स्वास्थ्य एवं
परिवार कल्याण मंत्रालय
MINISTRY OF
HEALTH AND
FAMILY WELFARE

सत्यमेव जयते

LAKSHADWEEP

STATE ACTION PLAN ON CLIMATE CHANGE AND HUMAN HEALTH

National Centre for
Disease Control
Government of India

National Programme
on Climate Change
and Human Health

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2022-27

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Acknowledgement

National Programme on Climate Change and Human Health (NPCCHH) is a flagship programme of Ministry of Health and Family Welfare shaping health system response to climate change in the country with goal to reduce morbidity, mortality, injuries, and health vulnerability to climate variability and extreme weather events. The actions taken under the programme to spread general awareness, build capacity of health care workforce and strengthen health system structurally and functionally in coming years will determine our health system's adaptive capacity to increasing and compounding impacts of various climate sensitive diseases and health impacts ranging from increased vector and water borne diseases, food insecurity, heatwaves, flooding and other disasters that are predicted to be more frequent. Goal of the program is to reduce morbidity, mortality, injuries, and health vulnerability to climate variability and extreme weather.

In Lakshadweep, there is limited availability of resources such as land, freshwater, energy (electricity) coexisting with the delicate ecosystem (coral reefs and lagoon) of the islands. This is where the importance of NPCCHH in Lakshadweep Islands.

I am confident that this action plan will be useful managing and monitoring the health impact and shape our future course of action in building climate resilience in this tiniest Union Territory of the Country.

I take this opportunity to acknowledge the contributions from the team of Health department in shaping the document and express my gratitude for their hard work. I am sure that the Department of Health Services will successfully implement the plan.

Shashank Mani Tripathi, IAS
Secretary (Health)
UT of Lakshadweep

Acknowledgement

Climate sensitive illnesses are on increase due to climate change and extremes of weather either through direct or indirect impact. National Programme on Climate Change and Human Health (NPCCHH) is a flagship programme of Ministry of Health and Family Welfare shaping health system response to climate change in the country with the vision to strengthen health of citizens of India against climate sensitive illness, especially among the vulnerable like children, women and marginalized population.

Climate change may negatively affect human health through a number of ways, but the commonly experienced are increased frequency and intensity of heat waves, rise in heat related illnesses, Air Pollution and health related issues, Vector borne diseases and Water borne illnesses. Over the years, global warming and climate change proponents have established that small islands nations are especially vulnerable because of their low-lying, ocean-fronted borders, relatively small land masses and exposure to extreme weather and climate variability.

As such U.T. of Lakshadweep has much importance in dealing with Climate change and its impact. Hence this Dr. Giri Sankar R, IAS Joint Secretary (Health) UT of Lakshadweep.

Dr. Giri Sankar R, IAS
Joint Secretary (Health)
UT of Lakshadweep

Acknowledgement

Climate change is change in the state of the climate due to natural internal processes or external force and is defined as: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." It affects social and environmental determinants of health like —clean air, safe drinking water, sufficient food and secure shelter.

High temperature is known to increase the level of 'ground level ozone' and other 'climate altering pollutants' other than carbon dioxide, which further exacerbate cardiorespiratory and allergic diseases and certain cancers. Beside these, there is increase in transmission and spread of infectious diseases, changes in the distribution of water-borne, food borne and vector- borne diseases and effects on the risk of disasters and malnutrition.

The vision of NAPCCHH is to strengthen health of citizens of India against climate sensitive illness, especially among the vulnerable like children, women and marginalized population. With a goal to reduce morbidity, mortality, injuries and health vulnerability to climate variability and extreme weathers.

Climate change may result more turbulent seas, storm surges, changing ocean currents and diminished protection from coral reefs due to bleaching (a precursor to mass death of corals) which poses an existential threat to Lakshadweep and hence NAPCCHH needs much importance in Lakshadweep.

I would like to extend sincere thanks to Secretary (Health), Joint Secretary (Health), Mission Director, NHM for the support and approval of the action plan.

Dr Shrikant R Tapdiya
Director of Health Services
UT of Lakshadweep

Acknowledgement

The State Action Plan on Climate Change and Human Health for the UT of Lakshadweep was prepared by the Directorate of Health Services, Administration of Lakshadweep. The document has been prepared with reference to national guidelines and state protocols to augment the healthy life style in ever changing climate. The document has been prepared with the technical assistance provided by National Programme on Climate Change and Human Health (NPCCHH) division, National Centre for Disease Control, New Delhi.

The Lakshadweep archipelago comprises of the most extensive coral reef and atoll system in the Indian Ocean as well as the largest atoll system in the world. The proposed 'Mission on Health' under the 'National Action Plan on Climate Change' proposes a multi-pronged approach to address the health- related aspects of climate change. It envisioned to strengthen health of citizens of India against climate sensitive illness, especially among the vulnerable populations like children, women and marginalized population. The goal is to reduce morbidity, mortality, injuries and health vulnerability to climate variability and extreme weathers.

Climate-sensitive health outcomes of concern in small islands include malaria, dengue, cholera and other diarrheal diseases, heat stress, skin diseases, acute respiratory infections and asthma. Rise in temperature will increase incidents of heat stress whilst projections for reduced rainfall, for instance, will reduce the amount of available freshwater for human use and consumption, leading to the increased risk of disease.

I would like to extend sincere thanks to Secretary (Health), Joint Secretary (Health), Director of Health Services for the support and approval of the action plan. I would also like to acknowledge the cooperation extended by the IDSP unit, NCD unit, NVBDCP and other program managers and technical staffs under NHM for supporting in the completion of this State Action Plan. The Department also extends sincere thanks to Environment & Forest and Science & Technology department and other line departments for their valuable input.

Dr K Shamsudheen
Mission Director (NHM)

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The coral islands of Lakshadweep are one of the low lying small groups of islands in the world. The low level of the islands of Lakshadweep makes them very sensitive to sea level rise and more chance of future threat to these island chains due to global climate change.

Climate-sensitive health outcomes of Lakshadweep islands include malaria, dengue, cholera and other diarrheal diseases, heat stress, skin diseases, acute respiratory infections and asthma. Rise in temperature will increase incidents of heat stress whilst projections for reduced rainfall, for instance, will reduce the amount of available freshwater for human use and consumption, leading to the increased risk of disease.

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Dr Nishad Khan K
State Nodal Officer (NPCCHH)

