlands, is growing.The ground water supply will be raised by building water in the fields. Landfilling can seriously affect our food safety and ground water.Over the past 3-4 decades, so many fields have been filled for different purposes.The fallow of uncultivation of fields is increasing every year. Nedumudi is a land blessed with the abundance of water in the canals that flow from head to toe, it's canal proximity to Pampa, one of the major rivers of Kerala and its tributary Pookaitha river. One tenth of the 176 km long Pampayar flows through Nedumudi. There are so many small and big canals flowing in this region and the total length of the canal is 35.4 km. There are stone walls laid for 13 canals having length 13.5 km. Most rivers have stone walls. The natural flora here almost disappeared.The Eta and Kaita River Trees not only provide protection to the river's shore, but also provide an opportunity for the flowing water to remain in the water body for a long time and to fall into the soil. Likewise, the sides of the canal prevent the collapse of the slopes to protect the stone walls, but also allow the flow of water to flow more quickly.

Nedumudi is the region where most of the granaries in the First Kuttanad package were built.Therefore, the condition of the stream has got worse here. There are many obstacles and difficulties in getting them back to normal.

Soil conservation should be given maximum priority to prevent soil loss. The old-fashioned approach to soil conservation is also changing.What is required is land management, which is not only soil but also interactions of water and animal life.

Land loss is as important as soil loss.Water scarcity is more affected than soil.Therefore, water conservation should be as important as soil conservation or more.we should find ways to reduce the flow of water by allowing the water to fall into the soil. Natural methods should be given more importance than mechanical methods.Natural fertilizer should be added in large quantities to maintain productivity.

The problems in the field today are attributed to the lack of water management in a water rich area.There are some changes in the weather in terms of rainfall.The amount and distribution of monsoon is almost constant and reliable.

Tropical rain and summer rains are not permanent. There should be plans to collect rainfall during the monsoon season.Water scarcity is due to over-reliance on other sources, ignoring the primary source of water.

Youth

Young people's involvement in disaster relief and other flood-related experiences in 2018 was significant. At the panchayat level there should be plans to utilize the youth capacity not only in case of disasters but also in all possible cases. Leadership role in agriculture development programs, watershed management, water resource recovery and health interventions can be enhanced by providing youth with necessary training so that they can be promoted as mainstream activists of the society and it is possible to become active in environmental interventions in Nedumudi panchayat. The projects for those who are willing to become entrepreneurs in agriculture, fisheries and livestock management must be decided at the panchayat level. Groups should be expanded to include youth in committees such as Kudumbasree and Padashekhara Samiti. The youth leadership can set up the teams needed for awareness campaigns and other activities . Should conduct environmental agriculture seminars and other training programs to attract youth.

Neighborhood groups /Kudumbasree

Neighborhood groups and Kudumbasree activities need to be strengthened to promote social awareness.Training programs for resource persons on Kudumbasree, ADS and SIDS levels should be conducted in the areas of drinking water, soil ecosystem protection and water reclamation.Each Kudumbasree must organize classes at the neighborhood level using a trained resource person. watershed committees should be established.The representation of Kudumbasree Neighborhood representatives should be ensured Neighborhood groups and Kudumbasree units should work on propaganda activities to reach out to all the people by discussing local development programs.

Senior Citizens' Organizations

Senior citizens' organizations should be organized in all the wards of the panchayat.For all kinds of growth today, the experiences of the older generation have to be passed on to new generations and social organizations.The older generation should be able to replicate the knowledge from pension organizations, retired officials, retired agriculture workers and retired teachers.Traditional agricultural knowledge, water conservation initiatives, the way they deal with natural disasters, financing systems, traditions of debt control and the production of agricultural implements can all be transmitted.A workshop can be convened on panchayat basis so that the old and the new can come together. This kind of events can elevate a village festival.

Capacity Training for Rapid Force

An expeditionary force should be active in the panchayat so that it can always intervene in disaster prevention activities.Youths and Kudumbasree Neighborhood Activists can be prepared for this rapid task force. Swimming training can be organised for entire people of Nedumudy panchayath. In case of emergencies, training of yachts and boats and first aid training should be given to the emergency service.It should also include fire extinguishers and rescues from electrical fires.Training should include necessary classes to build confidence.

Training of institutions

Government institutions, schools and other institutions should be included in the training programs. Training programs should be able to understand what can be done to provide adequate public service in emergencies and to implement necessary governmental assistance and coordination of other mechanisms.Various NGOs and NGOs need to be integrated into this.

Teachers

Teachers are the most important type of community education. Training should be given to school teachers and retired teachers to provide socially needed social education in all aspects of health care, disaster management, development, water safety etc. These training programs can be led by Kerala Institute of Local Administration with the technical assistance of Nedumudi Panchayath.As a part of second literacy activity, these activities can only make significant progress if there are significant interventions in this category.

Integration of community-based organizations

The integration of political and cultural movements, libraries, Kudumbasree, Padashekhara Samiti and MGNREGS should be implemented on a panchayat basis.

Padashekhara Samiti

The committees should be called for the coordination of water and soil water conservation activities under the aegis of 37 padashekhara committees of the Nedumudi Panchayath.Each Padashekhara Samiti should carry out the task of preparing and assembling awareness programs for the development of the area's agricultural development programs.

Empower the Bala Sabha and Bala Panchayat activities.

Today's children are tomorrow's citizens. Nowadays, the role of students in the emerging environmental struggles and awareness campaigns around the world is huge. They call the world out of the realization that their future will be destroyed due to climate change and disasters. The common ground for children, such as schools and balasabha needs to be reinforced by this knowledge base.The panchayat should be able to achieve the excellence of a panchayat where all children know how to swim. Training on health activities and social media apps related to disaster management can be provided to students. Topics such as forestry, agriculture, water conservation and environmental protection can be considered.Bal panchayats should be called. Environmental clubs can be formed to accommodate students based on watershed wards on school grounds. Children should also be involved in the welfare program for Waste management, reduction in plastic use and awareness of fire fighting

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Chapter-5

Resources and Capabilities

നമ്മൾ നമുക്കായി

This chapter contains information on equipment, materials, and skills required for special operations / activities in the area under the local self-government before ,during and after the disaster.This database helps to determine the level of caution associated with a particular vulnerability.

Transport facilities for rescue operations, rehabilitation centers available in the area,necessary supplies during relief work, availability of drinking water, wastewater management systems, locations for buying the dead,and also an analysis about the strength, weakness and challenges of local disaster management in the disaster management area are listed in this chapter.