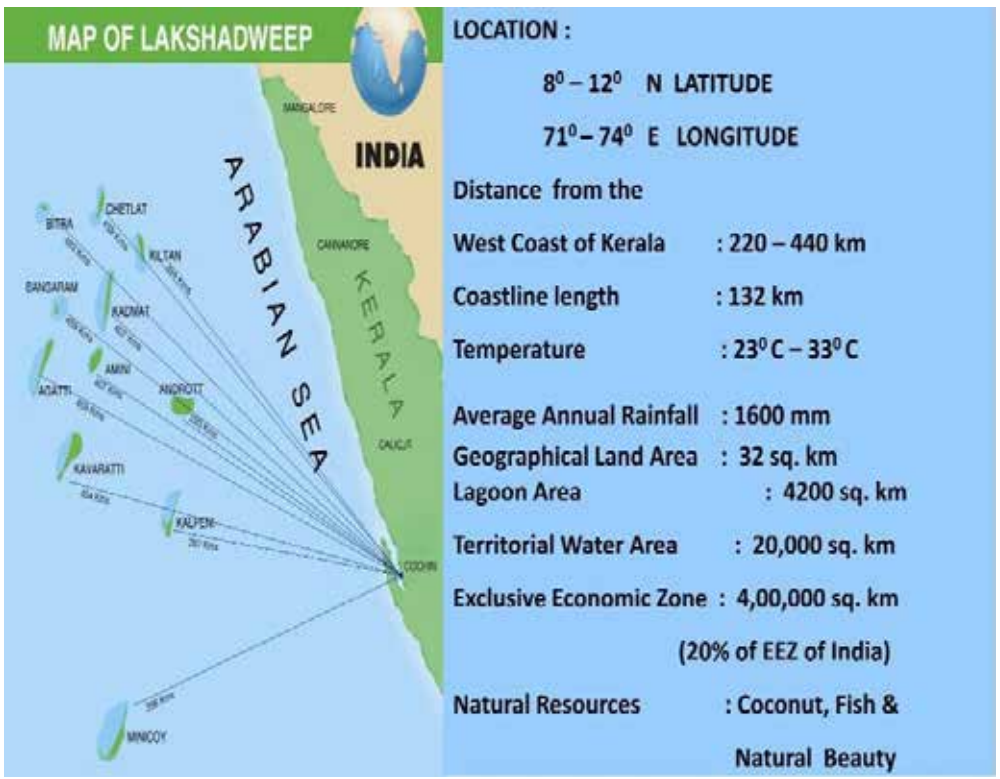
Executive Summary

Background: Overview of Lakshadweep

Lakshadweep is the smallest Union Territory (UT) of India laying scattered in the Arabian Sea and is also the establishment with the least population in India. It is a group of islands situated 200 to 400 km off the south western coast of India scattered in the Arabian Sea, between 80 and 12º North latitude and 71º and 74º east longitude. The islands have a total area of 32 sq. km and the lagoons enclosed by the atolls cover an area of 4200 sq. km. Surrounding territorial waters extend to 20000 sq. km and exclusive economic zone (EEZ) to 400000 sq. km.

Ten of the islands are inhabited while another 26 are uninhabited. Agatti has an airport with direct flight service from Kochi. The islands are restricted area and an entry permit from the Lakshadweep administration is required to visit the islands. Alcohol is prohibited in all the inhabited islands except in the tourism island of Bangaram.

Figure 1: Map of Lakshadweep



Source: Location map of Lakshdweep. Lakshadweep.gov.in

The island territory is bestowed with challenges which are unique to it and also blessed with unmatched natural beauty, peace, social harmony and high literacy. The tiny land mass which is isolated from the mainland, having difficulties in transport sector, lack of connectivity, more prone area to natural calamities etc are some of the bottlenecks that come in the way of development.

Each island is an entity scattered in the sea, which itself is another hurdle as each island has to be catered individually. There is lack of avenues for generation of adequate resources even for daily needs. Due to this inherent constrains those have been posed by nature, no major industry is possible in this territory.

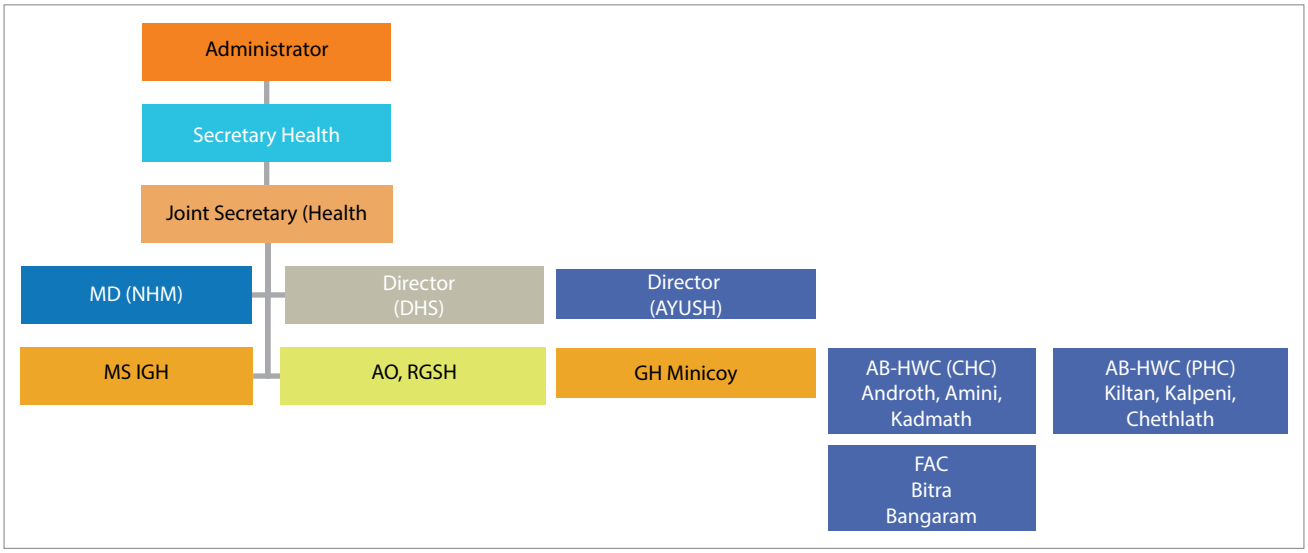
Geography and Demographics

Population of Lakshadweep is 64,473 (census 2011) and the population density is over 2000. Surface area of just 32 sq. km. Kavaratti is the headquarter of Lakshadweep. There is no road connectivity between islands. Only routine way to travel between islands in Lakshadweep is through sea. Interisland distance varies from about 10 to 200 km .There are no slums here. There are 11541 households and 94.8% belong to scheduled tribe. The majority of indigenous population is Muslim. Average literacy rate of Lakshadweep is 91.85%. Lakshadweep has a sex ratio of 946 females for every 1000 males.

Nearly all households have electricity and improved sanitation facilities. Industry activity in Lakshadweep revolves around small scale industries of coir and fish. The main occupation of people is fishing and coconut cultivation, with tuna being the main item of export. The economy of Lakshadweep depends largely on coconut cultivation, fishing, coir industry, and tourism. The terrestrial fauna is mostly domestic animals like the goat, cow and cat. GDP of Lakshadweep amounted to US$80 million in 2010. Lakshadweep Development Corporation Limited (LDCL) is also producing value added products from fish and coconut resources abundantly available in the islands through its canning factory at Minicoy, Maas packing unit at Agatti and three coconut processing units located at Kadmat, Androth and Kalpeni.

Health Infrastructure

Lakshadweep islands has fairly good health infrastructure with 1 District Hospital, 2 Sub District Hospital (1 referral Hospital) along with 6 AB-Health & Wellness Centre apart from these, two FACs are also there one each at Bitra and Bangaram islands and in addition to this allopathic centers there are



1 Deen Dayal Upadhyaya AYUSH Hospital, 7 AB-AYUSH Health & Wellness Centre& 2 Co-located AYUSH Dispensary also available at various Islands. As there is a total absence of private health facilities, all the health requirement of the public has to be met under public sector.

Evolution of Health system

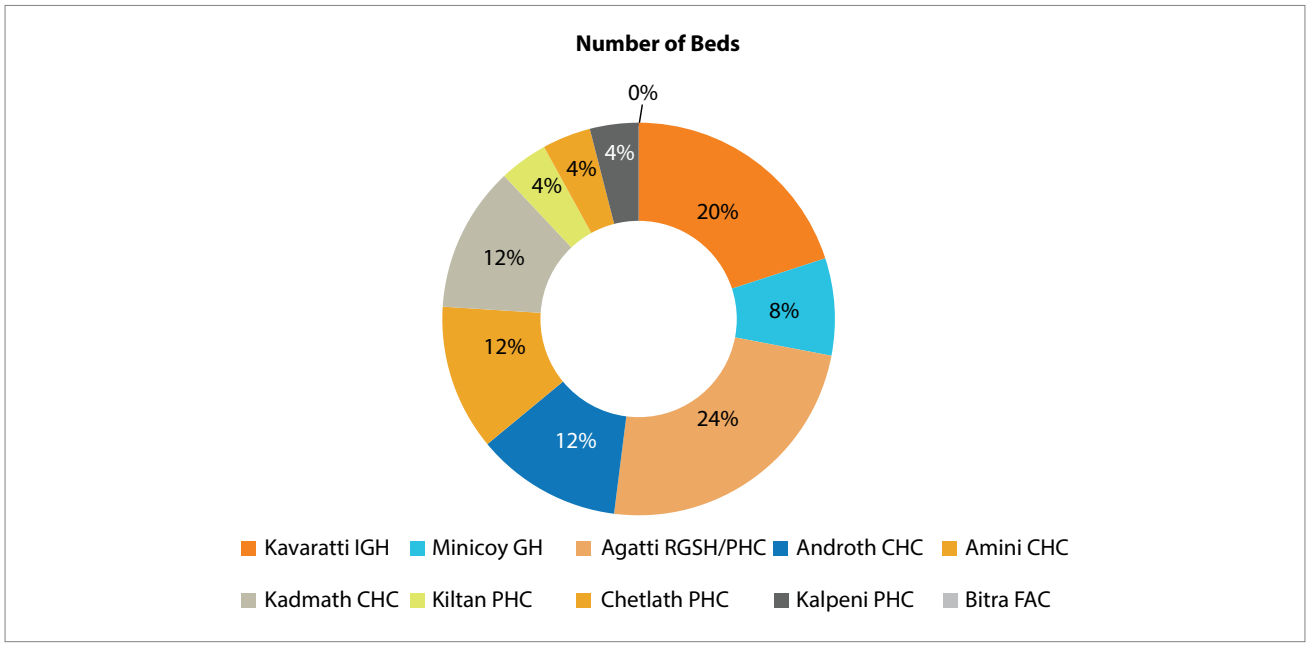
- 1874 – First dispensary at Amini Island
- 1890 – Second dispensary at Minicoy Island
- 1901 – Shifted dispensary to Androth Island
- 1936 – Started at Agatti Island
- 1949 – Started at Kalpeni Island
- 1956 – Started at Chetlat Island
- 1962 – All dispensaries upgraded to PHCs
- 1964 – Started hospital at Kavaratti island with 40 patients (later named as Indira Gandhi hospital

Health Facilities At a Glance

Institution	Number	Sanctioned Bed Strength
District Hospital	1	50
Sub District Hospital	2	70
AB-Health & Wellness Centre	6	120
Sub Centre	14	0
First Aid Centre	2	0
Co-located AYUSH Dispensary	1	0
AB-AYUSH Health & Wellness Centre	7	0
Deen Dayal Upadhyaya AYUSH Hospital	1	20
Total	**34**	**260**

PATIENTS DATA (Month & Bed Occupancy Rate)

Month & Year wise Bed Occupancy Rate for the year 2022 for various Health Facility in Lakshadweep					
Sl. No.	**Island**	**Hospital**	**No. of Beds**	**In Patient**	**BOR Per Year**
1	Kavaratti	IGH	50	8449	46.3%
2	Minicoy	GH	20	1616	22.1%
3	Agatti	RGSH/AB-HWC	50	4349	19.8%
4	Androth	AB-HWC	30	5891	53.8%
5	Amini	AB-HWC	30	3667	33.48%
6	Kadmath	AB-HWC	30	1372	12.5%
7	Kiltan	AB-HWC	10	778	21.3%
8	Chetlath	AB-HWC	10	537	14.7%
9	Kalpeni	AB-HWC	10	827	22.6%
10	Bitra	FAC	0	2	0
Total			**240**	**27488**	-


Number of Beds
0%
4%
4%
4%
20%
8%
12%
12%
24%
12%
Kavaratti IGH
Minicoy GH
Agatti RGSH/PHC
Androth CHC
Amini CHC
Kadmath CHC
Kiltan PHC
Chetlath PHC
Kalpeni PHC
Bitra FAC

PART I

Climate Change and its Health Impacts

CHAPTER 1

Introduction

Impact of Climate Change in States and its Health Issues

Climate change is defined as: "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods." It affects social and environmental determinants of health like clean air, safe drinking water, sufficient food, and secure shelter.

Climate change may negatively affect human health in several ways, but the most commonly experienced are increased frequency and intensity of heat waves leading to a rise in heat-related illnesses and deaths, increased precipitation, floods, droughts, and desertification leading to loss of lives. High temperature is known to increase the level of 'ground level ozone' and other 'climate-altering pollutants' other than carbon dioxide, which further exacerbate cardio-respiratory and allergic diseases and certain cancers. Besides these, there is an increase in the transmission and spread of infectious diseases, changes in the distribution of water-borne, food-borne, and vector-borne diseases, and effects on malnutrition.

The United Nations Framework Convention on Climate Change (UNFCCC) came into force on 21st March 1994. Since then, many steps have been initiated to reduce the effect of climate change at meetings like "Rio Convention 1992", Kyoto protocol 1997","Male' Declaration 1998", "Convention of Parties", "Cancun Agreement 2010"," Durban Platform 2011", and "Nationally Determined Contributions (NDCs) at Conference of Parties 21".

India is a signatory to the "Male' Declaration", wherein the need to strengthen the health sector has been identified so as to make it climate resilient. According to Male' Declaration, it is desired that healthcare facilities should be prepared and be made climate-resilient, particularly to be able to withstand any climatic event, and that essential services such as water, sanitation, waste management, and electricity are functional during such events. Further, to achieve resilient healthcare services, the health department has to undertake measures to initiate the greening of the health sector by adopting environment-friendly technologies and using energy-efficient services.

Initiatives undertaken by the Government of India, to institutionalize climate change-related initiatives are the identification of the Ministry of Environment, Forest & Climate Change (MOEF&CC) as the Nodal Ministry, formulation of National Environmental Policy 2006 and the Formulation of Prime Minister's Council on Climate Change for matters related to Climate Change.

MoEFCC developed National Action Plan on Climate Change with eight missions. Later on, four new missions (including Health Mission) were identified. The Health Mission aims to reduce climate-sensitive illnesses through integration with other missions under National Action Plan for Climate Change (NAPCC) as well as through programs run by various ministries. As a follow-up action, the Ministry of Health and Family Welfare (MoHFW) constituted a National Expert Group on Climate Change & Health (NEGCCH) to prepare National Action Plan on Climate Change and Human Health (NAPCCHH) and recommend strategies for indicators, mitigation, capacity building, etc. National Centre for Diseases Control (NCDC) is identified as the 'technical nodal agency' by MoHFW for the proposed National Mission on Health.

Under this programme, the states and the union territories were encouraged to develop state-specific action plans on climate change and human health. In this regard, the Lakshadweep Pollution Control. It is also responsible for facilitating the line departments in mobilizing climate funds for the implementation of various mitigation and adaptation measures. Besides, the Cell plays a key role in integrating the scattered knowledge base on climate change in the U.T. and making it available on one platform. Capacity building and knowledge dissemination on climate change at the individual, institutional, and systemic levels are other important activities.

The impact of climate change on the health needs to be taken care of as Lakshadweep is at a high risk of experiencing climate-related illnesses. The State Action Plan on Climate change and Human Health, prepared for Lakshadweep for five years i.e. 2022 to 2027 under NPCCHH, focus on the plan of action to adapt to these climate vulnerabilities in the UT.

CHAPTER 2

Climate Vulnerability

The Union Territory of Lakshadweep (UTL) is the only atoll coral island chain in India. The Lakshadweep archipelago comprises of the most extensive coral reef and atoll system in the Indian Ocean as well as the largest atoll system in the world. Apart from harboring significant biological diversity and acting as the breeding grounds for fishery stock, coral reefs also act as the 'natural defense mechanism' against sea- surges and storms in the Islands.

The islands are geographically isolated with a maximum distance of more than 400 km from the mainland, and have to depend on mainland for almost everything. Connectivity poses a very severe problem, both for the quality of life and for marketing of local produce in the islands. The distance from mainland affects the mobility of people for education, employment, social and religious purposes, medical treatment etc.