Table .1 Resource information

Transport equipments	Name of the owner	Phone number
Bulldozer	1.Sarath	8086050465
J.C. B (Tire Mounts / Chain Mounts)	1.Moncy kutty 2.Antochan 3.Sarath	1. 9605261393 2. 9446119014 3. 8086050465
Crane	Antappan	9446119014
Tractor	Gopalakrishnan	
Taxi service	1.Joskutty 2.Sibi 3.Mathukutty 4.Sibi Thaithottam	1.9847985726 2.9446788776 3.9446334536 4.9495523614
Heavy truck (Torres Lorry)	Anil kumar	9447743943
Mechanized boat	Thomas Chandy (EX: MLA)	9447051333
Boats	Johnson Yashodharan	9645072404 7902737209
Ambulance	1.Government hospital, Chambakulam. 2.Vandanam medical college.	1 .0477 2737587 2 .0477 2282015
Mobile Mortuaries	1.Kuryan manathra (Manathra decorations) 2.Roy Mangayil (Sandra decorations)	1.9947125545 2.9447230190
4 wheel drive jeep	Anshu Devasya	9495530296
Bus	Anil Kumar	9447743943

Communication	Name of the owner	Phone number
Telephone exchange	1.Nedumudi 2.BSNL Chambakulam	1. 0477 2762100 2. 0477 2707105
Mobile phone operator		
Local channels	1.NCV 2.KCV	1.9446155126 2.9495211539
News reporters	1.M.Jayachandran	1.9447743943
IT experts	Gopakumar. G	9447504754
New media fellowship	1.Jayan Chambakulam (V help) 2.P V Venugopal (Cankuttanad)	1.9446792643 2.9526300957
HAM radio	Nedumudi Police Station	0477-2762222

Equipments	Name of the owner	Phone number
Tents / Tarpaulin	Kuryan Manathra	9947125545
Pumpset - 40,30 HP	Mathoor padasheskharam	9447659012/ 9447743943
Generator	1.Anandhan Vyshyambhagam 2. Kuryan Manathra	1.8943648212 2. 9947125545
Water tanks (500 litres and above)	Kuttanad Taluk Office	047727202221
Wind-filled rubber boat	Mejo (Blue Jelly Resort)	9447765421
Light	1.Anandhan 2.Babu 3.Devi sounds	1. 8943648212 2. 9745398605 3. 9633065972
Coir	1.Krishnan	1.9744906553
Life jacket	Mejo (Blue Jelly Resort)	9447765421
Miscellaneous / rental items	1.Kuryan Manathra 2.Roy Mangayil	1.9947125545 2.9447230190

Automobile repairing garages / work-shops	Place	Name and phone number of the owner
1.R P M	Pooppally	Vishnu, 9072077274
2.Thumbechirayil	Pooppally	Rijo, 9496920380
Electric shop		
1.A C R	Chambakulam	Sibichan, 9446760089
2.Ryans	Paruthikkalam bridge	Jitto, 8330085588

Sanitation systems	Place	Name of the owner, Phone number
Portable toilets	-	
Sludge treatment plant	Alappuzha	Pollution control board

Human Resources	Name	Phone Number
Registered Health Practitioner/Doctor	Roy.B.Unnithan	9447319190
Engineer(Panchayath MGNREGS)	Akhila Mohanlal	7558847704
Nurse	1.Gopika 2. Malu	1 .8606400595 2 .8606122576
Vetenary Doctor	Deepa	9446926099
J.H.I	Aneesh	8921209121
Health Inspector	Jayaraj	9747538076
Health Activists/ASHA	1.Kala Shankar 2.Ambili	1.9745804651 2.8547725201

Human Resources	Name	Phone Number
Retired Police officers	1.Varghees kutty 2.Kannan (Dinesh)	1.9447788524 2.9446058892
Retired Armed Forces	1.P.R Suresh 2.Antappan Chennad	1.8606426880 2.9446920215
N.S.S Volunteers	1.Kripa Mariyam 2.Jobin.S 3.Shibin Sibi 4.Anila Rameshan 5.Mariya Josseph 6.Sandra Santhosh 7.Kribin Sebastian 8.MAhi Rajendran 9.Santo Thomas 10.Jesna Mathew	1.9526487266 2.8078226323 3.8086513233 4.8086930330 5.9961963053 6.8547203852 7.8086430571 8.8606871226 9.9656891196 10.9446537626
Diving Experts	P. Babu	9947967887
Blacksmiths	Aniyappan	8943378807
Wood cutters	1.Hari 2.Babu	1.9745548471 2.956740289
GAs cutter	Pramod	9446637135
Electiricians	Shiju Velayudhan	8089237757
K.S.E.B Officers	Kochumon	8157825327
J.C.B Operators	Sarath	8086050465
Trained swimmers / scuba divers	1.P. Babu 2.Satheesh	1.9947967887 2.9048936329

Human Resources	Name	Phone Number
Sound lighting system	1.Anandhan 2.Babu 3.Devi Sounds	1.8943648212 2.9745398605 3.9633065972
Snake hunters	NIL	
Cooks	1.Shaji Vargheese 2.Santhosh 3.Gopala Krishnan	1.9495159304 2.8606434355 3.9947857816
Cleaning workers	Harithakarmasena	7510932721
Coolies	1.Prajeesh 2.O.V.Vijayan	1.9961776712 2.9656432322
Fishermen	1.Yashodharan 2.Pradeep	1.9946910905 2.7902737209
Teachers	1.Jibin 2.Sunil Joseph Pathinaril 3.Raju.C . Puthanpurayckal	1.9995377044 2.9446274599 3.9447566251
Plumbers	1.George Vargheese 2.Raveendran 3.Lalan	1.8943960546 2.8943881089 3.9847267335
Dead body cleaners	NIL	
Helpers for Burying the dead body	NIL	

Materials Required	Name	Phone number
Medical shop	1.Rajappan (Sreepadma) 2.Vyppam madom medicals	1.9567085741 2.0477-2736332
Textiles	Venugopal K.B (Rajan Fabrics)	9446237153

Table 5.2: Non Governmental Organizations / Social Organizations / Kudumbasree units / Self help groups

Sl.No	Non-governmental organizations (NGOs), community-based organizations (CBOs) and other organizations / sports clubs / women's organizations / self-help groups / others / libraries / youth clubs / arts clubs.	Persons trained in disaster management (rescue / trauma care / basic life care / first aid / camp management)		
		Name	Trained sector	Phone number
1	Kudumbasree	1.Kavitha Mohan 2.Sulekha	1.First Aid 2. First Aid	9048844409 9495442571

Table 5.3: Earmarked Rehabilitation Centers

Sl. No	Name and location of the institution	No.of rooms available	The number of people that can be accom-modated	Ownership details (Government / Private) along with the owner's phone number	Facility / Condition (Appropriate / Improvement Needed / Not appropriate)			
					Water availabil-ity	Electricity	Toilets/ bath-rooms	Kitchen / Dining Room
School								
1	St.Mary's HSS Champaku-lam	6	36	Private	Needs improve-ment	Appropri-ate	Needs im-provement	Needs improve-ment
2	NS HSS Nedumudi	6	36	Private	Needs improve-ment	Suitable	Needs im-provement	Needs improve-ment
Community centers / Halls								
1.	St.Mary's Theological Cen-ter Champakulam	1	50	Private	Needs improve-ment	Suitable	Needs im-provement	Needs improve-ment
2.	St.Joseph church kondakal	1	50	Private	Needs improve-ment	Suitable	Needs im-provement	Needs improve-ment

Table 5.6: Availability of drinking water

Sl.No.	Source	Place	Functioning of Operating system (yes/no)	Status (Suitable / Source Cleanup / Coast Guard)
1.	KWA	Canal jetty	Yes	Source cleanup
2.	KWA	Pulpathra	Yes	Source cleanup
3.	KWA	Nelpuramadam	Yes	Source cleanup
4.	KWA	Mathirampalli	Yes	Source cleanup
5.	KWA	Chembumpuram	Yes	Source cleanup
6.	KWA	Nedumudi bridge	Yes	Source cleanup
7.	KWA	Thottaykkad	Yes	Source cleanup
8.	KWA	Chennamkary	Yes	Source cleanup
9.	BC	Manapra	Yes	Suitable
10.	BC	Vazhaparamb	Yes	Suitable
11.	BC	Kocharayckal	Yes	Suitable
12.	BC	Kallooram	Yes	Suitable
13.	BC	Thathery	Yes	Suitable
14.	BC	Uppukalam	Yes	Suitable
15.	BC	Mannada	Yes	Suitable
16.	BC	K.P. Colony	Yes	Suitable
17.	BC	Thychery	Yes	Suitable
18.	BC	Thachattuchira colony	Yes	Suitable
19.	BC	Kavumpuram	Yes	Suitable

Table 5.7: Market / Grocery Store / Drugs / Public Distribution System /Rice grinding shop

Sl.no.	Type of shop	Nale of the shop owner	Place	Phone num-ber
1. 2. 3. 4.	Public Distribution Center	Mathew C Joseph Babu Krishnan Nair M.A. Roy Joshy Thekkemury	Manimalamuttu Champakulam church Panchayath office Kondackal church Nedumudi	9947224707 9446616875 9446793803 9447230190 9447104131
1. 2.	Grocery store	Monichan Puthan-parambil Roy Mangayil	Kondackal Chambakkulam	9495537748 9447230190
1.	Medicine	1.Rajappan (Sreepadma) 2.Vyppam madam medicals 3.Suresh Kumar (Surya Pharmacy - Ayurvedam)		1.9567085741 2.0477-2736332 3.9496912410

Table 5.8: Locations for burial / mortuary / crematorium

Sl.No.	Name and Phone number of the person who is in charge	Phone number of the institution	Place	Phone number
1	-	-	Cheevattuthara, Vyshyambhagam	-
2	-	-	Bhasmathara, Ne-dumudi	-

Table 5.9: Management System

Sl.No.	Name and Place of Unit	Type of Waste	Ownership	Phone number
1.	Harithakarmasena	Inorganic waste	Panchayath	7510932721

നമ്മൾ നമുക്കായി

Chapter-6
Project Proposals for Disaster Mitigation

നമ്മൾ നമുക്കായി

INTRODUCTION

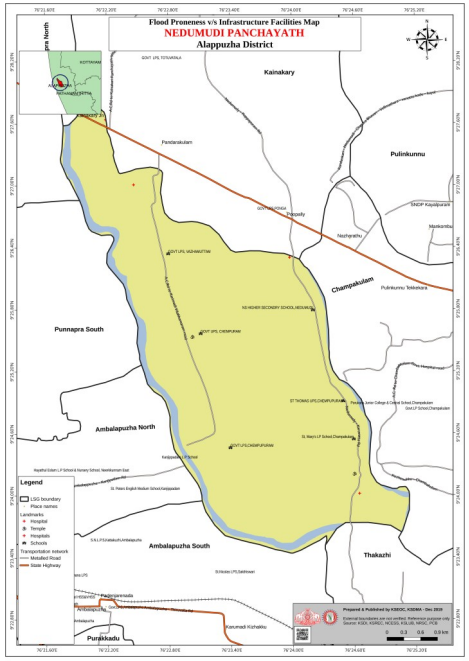
Nedumudi is one of the 6 panchayats belonging to the core part of Kuttanad. Most of the regions in Kuttanad are below sea level. It is a delta formed by four major rivers - Pamba, Meenachil, Achankovil and Manimala which flow into the Vembanad Lake which is in turn connected to the Arabian sea and because of these peculiarities., Kuttanad region is surrounded by water all the time. Nedumdi as a region has all the geographical characteristics of Kuttanad. Nedumudi being a part of Lower Kuttanad is surrounded by two rivers- Pamba and Pookaitha. As mentioned in the above portion of this disaster management report, water logging and flood are the issues that are faced by this region. Even though there were challenges earlier due to the geographical characteristics, climate change and developmental patterns have increased the vulnerability of the location.

Nedumudi is a peninsula region surrounded by two rivers and has a canal stretch of 35.4 km inside its boundaries. Out of the total geographical area, only a few regions have human settlement and the rest of the area are either ponds, canals or paddy fields. Due to geographical peculiarities, the canal system is in such a way that the water flows towards the panchayat. Due to these characteristics of watershed in the region, in the portions other than the human habitations the water level in the region are upto the same level of water in the river.

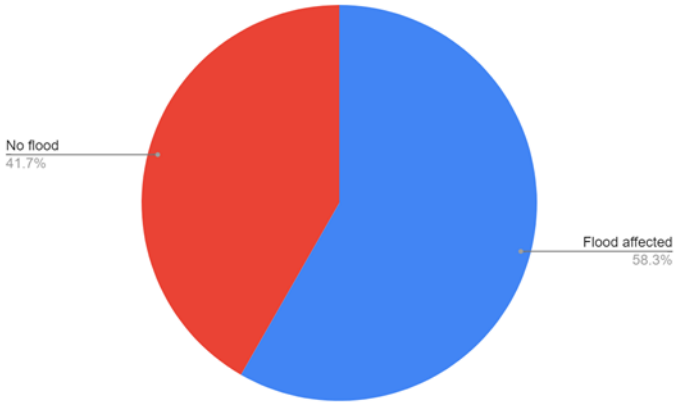
The heavy rainfall during monsoon and the rainfall in the catchment area are the major reasons for floods in the entire Kuttanad region including Nedumudi. There was no possibility of flooding solely due to the rain from two monsoons. Even Though there are two rivers surrounded by Nedumudi, unlike Kainakari and Pulinkunnu, flooding due to the upstream river flow is not a challenge for Nedumudi .

As mentioned above, the two changes that have taken place during this time period have opened up the possibility of flooding in Nedumudi today. One important reason is climate change itself. The disaster probability map given by KSDMA (Map 1) implies that the entire panchayat is flood prone due to the water from upstream and the rainfall in the panchayat boundary. Heavy flooding, inadequate rainfall, barriers to drainage, delays in receiving rainwater due to the seawater characteristics, and rising sea level are the impacts of climate change. The last two decades in the region have seen a series of development programs and a change in people's attitudes creating another level of crisis. It is the system of canals and paddy fields in the area that helps in the flow of rainwater during monsoon. But at present in Nedumudi panchayath, the efficiency of this process has been greatly reduced.

According to the Panchayat, the average rainfall received in Nedumudi annually is 219.85 cm. According to Figure 1, the most intense rainfall is 50 cm in June. The total land area of the area is about 546 hectares. Considering the amount of rains received, the maximum flood in Nedumudi Panchayat should be only 0.5 m. If there is sufficient water drainage, flood should not happen here. The KILA-IIT Bombay team has mapped out the magnitude of the 2019 floods. A sample study of 1057 households in the area showed that about 58.3 percent of the regions were flooded as shown in Figure 3. Of these, 76.7 percent of households in the area are flooded from 20 cm to 100 cm.