DEMOGRAPHICS	
According to 2011 Census	
Total population	64,429
Males	33,106
Females	31,323
Population density	2013 persons per sq. km
Area	32.69 sq km
Land use area	26.89 sq km
Total islands	36
Inhabited islands	10
Literacy	92.28%
Male literacy	96.11%
Female literacy	88.25%
Growth rate (decadal %)	6.23%
Sex ratio	946

Source: Census Report (2011)

Details of Inhabited Islands of Lakshadweep

Name of island	Land area (km²)	Population	Location
Chetlat	1.14	2347	11°42°N 72°42°E
Bitra	0.10	271	11°33°N 72° 09°E
Kiltan	2.20	3946	11°29°N 73° 00°E
Kadmat	3.20	5404	11°14°N 72°47°E
Amini	2.59	7661	11°06°N 72°45°E
Agatti	2.70	7566	10°50°N 73°41°E
Androth	4.90	11191	10°50°N 73°41°E
Kavaratti	4.22	11221	10°33°N 72°38°E
Kalpeni	2.79	4419	10°05°N 73°38°E
Minicoy	4.80	10447	08°32°N 73°17°E

Lakshadweep Weather Averages

Months	Average Temperatures			Average Precipitation	Wet Days	Relative Humidity	Average wind Speed
	Minimum (°C)	Maximum (°C)	Mean (°C)	Rainfall (mm)	(>0.1 mm)	(%)	(Beaufort)
January	23	29	26	35	3	72	2
February	24	29	27	25	2	72	2
March	25	30	28	16	2	72.0	2
April	27	31	29	52	4	74	2
May	26	31	29	200	12	77	2
June	25	30	28	293	21	80	3
July	24	29	27	212	19	80	3
August	25	29	27	200	16	80	3
September	25	29	27	144	14	79	3
October	24	29	27	185	13	78	2
November	23	29	27	141	10	77	2
December	23	29	26	76	5	74	2

Source: http://www.climatetemp.info/lakshadweep/

Sea Level Rise

It has long been recognized that islands on coral atolls are especially vulnerable to a combination of impacts, and it is argued that the risk from climate-induced factors constitutes a dangerous level of climatic change to atoll countries. The future of atoll island geomorphology has been predicted using both geological analogues and simulation modelling approaches. Using a modified shoreline translation model, it was found that, with sea-level rise, ocean shores will be eroded and sediment re-deposited further lagoon ward, assuming that the volume of island sediment remains constant.

Researchers have warned that the region most vulnerable to inundation from accelerated sea level rise is the UTL archipelago. The impact of accelerated sea level rise on coastal regions and islands and the ability to adapt to environmental changes of a particular shoreline depend on local topographic characteristics.

The UTL islands off the south-west coast of India, with a maximum height of 4 m above present mean sea level, may be particularly vulnerable to the consequences of sea level rise due to the greenhouse effect. Available data on the topography of Kiltan, Kavaratti, Kadmat, Kalpeni-Cheriyamand Agatti-Bangaram islands suggest that the predicted sea level rise scenario value of 1 m may be responsible for 19, 11, 19, 21 and 18% (respectively) land loss in these islands. Using the records of coastal tide gauges in the north Indian Ocean for more than 40 years, it has been estimated, that sea level rise was between 1.06-1.75 mm per year. These rates are consistent with 1-2 mm per year global sea level rise estimates of IPCC. While some spatial variation within and among regions is expected, it is reported (IPCC, AR4) that sea level is projected to rise at an average rate of about 5.0 mm/yr over the 21st century, and concluded that sea-level change of this magnitude would pose great challenges and high risk, especially to low-lying islands that might not be able to adapt.

The IPCC Report (2007)52 predicts a global sea level rise of at least 40 cm by 2100 that shall inundate vast areas on the coast, and up to 88 per cent of the coral reefs, termed the "rainforests of the ocean", may be lost. Globally, sea level rose at an average rate of 1.8 mm per year over 1961 to 2003. The rate was faster over 1993 to 2003, at about 3.1 mm per year. There is high confidence that the rate of observed sea-level rise increased from the 19th to the 20th century. The total 20th century rise is estimated to be 0.17 m. It is also projected that the sea level may rise further than what it is today and with warming of the oceans, the intensity and frequency of cyclonic activities and storm surges may increase leading to large-scale inundation of the low-lying areas along the coastline. A mean Sea Level Rise (SLR) of 15-38 cm is projected along India's coast by the mid-21st century and of 46-59 cm by 2100.

Assessment of Vulnerability in Islands

Climate Change	Exposure	Who or What Affected
Sea level rise and salt water intrusion	Salinization of water lenses Less fresh water available	Human consumption and health Water suppliers Plant nurseries and parks Biodiversity, protected areas
Reduced average rainfall	Less fresh water available Drought	Aquifer recharge rates Cisterns and reservoirs Biodiversity
Increased rainfall intensity	Runoff and soil erosion	Reduction in crop production Crop quality reduced Post-harvest losses Sedimentation of water bodies Blocked storm water wells
Increased evaporation rates	Soil erosion	Farming community; crop yields Biodiversity
Decreased temperature	Reduced minimum temperature Microclimate affected	Soil biodiversity affected Reduced crop yield Crop quality reduced

Source: Adapted and Modified from Hurlston, 2004

Coastal Zone Vulnerability

Coastal Zone Erosion and Accretion Coastal erosion is a serious problem faced by the Lakshadweep islands. Maximum erosion observed over a period of 35-40 years was in the range 28 to 44 m. With a tiny landmass of 32 sq. km and lying at below a maximum of 6 m from MSL, erosion of every inch of land is a serious loss. Erosion takes place on account of natural causes like wave action as well as due to destruction of coral reefs. Similarly, the high-speed wind and huge waves hitting the seashore lead to sea erosion resulting into reduction of the size of the islands. Even otherwise, during southwest monsoon season, sea erosion takes place and many low-lying foreshore regions of the islands are washed out. The projected rise in sea level may further aggravate the scenario.

The UTL has witnessed an unprecedented flooding and erosion of some of the islands during the 2004 cyclonic storms. Studies on collection of baseline data on erosion and the accretion cycle in Lakshadweep Islands and to design and implement proper coastal protection measures and beach monitoring over a long term period were carried out by the Center of Earth Science Studies (CESS), Thiruvananthapuram, in four islands viz. Kavaratti, Agatti, Amini and Bangaram during 1990-1993. The studies revealed a net accretion of 21.43-m 3 / m in Kadmat and 11.05 m3 /m in Chetlat islands during the study period. The Kiltan Island showed net accretion as well as seasonal erosion at certain stretches. Major part of Kiltan Island has been undergoing erosion on the east coast.

Good correlation between high diffraction zones and erosion was observed. Similarly, erosion was noticed at Bitra Island (the smallest island in the UTL) mostly on the south and south-eastern sectors. Long- term shoreline changes have been estimated for these islands. The Chetlat Island exhibited maximum recession of shoreline on southeast and northeast corner whereas in the case of a baseline data on the erosion aggression cycle has indicated that the erosion pattern in the islands is controlled by the wave diffraction. Wave diffraction plays a significant role in the distribution of wave energy along the Coasts of the islands, which affects the stability of the coast. The diffraction coefficients along the boundary of the islands vary from 0.71 to 1.45. Higher diffraction is observed at the SW and SE coasts where critical erosion is observed. At the NE portion of the islands where there is no net erosion the diffraction coefficient is less.