(Map 1)

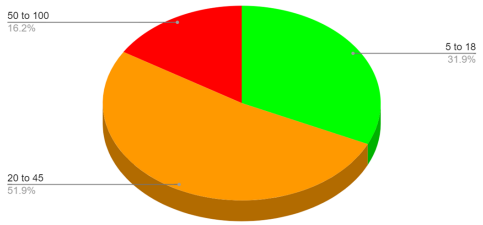


(Figure 1)

നെടുമുടി ഗ്രാമപഞ്ചായത്ത് ദുരന്തനിവാരണ ആസൂത്രണ രേഖ

Ward	Water Level (CM)																												
	5	7	8	10	12	15	17	18	20	21	25	26	27	28	30	32	33	35	40	45	50	60	62	64	70	75	76	80	90	100
1		2		12				1	7		2				6			3	5	2	2	1			1	1	0	1		1
2				5		3			4		2				5			2		1	2					1				
3	3			8		4			1						1							1								
4	1			4			1		3		1				4		1	2	3		1	1		0	1					2
5			1	1		1			4		1								1		1									
6				6		1			2		1				1					1										
7			1	4		1			3		1				3			3												
8									3		2		1	0	2			2	1		2				1					
9		2	1	10	2	5			3	1					2			1	1											
10				1		1			9		1	1			8			2	7		5	5			1			2	1	1
11		0	1	12	5	9		2	10		4				13				4	1	5	3			3			1	2	
12				4	1	4			3	1	1			0	4	1			2				1							
13				5					8		1				16				7		10	1			1	1				3
14		2	1	2		2			6		2				3				1		1							1	1	
15				2		2			3						1			3	1	2										
Grand Total	**4**	**6**	**5**	**76**	**8**	**33**	**1**	**3**	**69**	**2**	**19**	**1**	**1**	**0**	**69**	**1**	**1**	**18**	**33**	**7**	**29**	**12**	**1**	**0**	**8**	**3**	**0**	**5**	**4**	**7**

During this period, however, the maximum water level in the two rivers was below that of the land. So there was no reason for the flood to occur in the land which is in higher altitude than the river. But as graph 2 shows, 16.2 percent of the area was flooded, with a height of about 0.5 to 1 meters. The answer can be found in the following story



Bhaskaranchettan's house is located on the edge of Mathur Padasekharam near Pauvam bridge. With the efforts of Bhaskaran Chettan in 2016, a panchayat road was built in front of his house. After constructing a 2 km stretch of road, Bhaskaranchettans house was surrounded by road. Bhaskaran Chettan had earlier undertaken to build this road. One of the biggest challenges of building the road back then was the need to build a bridge across the canal and it was a big canal. Panchayat did not have the funds to build a bridge there. Once there is a road, Bhaskaranchettan can get directly to the road without having to go around. Since his son is studying to be an engineer, if he buys a car tomorrow, he can bring the car to his property. The irrigation officer who was transferred there came forward with a solution. He put forward the concept of Culvert instead of bridge. When the road gets built, who would need the canal? So the government ruled that the Culvert would be profitable. Bhaskaran Chettan's dream came true. Then comes the rain of 2018. In the rain, Bhaskaran's house and surroundings were water logged. He and his family moved to a rehabilitation camp in Alappuzha city. It took days for the water to flow out from his property. Finally, he and his family moved back and thought that the house was submerged solely due to global climate change. Then came the 2019 monsoon, this time also Bhaskaran's house submerged. This time, he started thinking, the rainfall was normal, then why was his place water logged?

It took days for the water to go down. In the meantime, he found out the reason for the waterlogging and why it takes a lot of days for the water to go down. Before the road was built, all the rainwater coming to the area including in Bhaskaran Chettan's compound will flow through the adjacent canal and reach the river. Because of the newly built road, the water did not have the way to flow towards the canal and hence resulted in waterlogging. Like Bhaskaran Chettan, many who needed the road had built new culverts in the canal. So the boats that went on occasionally stopped and no one was concerned about the canals anymore. The collapsed trees and side walls made the canal congested. In Nedumudi , we can see a lot of situations like the example of Bhaskaranchettan's.

Ward	Water Level From 5 To 18 Cm	Water Level From 20 To 45 Cm	Water Level From 50 To 100cm
1	15	25	7
2	8	14	3
3	15	2	1
4	6	14	5
5	3	6	1
6	7	5	0
7	6	10	0
8	0	11	3
9	20	8	0
10	2	28	15
11	29	32	14
12	9	12	1
13	5	32	16
14	7	12	3
15	4	10	0

The story mentioned above is about the man-made flooding that came about due to developmental interventions in the area. In technical terms, it can be called micro flood. Even Though the blame of 2018 floods lies with climate change, the flood of 2019 and the floods before 2018 are solely because of the anthropogenic actions. Of course, this plan includes precautions to be taken if floods like 2018 reoccur. In Nedumudi, however, interventions to reduce the impact of recurrent micro-floods and minimize their impacts need to be intensified. The disaster plan has considered both impacts that are mentioned above. This includes interventions to reduce the impact of disasters beyond our capabilities and to mitigate and minimize the impact of local disasters such as micro floods.

The regeneration of the canals

The present findings show that 58.3 percent of households in Nedumudi panchayats are affected by micro-floods. The challenges posed by micro floods are erosion of buildings, damage to crops and livestock, and the spread of infectious diseases. Rainwater during monsoon is supposed to flow towards paddy fields and canals. The role of canals are not just to accumulate rainwater but also to direct the water towards the paddy fields. According to the Nedumudi Panchayat, there are about 35.4 km of canals in the Panchayath.

When we consider the amount of rainfall currently falling in the area, 27,34,282 cubic meters of water to be evacuated. Table 2 shows that the total catchment capacity of all the canals in the Panchayath is only 23.5%.

From the above data it is clear that the water should be stored in Paddy fields covering 67.7 per cent of land of the Panchayat. The plan for this is included in the next chapter of this document. At present, it involves interventions to enhance the water flow capacity of the canals in the region. The job of the canal is to receive the water as soon as possible. But there are mainly two issues that can reduce the efficiency of the canals from fulfilling this task. The first of these is the natural phenomenon. Each rainfall drains a large amount of silt (mud) into the canal. The river from the upstream will deposit a large amount of silt into canals. As a result of these natural processes, the depth of the canal is reduced significantly with each rainy season. The length, breadth and depth are the parameters to determine the capacity of the canals and because of the decrease in depth due to silt accumulation, the capacity of canals are reduced. The only solution is to remove the mud that is deposited in the canal at a certain time every year. Earlier, people used to take out the sludge from the canals and used to construct the bund and some amount to sludge used to raise their land to protect themselves from the flood. This work was a sustainable program for deepening the canals and reducing the impact of flooding. Over time this process has ended and naturally the depth of the canals has been significantly reduced.

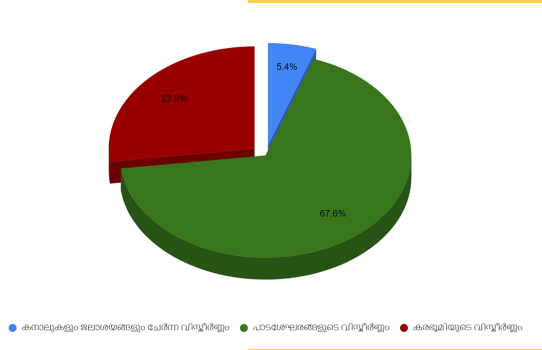
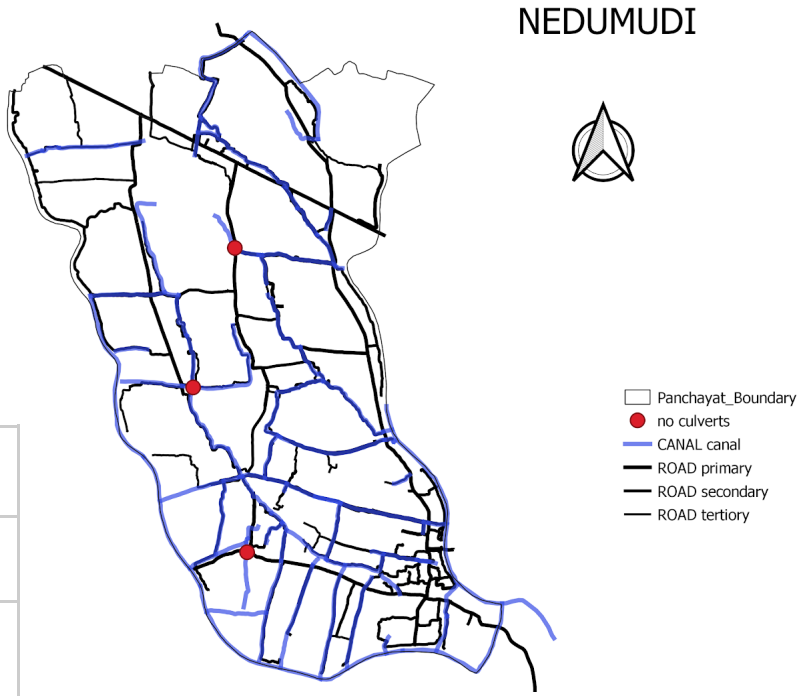