Shore Line Changes

Island	Perimeter (km)	Length of shoreline in km		
		Erosion (%)	Accretion (%)	No Change (%)
Kavaratti	11.45	4.15 (36)	7.12 (61)	0.18 (1.5)
Agatti	16.14	9.01 (56)	6.34 (39)	0.79 (4.8)
Amini	6.67	2.45 (36)	3.85 (57)	0.37 (5.3)
Andrott	10.59	4.47 (42)	0.92 (8.6)	5.2 (49)
Bangaram	3.51	2.17 (61)	1.34 (38)	-
Kalpeni	11.85	2.53 (21)	2.01 (17)	7.31 (61)
Minicoy	23.07	9.98 (43)	3.58 (15)	9.51 (41)
Kiltan	7.81	3.64 (46	3.18 (40)	0.99 (12)
Chetlat	5.82	2.14 (36)	3.2 (55)	0.48 (8)
Kadamat	18.37	5.55 (30)	9.82 (53)	3.01 (16)

Source: CESS

Flood Prone Areas of Lakshadweep Islands

Kavaratti Island	• Major part of the island has an elevation of 3 to 4 m above MSL. • High sand bumps of > 5 m: Patches near Hujra Palli and further south. • Low-lying areas: Bordering northeast coast from south of Ottavayilpalli (south of Reference Station CSK 5) up to CSK-8 near the Administrator bungalow in the north; Patches near fisheries jetty, south of Purath Palli and south of Chicken neck
Amini Island	• High sand dunes of >5 m: North-western part • Low-lying areas: Central part of island (from Thiruvathpalli in the north to Helar Palli in the south). • Gradual slope: From eastern part to the coast.
Kiltan Island	• Major part of the island has an elevation of above MSL. • Low-lying regions: Kulikkara Palli, Kunni Palli, and North West of EliPalli. • In the eastern coast starting from Naranga Palli towards north the stretches has an elevation 0 to 2.5 m above the MSL
Kalpeni Island	• Average elevation of the kalpeni island is only 1-2 mm above MSI. • The Centre part on the southern side lies below the MSI • Low-lying areas: the eastern shoreline from Heli base to Edappalli has an elevation of 1-2 metre above MSI • The Koomel area has an elevation of only 1 metre above MSI.

Adaptive Capacity of Health Sector in UTL to Climate Change, Extreme Events and Disasters

Capacity	Status
Sanitation	• Lakshadweep islands have a total population of 65,000. The individual houses with an average population of five people have not been provided with sanitary facilities. • Attempts to provide Bio-toilets as well as community toilets and the sewage treatment systems have failed in the past because of incompatible technologies or traditional faith of the local population. • As such, the untreated sewage directly enters into the sea affecting the Coral-reef ecosystem. • This also leads to common water-borne diseases as well as epidemics particularly during the time of disaster. An urgent need of sanitary facilities with suitable technologies is recommended for all the islands.
Health	• The population of Lakshadweep Island is prone to various water borne diseases such as Diarrhoea, Cholera, Gastroenteritis, Dysentery, Infective Hepatitis, Poliomyelitis, Malaria/Filaria and some of the skin diseases. • The administration has a provision of Medical Officer attached to a community health center on each of the inhabited island and a Firstaid center at Bitra Island. Even though a special quota of 10 students in the medicine is allocated for Lakshadweep islands, there is dearth of specialists on most of these islands due to the existing recruitment policies of the government. This leads to inadequacy of the medical staff and the specialists leading to poor medical aid during the time of disaster. • Special efforts to recruit doctors with a mandatory time frame to work on islands are urgently required so as to address these gaps. Arrangement for extra manpower, doctors, paramedic's as well as storage and distribution of medicines and facilities for mobile hospitals, which can be installed on a ship/ vessel, can be considered.
Solid Waste Disposal	• Lakshadweep Administration has banned the use of plastics and non-biodegradable materials on islands. In the event of an accidental use of such materials, they are collected and incinerated on the islands. The mechanism for disposal of other biodegradable materials is being developed in a phased manner.

CHAPTER 3

Climate Sensitive Issues/Diseases Prevalent in Lakshadweep

The Lakshadweep is vulnerable for heat waves and heavy rainfall during monsoon.

The open sea coral islands of Lakshadweep are one of the low lying small groups of islands in the world. The low level of the islands of Lakshadweep makes them very sensitive to sea level rise and therefore the foremost future threat to these island chains is potential global climate change. The IPCC Report (2007) predicts a global sea level rise of at least 40 cm by 2100 that shall inundate vast areas on the coast, and up to 88 per cent of the coral reefs, termed the "rainforests of the ocean", may be lost.

Researchers have warned that in India, the region most vulnerable to inundation from accelerated sea level rise is the Lakshadweep archipelago. Available data on the topography of Kiltan, Kavaratti, Kadmat, Kalpeni-Cheriyam and Agatti-Bangaramislands suggest that the predicted sea level rise scenario value of 1 m may be responsible for 19, 11, 19, 21 and 18% (respectively) land loss in these islands. Low-lying islands are at greater risk from sea-level rise.

Androtт, Kalpeni and Minicoy lie in a cyclone belt. The remaining islands are subject to the Southwest and Northeast monsoons causing heavy damages to coconut crops, seashore land, sheds and dwelling houses that are not able to withstand cyclonic winds or in areas subject to flooding. There is no significant change in rainfall and temperature data for last 30 years recorded in Lakshadweep.

Climate-sensitive health outcomes of concern in small islands include malaria, dengue, cholera and other diarrheal diseases, heat stress, skin diseases, acute respiratory infections and asthma.

Rise in temperature will increase incidents of heat stress whilst projections for reduced rainfall, for instance, will reduce the amount of available freshwater for human use and consumption, leading to the increased risk of disease.

Flooding associated with increased rainfall and high sea levels coupled with increased surface air temperature is likely to cause higher incidences of vector- and water-borne diseases.

Harmful algal blooms (HABs) produce toxins that can cause human diseases, mainly by consumption of contaminated shellfish. Warmer seas may thus contribute to increased cases of human shellfish and reef fish poisoning (ciguatera) and pole ward expansions of these disease distributions.

Following are the climate-sensitive diseases prevalent in the UT:

- Acute Respiratory Illnesses attributed to Air Pollution
- Heat-related illnesses

- Vector-Borne Diseases
- Water and Food-Borne Diseases
- Nutrition-related diseases
- Allergic Diseases
- Cardio-pulmonary Diseases
- Mental Health issues
- Specific illnesses due to sea and coastal area

IDSP Data 2021-2022

Diseases	No. of Positive Cases	
	2021	2022
Dengue	4	67
Chikungunya	0	0
H1 N1	0	0
JE	0	0
Typhoid Fever	22	21
Viral Hepatitis A	0	5
Viral Hepatitis B	14	21
Scrub Typhus	0	0
Leptospirosis	0	0
Malaria	1 (imported case)	0
Anthrax	0	0
Acute Respiratory Infection (ARI)	5543	10841
Influenza Like Illness(ILI)	6298	13583

Source: Lakshadweep State Report

CHAPTER 4

Vision, Goal and Objectives

Vision: Strengthening of healthcare services for all the citizens of the state especially vulnerable population i.e. children, women, elderly, tribal, and marginalized populations against climate-sensitive illnesses.

Goal: To reduce morbidity, mortality, injuries, and health vulnerability due to climate variability and extreme weather.

Objective: To strengthen healthcare services against the adverse impact of climate change on health.

Specific Objectives

Objective 1: To create awareness amongst the general population (vulnerable community), health-care providers, and policy makers regarding the impacts of climate change on human health.

Objective 2: To strengthen the capacity of the healthcare system to reduce illnesses/ diseases due to variability in climate.

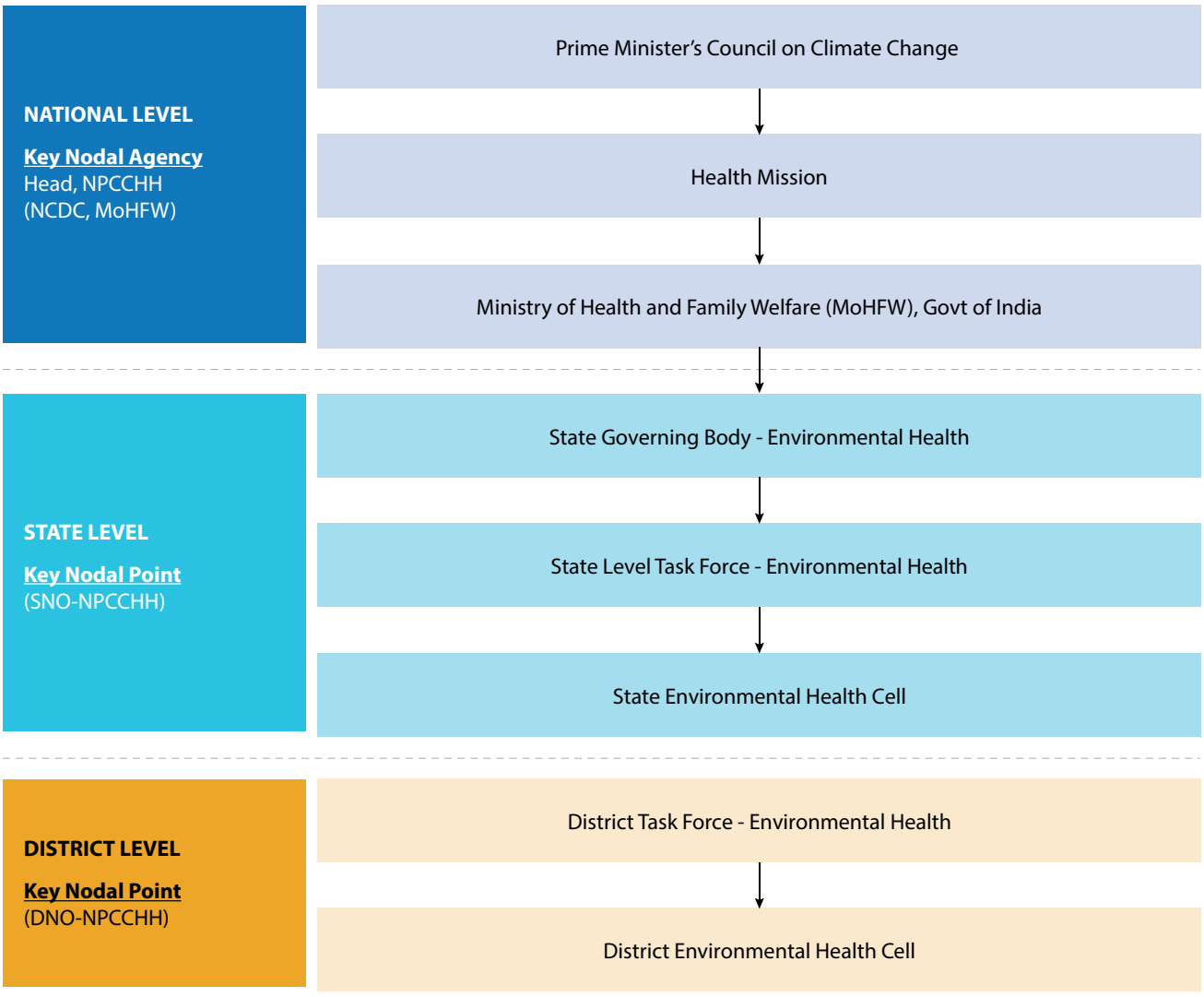
Objective 3: To strengthen health preparedness and response by performing situational analysis at national/ state/ district/ and below district levels.

Objective 4: To develop partnerships and create synchrony/ synergy with other missions and ensure that health is adequately represented in the climate change agenda in the country in coordination with the Ministry of Health & Family Welfare.

Objective 5: To strengthen state research capacity to fill the evidence gap on impact of climate change on human health.

CHAPTER 5
Organisation Structure

ORGANISATIONAL STRUCTURE



I. State Level - Governing Body - Environmental Health	
1. Secretary (Health)	Chairperson
2. Secretary (Disaster Management)	Member
3. Secretary (Agriculture)	Member
4. Secretary (Environment & Forest)	Member
5. Secretary (S&T)	Member
6. District Collector	Member
7. Director (Health Services)	Member Secretary
8. Mission Director (NHM)	Member
9. State Nodal Officer (Climate Change)	Member
10. Head-NAPCCHH, CEOH & CCH Division, NCDC	Member

The State Level Governing Body Has the Following Roles and Responsibilities

1. Recommend strategies for mitigating the adverse effects of climate change on human health.
2. Prepare an Action Plan for Climate Change and Human Health
3. Review epidemiological data on environmental health and climate change
4. Recommend strategies for monitoring and evaluation of health impacts due to climate change
5. Recommend coordination mechanisms with various stakeholders
6. Recommend means of financial assistance to states and other agencies working in the field of health and climate change
7. Recommend National Environmental Health Policy and Strategy
8. Any other matter as directed by MoHFW, Govt. of India.

II. State Level Task Force – Environmental Health	
1. Secretary (Health)	Chairperson
2. District Collector	Member
3. Mission Director (NHM)	Vice Chairperson
4. Director (Health Service)	Member Secretary
5. Director (Environment& Forest)	Member
6. Director (S&T)	Member
7. CEO, (Disaster Management)	Member
8. Director (ICMR Institute)	Member
9. State Nodal Officer (Climate Change)	Member
10. Head-NAPCCHH, CEOH&CCH Division, NCDC	Member

The task force of the Environmental Health Cell coordinates with the Centre (MoHFW, NCDC) for the execution of the SAPCCHH.

III. State Environmental Health Cell (EHC)	
The following are the Executive Members of EHC	
1. State Nodal Officer (Climate Change)	Chairperson
2. Programme Officer (Cancer) (NCD)	Member
3. Health Education Officer	Member
4. Consultant , SHSRC	Member

The roles and responsibilities of Sate EHC will be as follows

a. Preparation and implementation of the State Action Plan for Climate Change and Human Health

b. Conduct Vulnerability assessment and risk mapping for commonly occurring climate-sensitive illnesses in the UT

c. Assessment of needs for healthcare professionals (like training, capacity building, etc.) and organize training, workshop, and meetings.

d. Maintain state and district level data on physical, financial, and epidemiological profile for climate-sensitive illnesses

e. Ensure convergence with NHM activities and other related programs in the state /district

f. Timely issue of warning/alerts to health professionals and related stakeholders as well as the general public through campaigns or using mass media (electronic or printed)

g. Social mobilization for preventive measures through the involvement of women's self-help groups, community leaders, NGOs, etc.

h. Advocacy and public awareness through media (street plays, folk methods, wall paintings, hoardings, etc.)

i. Conduct of operational research and evaluation studies for climate change and its impact on human health.

IV. District level Task Force– Environmental Health	
Since Our UT is a uni-district Union Territory, we may constitute an island level Task force instead of District Level.	
1. Deputy Collector/BDO	Chairperson
2. Medical Supt/Medical Officer in-charge	Member Secretary
3. Health Inspector	Member
4. Environmental Warden	Member
5. Multipurpose Health Worker	Member

At the island level, the responsibility for programme implementation lies with the Medical Supt/ Medical Officer (In-charge) of the island concerned. The existing machinery of NHM is utilised for the related activities. The ANM, ASHA, and Anganwadi workers are to assist in activities related to the implementation of action plan at the local level.