Image 4

SI NO	TERRITORY	AREA(sq.m)
1	Area of canals and water bodies	10,83,635.95 sq.m
2	Area of paddy fields	1,36,77,800 sq.m
3	Area of land	54,68,564.05 sq.m
	TOTAL	2,02,30,000

Table 2

The second thing that has affected the canals is the encroachment of the canals . With the spread of roads everywhere, there was no need to rely on canals for transportation.Widespread canal encroachments have taken place to acquire roads and develop the land. Analysis of Map 1 shows that the roads in the Nedumudi Panchayath are parallel to 90% of the canals. The construction of roads must have relied on where the canal was. Even if the road was encroached on canals at least 1 m in length, the canal would have lost 9270 cubic meters (more than 12% of its current capacity). In addition, the culverts and bridges built into the canal are built into the canal to reduce costs. This is certainly affecting the smooth flow of the canals.



	LENGTH	AVERAGE WIDTH (m)	AVERAGE DEPTH (m)	VOLUME (cub.m)
Present Measurements	35403	7.790517241	2.618517241	722207.1704
With the addition of 1 m which is assumed to be depleted	35403	8.790517241	2.618517241	814910.5362

There are two types of interventions involved in the project to maximize their aquifer capability by regenerating and deepening the canals. The first is to restore the canals to their depth. The latter is a tactical approach to prevent encroachment of canal areas and to regulate structures that adversely affect their flow.

Increasing the depth of the canal

As a part of a pilot project, In Nedumudi panchayat a canal was selected and sludge was taken out and bund was built under IIT Bombay, KILA and KSSP. The same Methodology is used to decongest the canals in entire Nedumudi Panchayat.

SL NO	CANAL (Starting and ending points)	LENGTH	AVERAGE WIDTH (in m)	AVERAGE DEPTH TO BE INCREASED (in m)	SILT TO BE REMOVED (cub.m)
1	North of Nedumudy panchayath to St'joseph chappal manapra (River Pookkaitha)	743	22.42	0.3351334219	5582.67265
2	North of Kondakkal bridge to Kallooram (River Pookkaitha)	1210	5.48	0.2209666858	1465.1859
3	North of FCC Convent to vazhapparambu (River Pookkaitha)	1390	6.1	0.2972572691	2483.2575
4	Janardhanan shop to Lake resort	1370	6.21	0.2437213465	2073.5081
5	From near to vaishyambhagam post office (River Pookkaitha)	150	9.875	1.246303797	1846.0875
6	Thekkumthara bridge to motor thara	289	6.75	0.1011111111	197.2425
7	St Antony's church to Pookkaithayar	1050	18.43	0.1874097615	3626.66

SL NO	CANAL (Starting and ending points)	LENGTH	AVERAGE WIDTH (in m)	AVERAGE DEPTH TO BE INCREASED (in m)	SILT TO BE REMOVED (cub.m)
8	St Antony's church to Kanjippa-dam	1240	4	0.5	2480
9	Kurishupally to kanjippadam jan-gar kadavu	1740	6.4	0.2528487787	2815.724
10	Pongavan kalam to ambalam road	169	5	0.35	295.75
11	Near Milma junction (kocheri thodu)	2590	12.77	0.1915550926	6335.5506
12	Near to Ra palam north to sndp	539	15.25	0.51	4192.0725
13	Puthuvana to moonnukalam bridge	190	6	0.1013711404	115.5631
14	Janardhanan shop to martin palli	718	8.98	0.3778030411	2435.938
15	Kondakkal to Ganapathi temple champakulam	267	8.9	0.0942258974	223.909
16	Chempumpuram hospital to mo-torthara	174	2.5	0.25	108.75
17	Pulikkalkkavu temple to heaven lake resort	854	2	3.056762295	5220.95

SL NO	CANAL (Starting and ending points)	LENGTH	AVERAGE WIDTH (in m)	AVERAGE DEPTH TO BE INCREASED (in m)	SILT TO BE REMOVED (cub.m)
18	Syro-Malabar church(mathoor thycheri road) to house boat link	931	4.5	0.46	1927.17
19	Pulikkalkkavu temple to Paruthikkalam (pamba river)	3200	7	0.5	11200
20	West of Thottakkadu junction to north of mathoor temple	1890	5	0.4	3780
21	Thottakkadu to Paruthikkalam	1690	5.5	0.5	4647.5
22	North of Nedumudy panchayath (pamba river) to bhoothapandam lake	4800	10.95	4.638023919	243774.5372
23	Champakulam(Amichakary)to Pullangady resort	885	15	0.6	7965
24	Pooppally Herritage homestay manimalamutt (pamba river) Manimalamutt bridge	105	7	0.3	220.5
25	Manimalamutt bridge to bhoothapandam lake	1820	6.5	0.4	4732

SL NO	CANAL (Starting and ending points)	LENGTH	AVERAGE WIDTH (in m)	AVERAGE DEPTH TO BE INCREASED (in m)	SILT TO BE REMOVED (cub.m)
26	Manimalamutt bridge to Ponga Chettikkalam temple	2430	5	0.35	4252.5
27	Nearer to Ponga Chettikkalam temple to bhoothapandam lake	279	4.5	0.3	376.65
28	Nearer to Ponga Chettikkalam temple to SIFFS Office	1710	6	0.5	5130
29	Pandarakkulam to pandarakkulam Mini kalpakavady toddy shop	980	2	0.25	490
				TOTAL	**329994.6786**

According to Table 1.1, 3,29,994.6786 cubic meters of mud is to be removed. Excavating machines built for this purpose can be used. Excavators are available in 20,32,60,120 categories. The below table shows the cost and the details of Excavators.

SL NO	CANAL (Starting and ending points)	LENGTH	AVER-AGE WIDTH	SILT TO BE RE-MOVED	MODE OF EX-CAVATION	COST
1	Pulikkalkkavu temple to heaven lake resort	854	2	5220.95	Man power	1134989.13
2	Pandarakkulam to pandarakkulam Mini kalpaka-vady toddy shop	980	2	490	Man power	106521.7391
3	Chempumpuram hospital to motorthara	174	2.5	108.75	Man power	23641.30435
4	St Antony's church to Kanjippadam	1240	4	2480	20 T	457846.1538
5	Syro-Malabar church(mathoor thycheri road) to house boat link	931	4.5	1927.17	20 T	355785.2308
6	Nearer to Ponga Chettikkalam temple to bhooth-apandam lake	279	4.5	376.65	20 T	69535.38462
7	Pongavan kalam to ambalam road	169	5	295.75	32 T	31367.42424
8	West of Thottakkad junction to North of Mathoor temple.	1890	5	3780	32 T	400909.0909
9	Manimalamutt bridge to Ponga Chettikkalam tem-ple	2430	5	4252.5	32 T	451022.7273

SL NO	CANAL (Starting and ending points)	LENGTH	AVER-AGE WIDTH	SILT TO BE RE-MOVED	MODE OF EX-CAVATION	COST
10	North of Kondakkal bridge to Kallooram (River Pookkaitha)	1210	5.48	1465.1859	32 T	155398.5045
11	Thottakkadu to Paruthikkalam	1690	5.5	4647.5	32 T	492916.6667
12	Puthuvana to moonnukalam bridge	190	6	115.5631	32 T	12256.69242
13	Nearer to Ponga Chettikkalam temple to SIFFS Office	1710	6	5130	32 T	544090.9091
14	North of FCC Convent to vazhapparambu (River Pookkaitha)	1390	6.01	2483.2575	32 T	263375.7955
15	Janardhanan shop to Lake resort	1370	6.21	2073.5081	32 T	219917.5258
16	Kurishupally to kanjippadam jangar kadavu	1740	6.4	2815.724	32 T	298637.3939
17	Manimalamutt bridge to bhoothapandam lake	1820	6.5	4732	32 T	501878.7879
18	Thekkumthara bridge to Motor thara	289	6.75	197.2425	32 T	20919.65909
19	Pulikkalkkavu temple to Paruthikkalam (pamba river)	3200	7	11200	32 T	1187878.788

SL NO	CANAL (Starting and ending points)	LENGTH	AVER-AGE WIDTH (in m)	SILT TO BE RE-MOVED	MODE OF EXCA-VATION	COST
20	Pooppally Herritage homestay manimalamutt (pamba river) Manimalamutt bridge	105	7	220.5	32 T	23386.36364
21	Kondakkal to Ganapathi temple champakulam	267	8.9	223.909	32 T	23747.92424
22	Janardhanan shop to martin palli	718	8.98	2435.938	32 T	258357.0606
23	From near to vaishyambhagam post office (River Pookkaitha)	150	9.875	1846.0875	32 T	195797.1591
24	North of Nedumudy panchayath(pamba river) to bhoothapandam lake	4800	10.95	243774.5372	70 T	12188726.86
25		2590	12.77	6335.5506	70 T	316777.53
26	Champakulam(Amichakary)to Pullangady resort	885	15	7965	70 T	398250
27	Near to Ra palam north to sndp	539	15.25	4192.0725	70 T	209603.625
28	St Antony's church to Pookkaithayar	1050	18.43	3626.66	70 T	181333
29	North of Nedumudy panchayath to St'joseph chappal manapra (River Pookkaitha)	743	22.42	5582.67265	70 T	279133.6325
			TOTAL	**329994.6786**	**TOTAL EXPENSE**	**20804002.06**

The cost of removing mud from the entire canals of Nedumudi Panchayat as per Table 1.3 is Rs 20,80,4002. The first phase of deepening may require the removal of large quantities of mud. Because the amount of mud that has accumulated over a long period of time, the large amount of mud needs to be removed. Another aspect of the project is the managing the sludge.

Currently there are three methods of handling sludge.

1. Bund construction on canal banks
2. Increasing the height of public areas of the panchayat
3. To build road under PWD

BUND ON CANAL BANKS

According to the table1.4, 13.4 km of canals have stone wall. The rest of the area has common bunds. Bunds can be built to a height of 0.4 m, in the case of having stone wall and 0.6m in the case of no stone wall in the same area. In the stone wall area, sludge can be used on an average of 0.2 cub.m per m above the stone wall, and 2.04 cu.m on the banks having no sidewall .From figure 1.5 it is clear that this will increase the capacity of the current canals by 5.5 %.

Type	Height of the Bund(m)	Length of canal (in m)	Average width of canal	Increased Capacity (cu.m)
Area having stone walls	0.4	13400	2.61	13989.6
Area haven't stone walls	0.6	22003	2.61	34456.698
			TOTAL	48446.298

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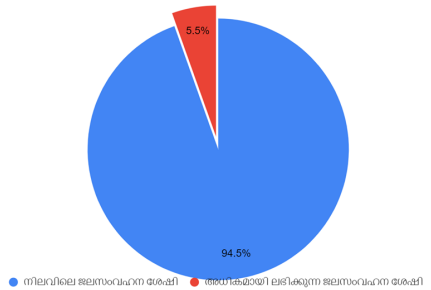


Figure 6

To accomplish the process in the whole canals of panchayath would require a total of 47566.12 cub.m of sludge as per table 1.6. This is 14.5 % of the total available sludge as per table (1.4). 44.5% of the total sludge is required to raise the area of panchayath and 40 % to be used by the residents of the area.

Type	Area of bund (in sq.km)	Length of land (in m)	Required silt (cub.m)
Area having stone walls	0.2	13400	2680
Area haven't stone walls	2.04	22003	44886.12
		TOTAL	**47566.12**

Table 1.5

To make the bunds long lasting under the project, there is a need to include coir geotextile. To reinforce geotextile, vegetation such as fodder grass and *Ramacham* etc should be planted to increase the strength of the bund.Therefore the use of geotextiles to create a large number of local jobs through canal rejuvenation will benefit the workers in the traditional sector namely coir sector.According to table 1.6 a localised job creation worth Rs.15,99,401 can be created through bund strengthening process.

Type	Length for bund construction	No. of unskilled laboures required for 1 km bund construction per day	Unit wage of unskilled laboures	Cost 1	No.of skilled laboures required for 1 km bund construction per day	Unit wage of unskilled laboures	Cost 2	Total (cost 1+ cost 2)
Area having stone walls	13.4	15	271	54471	5	750	50250	**104721**
Area Not Having stone walls	22	140	271	834680	40	750	660000	**1494680**
			Total	**889151**			**710250**	**1599401**

Table 1.6

Protection of clay bunds

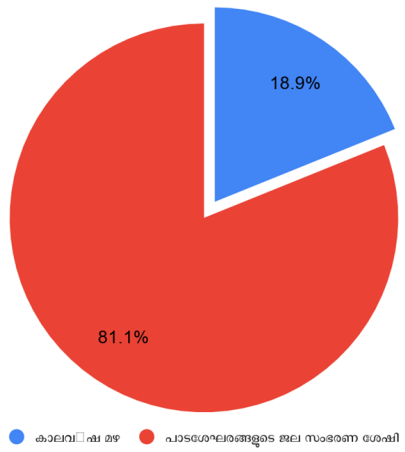
Bunds made of geotextile and sludge should be planted with vegetation and maintained properly. It is possible to plant in a total of 35 km of bund throughout the panchayath. Considering the nature of the soil in kuttanad fodder grass is the most practical choice. There is currently 564 number of cattle in the Panchayat. All these require 62050 quintels of order per year at 170 quintels per day. According to current market condition fodder is worth Rs.500 per quintal. From 35403 sq.m area a total of 14161 quintels of order can be produced from 4 crops in a meter area every 2 months.This only 23% of the quantity of fodder required by the panchayath.This is evidence from the increasing demand for fodder farming .Based on table 1.8 fodder cultivation in each ward is monitored by kudumbasree workers of the area.