Roles and Responsibilities

Designation	Details
State Nodal Officer- Climate Change	• Coordinate the State level Task Force Meetings to develop a Health Adaptation Plan on Air pollution and Health as a part of the State Action Plan on Climate Change and Human Health (SAPCCHH) • Undertake situational analysis of health impacts in the context of air pollution: ▪ Reports/ documents/ policies developed related to air pollution and health undertaken in various programmes and in other departments in the UT. ▪ AQI Monitors installed (CPCB/SPCB// SAFAR) • Hot spot sites in the context of air pollution • Identification and capacity building of Human Resources ▪ Professionals from Medical Colleges, Directorate of Health, and Institutes working related to air pollution, NGOs etc. ▪ Notification of designated Nodal Officers at every level i.e. district / block ▪ Identification of nodal officers from the designate sentinel hospitals ▪ Capacity Building of Nodal Officers and other healt professionals and Community Health Worker ASHAs, AWWs • IEC Development and Dissemination Plan • Development and Dissemination of Health Advisories • Surveillance establishment in the context of air pollution • Hospital Preparedness related to air pollution • Timely issue of warnings to hotspots areas, health professionals, and vulnerable and general population • To coordinate with the district nodal officers for overall periodic reviews, Supervision, Monitoring and Evaluation of the identified activities being carried out at all levels – State, District, Block, Town and Village/ward
District Nodal Officer-Climate Change	• To develop a Health Adaptation Plan on Air pollution and Health as a part of the DAPCCHH • To undertake situational analysis on air pollution and health at the district level • Review and approval of reports/ documents/policies developed related to air pollution and health • Review of data from the AQI Monitors installed in the district (CPCB/SPCB/SAFAR or NCAP) • Human Resource identification and appointment: ▪ Professionals from Medical Colleges, Training Institutes ▪ Notification of designated Nodal Officers at every levels ▪ Capacity building of Medical Officers, health professionals, & community health workers-ASHAs, AWWs • IEC Dissemination Plan • Dissemination of Health Advisories • Surveillance establishment and reporting • Healthcare facilities preparedness • Timely issue of warning/ alerts to hotspot's areas, health professionals, and vulnerable and general population • Periodic reviews, supervision and monitoring of the identified activities • IEC, capacity building, surveillance, preparedness of healthcare facilities

Designation	Details
Block Medical Officer	• Implementation of the identified activities on air pollution and health as per DAPCCHH or in consultation with DNO-CC/SNO-CC • Capacity building of the Medical officers, Nursing officers, Pharmacists, Communities health officers/workers • Integrate and coordinate to get support from Rashtriya Bal Swasthya Karyakram and Rashtriya Kishore Swasthya Karyakram • IEC dissemination for increasing awareness. • Health advisories dissemination. • Hospital preparedness for public health emergencies related to air pollution. • Supervision and monitoring of surveillance activities, if any sentinel hospitals are involved in the block. • Community level public awareness generation on health effects of air pollution, and ways to protect and prevent health problems.
Community Health workers at the Village Level/ Ward Level	**ASHAs** Awareness generation at the community level on the sources of air pollution, health problems, and ways to protect and prevent air pollution Organize campaigns particularly on health problems of women and children related to air pollution **AWWs** (Through CDPO): At the Anganwadi centres, during immunization sessions, awareness generation on the sources of air pollution in the household and outside, its health problems particularly on women and children and ways to address them.

PART II

Health Action Plans on Priority Climate Sensitive Health Issues

CHAPTER 6

Health Action Plan on Air Pollution Related Diseases

Air pollution is a major environmental risk to health. The formation, transport, and dispersion of air pollutants is determined partly by climate and weather factors such as temperature, humidity, wind, storms, droughts, and precipitation and partly by human activities known to produce various air pollutants. It is thus logical to assume that climate change will influence the dynamics of air pollution. By reducing air pollution levels, states can reduce the burden of disease from stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma.

Types of Air Pollution:

1. Ambient (Outdoor) Air Pollution
2. Household (Indoor) Air Pollution

Ambient (Outdoor) Air Pollution

Ambient air pollution is defined as potentially harmful pollutants emitted by industries, households, cars, and trucks. Ambient (outdoor air pollution) in both cities and rural areas has caused 3.7 million premature deaths worldwide in 2012, as per the estimations. Air pollution also affects health by causing acid rain; eutrophication due to nitrogen oxides, emissions from power plants, cars, trucks, and other sources; haze; toxic effects on wildlife; ozone depletion; crop and forest damage etc. Over 4 million people die prematurely from illness attributable to the household air pollution from cooking with solid fuels. 3.8 million premature deaths annually have been reported from non-communicable diseases including stroke, ischemic heart disease, chronic obstructive pulmonary disease (COPD) and lung cancer and are attributed to exposure to household air pollution.

Prominent causes of Ambient Air Pollution:

1. Pollution by automobiles
2. Industrial Emission
3. Municipal and agricultural waste sites and waste incineration/burning
4. Residential cooking, heating, and lighting with polluting fuels

Prominent causes of Household Air Pollution:

1. Use of kerosene as fuel for cooking
2. Burning of waste, cow dung, coal

3. Household Activities- everyday activities such as heating, cleaning, painting, and decorating
4. Common household products such as cleaning sprays, paints, varnish, pesticides, grease, solvent removers, and aerosol sprays may contain harmful chemicals that pollute the air

Air Quality Index

Air Quality Index is a tool for effective communication of air quality status to people in terms, which are easy to understand. It transforms complex air quality data into a single number (index value), nomenclature, and colour.

Adaptation Plan

A. Awareness

Plan	Objectives	Activity	Budget (In Lakhs)
IEC Campaign	The districts are aimed to create awareness through Information, Education, and Communication Activities (IEC) developed using communication materials such as posters, audios, videos, organizing public health events, and advisories related to air pollution based on locally and culturally acceptable messages.	Posters Audio Videos GIF's Public Health Advisories	**2023-2024 – 0.30** **2024-2025 – 0.40** **2025-2026 – 0.50** **2026-2027 – 0.55** **2027-2028 – 0.60**
Public Health Advisories	Health advisories are issued to alert the population of the potentially harmful impact of air pollution. Advisories issued at the central level will be forwarded to all the districts through the state for public dissemination. The district is to ensure timely dissemination of health advisories in locally acceptable language.		
Observation of Special Days	International Day on Clean Air for Blue Sky - 7th September: • Health facility-based plantation, awareness sessions • Community setting- based mass meetings, rallies, local/community radio programmes, street plays • Sports events: athletics, cycling • Competition and quiz		**0.41**

B. Capacity Building

Plan	Objectives	Activity	Budget (In Lakhs)
Medical professional training	Strengthening & Mobilization	Training on air pollution and various health impacts knowledge building workshops	**2023-2024 – 0.50** **2024-2025 – 0.60** **2025-2026 – 0.70** **2026-2027 – 1.00** **2027-2028 – 1.00**
Sensitization			

C. Surveillance

Plan	Objectives	Activity	Budget (In Lakhs)
Alert system	Automated Air Quality Warning devices in all the schools, offices, and other public buildings in the vulnerable areas for triggering warning manually by the local government: a. Radio communication system for district administration. b. Air quality alerts, based on the air quality index thresholds determined by the local government c. Leaflets and pamphlets describing prevention guidelines. d. 24/7 Tele-assistance communication services and devices.		

NPCCHH Training Plan at the District Level

Training Programme	Trainer	Participants	Training Content
Medical Officers (3 Days)	SNO, DNO	MO (DH, CHC, PHC)	Air pollution related illness
Community Health Care Workers (HWC) (2 Days)	MO	Community Health Workers (ANM, PHN, HI, MPHW, ASHA)	
Panchayati Raj Institutions (1 Day)	MO	Panchayati Raj Institutions, communities	

Roles and Responsibility of key Members

Sl. No.	Member	Responsibilities
1	SNO-CC	Coordinate the activities of assessing the impact of Air Pollution on health and to suggest measures to reduce the same. Coordinate with the **Directorate of Medical Education to:** • To collect and compile data of patients with respect to air pollution effects on human health • To assist research on air pollution impact on health initiated by central/state govt. ministry, ICMR, or any other agencies
2	Director, from any research institute	• To create evidence of air pollution impact on health by undertaking various studies and research for the same.
3	Director, Meteorological Department	• To provide timely data of temperature, rainfall, wind speed, or any other relevant meteorological factors having relation with an increase or decrease in air pollution • To give inputs for reducing air pollution in relation to meteorological factors.
4	Chairperson, State Pollution Control Board	• To provide Air Quality Data for the cities identified under the Sentinel Surveillance for assessing the impact of air pollution. • To undertake measures to reduce air pollution and improve the quality of air. • To monitor the progress of activities undertaken for reduction of air pollution.