Sl no	Name of the canal	Wards by which canals passess	Area of bund for fodder-grass cultivation(in sq.m))	Production :10 kg / sq.m /yield in 4 months (in kg)
1	*C1.1	10	743	7430
2	*C1.2	11	1210	12100
3	*C1.3	12	1390	13900
4	*C1.4	12	1370	13700
5	*C1.5	12	150	1500
6	*C1.5.1	12	289	2890
7	*C1.6	12	1050	10500
8	*C1.6.1	12	1240	12400
9	*C1.6.1.1	13	1740	17400
10	*C1.6.1.1.1	13	169	1690
11	*C1.7	8	2590	25900
12	*C1.7.1	7,13	539	5390
13	*C1.8	8,13	190	1900
14	*C1.9	9,13	718	7180
15	*C1.10	9	267	2670
16	*C1.11	14	174	1740
17	*C1.12	14	854	8540
18	*C1.13	14	931	9310
19	*C1.14	8,16	3200	32000
20	*C1.14.1	5,7	1890	18900
21	*C1.14.2	5,7	1690	16900
22	*C1	9,12,13,14,15	4800	48000
23	*C2	10	885	8850
24	*C3	6,7	105	1050
25	*C3.1	6,7	1820	18200
26	*C3.2	1,2,3	2430	24300
27	*C3.2.1	1,2,3	279	2790
28	*C3.2.2	1,2,3	1710	17100
29	*C4	15	980	9800
		Total	**35,403**	**354030**

ROLE OF PADASHEKHARAMS IN MICRO FLOOD MANAGEMENT

It has been pointed out earlier that due to the geographical peculiarities of nedumudy panchayath, water flows from river to settlement instead of vice versa. Due to this situation it is not possible for the rainwater falling in the Panchayat to flow into the rivers through the canal.To control flooding in the panchayath the rain water should be stored inside the panchayath and drained as and when the water level of the river falls down.

As mentioned above the paddy fields are the natural reservoirs of the panchayath. According to calculations, 1 sq.m paddy field can hold upto 2 cu.m of water. From the graph 1, it is clear that the amount of rain water recovered from the monsoon is only 18.1% (6370877.118 cu.m) of the reservoir capacity of the fields. The average rainfall received during a monsoon season is 116.5 cm. As per the above estimate only 25.85 hectares of paddy fields is required to accomodate the floods. But the challenge for this is the second cultivation of paddy fields during the monsoon season. Due to the second crop planting almost all the paddy fields are covered with water. Therefore the rainwater that falls on the fields will remain there and will lead to flooding. Micro flooding can be avoided almost completely by keeping the paddy fields aside in proportion to the amount of rainwater that comes before each rainy season. Depending on the location of flood prone areas and the adjacent canals and the canals flowing through it, it will be necessary to decide which area to keep aside.



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The selection of paddy fields for the accommodation of rain water is possible in 2 ways. A few paddy fields can be moved on a turn key basis to accommodate water. The second method is to create a buffer zone for water absorption in selected large fields.The buffer is meant to convert the space inside the paddy fields into an inner paddy field and allow the water to fill inside.

POLICY MEASURES FOR THE PROTECTION OF CANALS

1. CANAL DATA BANK

Width on each 50 m interval of the current canals will be marked and mapped with the help of GIS technology and the data will be shared with the public on the panchayath website. The panchayath will be able to verify the data bank and take action on the complaints pertaining to canal encroachments in future.

2. CONSTRUCTION OF BRIDGES AND CULVERTS

The bridges and culverts currently existing in panchayath will be subjected to detailed auditing according to water flow and water transport, and plans will be drawn up to implement and rebuild the structures that will adversely affect the functioning of the canal. It will also be decided in principle that construction projects carried out under varios departments of the panchayath can be implemented with due consideration of the water flow and water transport activities of the canal.

3. MAINTENANCE OF CANALS

Maintenance of canals also need to be done after a one time cleaning. According to the current plans, the permanent maintenance plan should be fixed and implemented for deepening the canals every year. Plans to protect the bunds and the geo-textiles on it and to reinforce the bunds at regular intervals should also be implemented.

Various maps during disaster

The whole of Kuttanad lies as small lands elevated in the vast watersheds. During flood, the roads are completely submerged and the land is isolated as a large blanket covered with water. During such circumstances the only land near to nedumudy is Alappuzha and Changanacherry. When this situation arose in 2018, rescue teams from Alappuzha and Changanacherry took up this challenge and came on rescue boats to help people. The challenge they faced during that time was to identify road routes to each area.All the road were under water and if a person from an isolated region asks for help, it was difficult for the rescue team to reach that person. During such situations there is no way to identify the area where people need help and a person without local knowledge finds it difficult . Another crisis faced by the people in the Panchayat is that not everyone will be able to find a rescue camp near their home and find the help and equipment needed during a flood.

During the 2018 flood, the team of Canalpy in Alappuzha, part of the IIT Bombay and Kila project, came up with an innovative solution to the problem. There were a lot of isolated regions during that time in Kuttanad. These camps were deserted because they were situated at regions where it was very far from main canals and boats finds difficult .The camps near main canals received great assistance in camps , temporary habitation ,drugs and food substances but the hardest part in this was people living within innermost camps was not receiving any help from organisations other than government. With the help of GIS technology, CANALPY workers were able to solve the crisis.

The activists of the Canalpy and Kerala Sasthra Sahithya Parishad traveled in small boats and collected details of all these isolated camps and all the necessary information such as the members of the camp and the personnel of the camp with the mobile application OSM Tracker. The unique feature of this application is that it can be used to map the collected information to a map along with the geographic information of the location. With this gathered information , the group devised a map for public use and shared it widely. With the help of this map, a large number of volunteers were able to locate these isolated camps and help them.

A localised form of this model is suitable for Nedumudy panchayath also. With the help of GIS technology, currently deployed rescue centers and resources at risk, the GIS technology can be deployed to a common platform so that people can quickly locate their rescue centers and gather. And with the help of this map, people can quickly find places to coordinate rescue operations in the event of a major flood.For this to be done, all the resources and resources in the area must be assembled with the help of the OSM Tracker application and the information will be shared on the Panchayat website with the help of a free software called QGIS. From this Web site,either scan the QR code on your mobile phone or type the link from web site on your phone, people can save a disaster map to their phone and use them .

The disaster map can only work effectively if more information is added to the map that has already been created and updated eventually.For this, volunteers in the area must be trained and a technical team be trained in map management.

Mapping of infectious diseases and bedridden patients

The spread of infectious diseases is one of the biggest crises in the panchayat that is caused by micro floods every year.Waterborne diseases such as diarrhea, cholera, jaundice, leptospirosis, and mosquito-borne diseases like malaria, chikungunya and dengue fever are very likely at this time.The most effective measures at this stage are to initiate the preventive response during the outbreak of the disease itself and prevent the spread of the disease. The activities of CANALPY and Kerala Sasthra Sahithya Parishad During the Flood 2018 can be modeled.

The group had implemented very effective disease mapping activities during the first floods in Kuttanad in July 2018.As part of this campaign, volunteers came to Kuttanad camps and collected information about fever and diarrhea every day with the help of free software called ODK Collect.With the help of the ODK Collect application, which is also available in the internet, such symptoms can be mapped along with the geo reference point, which can then be coded and transferred to the Department of Health for preventive measures, thus preventing the spread of the disease.

This model is suitable to be deployed in the panchayat. The program can be led by Asha Volunteers of the Panchayath.The plan also includes a mobile app for collecting information such as illness information and geo-reference as well as a monitoring system for observing illness information. The mobile app running on the Android platform should be built locally and the Asha volunteers in their respective areas should be divided into different zones.During flood or similar disaster, asha workers should start volunteering and visiting all the homes in their assigned area and collecting patient information.All information compiled by ASHAs will be made available in a public domain supported by cloud technology. It should also be able to provide information to the area's monitoring team immediately on their computer with the help of software built into the data collection.Based on this information, the Response Team, part of the Health Department will be able to start work. This team can begin prevention activities immediately after evaluating the symptoms.

As part of the Disease Mapping in the Flood of 2018, the collection of disease data was not the only activity. From each camp, the patients' information including the phone number of their relatives was collected. Although the group had gathered information on the basis of access to health services, it was used on a different level during the Great Flood followed by small Flood in July 2018. It was on August 15, 2018 that there was a warning to immediately relocate everyone in Kuttanad to Alappuzha. However, it was not possible for families with bedridden patients to move to Alappuzha very soon. In a nutshell, having a bedridden patient in a house could endanger the entire family. It is in this context that the information of bedridden patients collected as part of the disease mapping was very useful.Based on this data, the Alappuzha team first transported the sick patients to the wards set up at the Alappuzha General Hospital.

Around 320 bed patients were safely brought to Alappuzha as part of this operation. In Kuttanad, only 3 people died in the Great Flood of 2018.The number of deaths would not have been so dramatically increased if information of bedridden patients was not available at that time.

Considering this, Nedumudy panchayath has included the database of bedridden patients in the disaster management plan.With the help of a mobile app currently built for disease mapping, ASHA workers can collect information of bedridden patients. This collection of data can be done before every rainy season to collect the statistics of the sick patients in the panchayat and also to arrange the vehicles and hospital facilities for the immediate evacuation of the bed patients during the time of a flood like disaster.

SL NO	PROJECT	TYPE	EXECUTION	HELP
1	Revitalization of canals	Deepening of canals	Panchayath	• Block panchayath • Irrigation department
		Bund construction on canal banks	Panchayath	• Block panchayath • MGNREGS
		Protection of bunds	Panchayath	• Kudumbasree mission
2	Micro flood Management	Microflood management with the help of padashekharams	Panchayath	• Block panchayath • Padashekhara committee
3	Policy measures for canal protection	Canal data bank	Panchayath	• Irrigation department • KILA
		Upgrading of bridges and culverts	Panchayath	• Irrigation department • PWD
		Construction control of bridges and culverts	Panchayath	• Irrigation department • PWD
		Maintenance of ca-	Panchayath	• Irrigation department • PWD

SL NO	PROJECT	TYPE	EXECUTION	HELP
4	Maps during disaster	Technical support	Panchayath	KILA
		Mapping	Panchayath	KILA
		Management group	Panchayath	KILA
5	Mapping of Infectious diseases and bed patients	Technical supports for mobile applications	Panchayath	KILA
		Group of Asha volunteers	Panchayath	KILA Health department
		Monitoring system	Panchayath	KILA Health department
		Response team	Panchayath	KILA Health department
		Data bases of bed patients	Panchayath	KILA Health department

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Chapter-7

Important Phone Numbers

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This chapter contains the telephone numbers of officers, key offices and related personnel assigned to assist the residents of the area involved in the panchayat/municipality/corporation during the time of disaster management. In addition to the health service and veterinary services, helpline numbers such as police, fire and rescue, childline, women's helpline and ambulance services are also included here. This chapter includes all necessary phone numbers for emergencies, making it easier to access services during and after disasters. In this chapter, the telephone numbers of all persons and services that need to be contacted during disaster relief are accurately recorded so that locals know exactly how to respond and whom to contact.

Table 7.1 Details of Wards in Grama Panchayat /Municipality / Municipal Corporation

This list contains information on grama panchayath ward members and contact numbers. This information is useful for emergency assistance

SL NO	Name of Ward	Ward Number	Name of Ward Member	Phone Number
1	Ponga south	1	Sreedevi.C	9539462341
2	Ponga	2	Yashodha Sukumaran	9645306828
3	Chennankary	3	Sudha Jacob	9847949817
4	Nedumudy	4	Jameela Mohandas	9072601966
5	Nedumudy south	5	M.K Radhakrishnan Nair	9946731330
6	Thekkemuri north	6	M.Hemalatha	9497634540
7	Thekkemuri	7	Mariyamma Joly	8547585340
8	Champakulam north	8	V.Sasi	9497335317
9	Champakulam	9	Chacko M.K	9495069752
10	Manapra	10	James Thirunilam	9961589375
11	Nadubhagam	11	Binu Sreekumar	9747482557
12	Vaishyambhagam south	12	K.P Aniyappan	8943378807
13	Vaishyambhagam north	13	Muraleedharan A.V	9496886435
14	Chempumpuram	14	Pushpa Panickar. S	9446203298
15	Pazhayakari	15	Ruby Antony	9747003897

Table7.2. Other important phone numbers in GramaPanchayat/Municipality/Municipal Corporation

This list contains information and contact numbers of district-level officials and Representatives.

Sl No	Name	Contact Number
1	MP	04772266220
2	MLA	04772762284
3	District Collector (Officer in charge of Dis-	04772251720
4	Thahasildar	04772702221
5	District Panchayat Secretary	04772253836
6	Block Panchayat Secretary	8281040535
7	District Treasury Officer	04772251724
8	District Registrar	04772253257
9	Sub Collector	9447495002
10	District Planning Officer	04772252064
11	Executive Engineer PWD	04772251789
12	Executive Engineer Road	04772269710
13	Executive Engineer Water authority	04772242372

Table 7.3 important contacts of offices in GramaPanchayat /Municipality / Municipal Corporation

This list contain information on various officials and their contact numbers. This information is useful for emergency assistance and rescue operations.

SL NO	Name of Office	Contact Person	Contact Number
1	Village Office	Village Officer	8547611905
2	Agriculture Office	Agriculture Officer	9447102471
3	Veterinary Office	Doctor	9446926099
4	Police Station	Sub Inspector	9745769425
5	BSNL Office	Executive Engineer	0477 273 7200
6	Block Office	Block Officer	0477 270 2294
7	KSEB Office	Executive Engineer	0477 273 6238
8	Fisheries Office	Assistant Director	0477 225 2367
9	Fire and Rescue	District Fire Officer	0477 223 0303
10	Financial Institutions	SBT DCB	0477 273 6253 0477 273 6221

Table 7.4 Health Services Department

The table contains information about different hospitals, its places, and available services.

SL NO	Name of hospitals	Place	Phone Number
1	Govt.Homeo Dispensary	Champakulam	9497663163
2	Govt Ayurveda Hospital	Champakulam	9447319190
2	CHC	Chempumpuram	9495951771
3	Private Hospital	Nedumudy	9544808380

Table 7.5 Veterinary Services

The list contains information on Veterinary Services

SL NO	Name of Clinic	Name of Surgeon / Doctor	Place	Phone Number
1	Veterinary Dispensary Chempumpuram (Ward 14)	S. Deepa	Chempumpuram	0477 276 3317

Table 7.6 Helpline Numbers

This list contains information that can serve to warn of disasters, alert others, or assist in rescue missions.

Helpline	Phone Number
Police	0477 276 2222
Fire and Rescue	0477 227 5570
Childline	0477 224 1644
Crime Stopper	0477 224 5541
Women Helpline	0477 223 7474
Railway enquiry	0477 223 8465
Railway Alert	0477 225 3965
HAM Radio Operator	7356814873
Ambulance Services	108(CHC)