Sl. No.	Member	Responsibilities
5	Chairperson, State Disaster Management Authority	• To monitor the situation of air pollution in different cities of state
6	State Surveillance Officers	• To take necessary action in regular data collection and analysis of data • To prepare and disseminate IEC on a regular basis to the cities for awareness generation
7	Environmental Engineer/Senior Scientist from MoEFCC	• To enlist and share probable causes of increase in air pollution • To give necessary inputs to reduce air pollution as per the causes identified

Sl. No.	Designation	Details
1.	State Nodal Officer-Climate Change	• Coordinate the State level Task Force Meetings to develop a Health Adaptation Plan on Air pollution and Health as a part of the State Action Plan on Climate Change and Human Health (SAPCCHH) • Undertake situational analysis of health impacts in the context air pollution: ▪ Reports/documents/policies developed related to air pollution and health undertaken in various programmes and in other departments in the UT. ▪ AQI Monitors installed (CPCB/SPCB// SAFAR) • Hot spot sites in the context of air pollution • Identification and capacity building of Human Resources ▪ Professionals from Medical Colleges, Directorate of Health, and Institutes working related to air pollution, NGOs etc. ▪ Notification of designated Nodal Officers at every level i.e. district / block ▪ Identification of nodal officers from the designated sentinel hospitals ▪ Capacity Building of Nodal Officers and other health professionals and Community Health Workers- ASHAs, AWW • IEC Development and Dissemination Plan • Development and Dissemination of Health Advisories • Surveillance establishment in the context of air pollution • Hospital Preparedness related to air pollution • Timely issue of warnings to hotspots areas, health professionals, and vulnerable and general population • To coordinate with the district nodal officers for overall periodic reviews, Supervision, Monitoring and Evaluation of the identified activities being carried out at all levels – State, District, Block, Town and Village/ward
2.	District Nodal Officer-Climate Change	• To develop a Health Adaptation Plan on Air pollution and Health as a part of the DAPCCHH • To undertake situational analysis on air pollution and health at the district level • Review and approval of reports/ documents/policies developed related to air pollution and health • Review of data from the AQI Monitors installed in the district (CPCB/SPCB/ SAFAR or NCAP) • Human Resource identification and appointment: ▪ Professionals from Medical Colleges, Training Institutes ▪ Notification of designated Nodal Officers at every levels ▪ Capacity building of Medical Officers, health professionals, & community health workers- ASHAs, AWWs

Sl. No.	Designation	Details
		• IEC Dissemination Plan • Dissemination of Health Advisories • Surveillance establishment and reporting • Healthcare facilities preparedness • Timely issue of warning/ alerts to hotspot's areas, health professionals, and vulnerable and general population • Periodic reviews, supervision and monitoring of the identified activities • IEC, capacity building, surveillance, preparedness of healthcare facilities
3.	Block Medical Officer	• Implementation of the identified activities on air pollution and health as per DAPCCHH or in consultation with DNO-CC/SNO-CC • Capacity building of the Medical officers, Nursing officers, Pharmacists, Communities health officers/workers • Integrate and coordinate to get support from Rashtriya Bal Swasthya Karyakram and Rashtriya Kishore Swasthya Karyakram • IEC dissemination for increasing awareness • Health advisories dissemination • Hospital preparedness for public health emergencies related to air pollution • Supervision and monitoring of surveillance activities, if any sentinel hospitals are involved in the block
4.	Community Health workers at the Village Level/ Ward Level	• Community level public awareness generation on health effects of air pollution, and ways to protect and prevent health problems **ASHAs** a. Awareness generation at the community level on the sources of air pollution, health problems, and ways to protect and prevent air pollution b. Organize campaigns particularly on health problems of women and children related to air pollution **AWWs –** (Through CDPO): At the Anganwadi centres, during immunizations sessions, awareness generation on the sources of air pollution in the household and outside, its health problems particularly on women and children and ways to address them.

CHAPTER 7

Health Action Plan on Heat Related Illnesses

In India, a heat wave is considered if the maximum temperature of a station reaches at least 40°C or more for plains, 37°C or more for coastal stations, and at least 30°C or more for hilly regions. The following criteria is used to declare a heat wave:

a. Based on the Departure from Normal

- *Heat Wave:* Departure from the normal is 4.5°C to 6.4°C
- *Severe Heat Wave:* Departure from the normal is >6.4°C

b. Based on Actual Maximum Temperature (for plains only)

- *Heat Wave:* When the actual maximum temperature ≥ 45°C
- *Severe Heat Wave:* When the actual maximum temperature ≥ 47°C

The adverse health effects of hot weather and heat waves are largely preventable. Prevention requires a portfolio of actions at different levels, these actions can be integrated into a defined heat–health action plan.

To declare a heat wave, the above criteria should be met at least at two stations in a Meteorological sub-division for at least two consecutive days. A heat wave is declared on the second day.

Different types of heat-related illnesses include:

1. Minor heat-related Illnesses: Heat rash, heat cramps, heat syncope
2. Major heat-related Illnesses: Heat exhaustion and heatstroke

Types of heat-related illnesses

Clinical Entity	Age Range	Setting	Cardinal Symptoms	Cardinal / Important Signs	Pertinent Negative findings
Heat rash/ prickly heat/ Miliaria	All, but frequently children	Hot environment; +/- insulating clothing or swaddling (wrap in tight clothes)	**ITCHY RASH with SMALL RED BUMPS** at pores in the skin. Seen in setting of heat exposure; bumps can sometimes be filled with clear or white fluid	**DIFFUSED RED COLOUR SKIN OR VESICULAR RASH,** itching of the skin without visible eruption	**NOT FOCALLY DISTRIBUTED** like a contact dermatitis
Heat cramps	All	Hot environment, **TYPICALLY WITH EXERTION,** +/- insulating clothing	**PAINFUL SPASMS** of large and frequently used muscle groups	Uncomfortable appearance, may have **DIFFICULTY FULLY EXTENDING AFFECTED LIMBS/JOINTS**	No contaminated wounds/tetanus exposure; no seizure activity
Heat exhaustion	All	Hot environment; +/- exertion; +/- insulating clothing or swaddling (wrap in a tight clothes)	Feeling overheated, light headedness, **EXHAUSTED AND WEAK,** unsteady, feeling of **VOMITING, SWEATY AND THIRSTY,** inability to continue activities	**SWEATY**/ diaphoretic; flushed skin; hot skin; **NORMAL CORE TEMPERATURE;** +/- dazed, +/- generalized weakness, slight disorientation	No coincidental signs and symptoms of infection; no focal weakness; no difficulty in swallowing food or speech; no overdose history
Heat syncope	Typically adults	Hot environment; +/- exertion; +/- insulating clothing or swaddling (wrap in a tight clothes)	Feeling hot and weak; light headedness followed by a **BRIEF LOSS OF CONSCIOUSNESS**	Brief, generalized loss of consciousness in hot setting, short period of disorientation, if any	**NO SEIZURE ACTIVITY,** no loss of bowel or bladder continence, no focal weakness, no difficulties in food swallowing or speech
Heat Stroke	All	Hot environment; +/- exertion; +/- insulating clothing or swaddling (wrap in a tight clothes)	Severe overheating; profound weakness; **DISORIENTATION, NOT FULLY ALERT, CONVULSION, OR OTHER ALTERED MENTAL STATUS**	Flushed, **DRY SKIN** (not always), **CORE TEMP** ≥40°C **OR** 104°F; altered mental status with disorientation, incoherent behaviour, **COMA, CONVULSION;** tachycardia; +/- hypotension	No coincidental signs and symptoms of infection; no focal weakness; no difficulties in swallowing food or speech, no overdose history

Adaptation Plan

A. Awareness

Plan	Objectives	Activity	Budget (in lakhs)
IEC Campaign	The districts are aimed to create awareness through Information, Education, and Communication Activities (IEC) developed using communication materials such as posters, audios, videos, organizing public health events, and advisories related to air pollution based on locally and culturally acceptable messages.	Posters Audio Videos GIF's Public Health Advisories	**2023-2024 – 0.30** **2024-2025 – 0.40** **2025-2026 – 0.50** **2026-2027 – 0.55** **2027-2028 – 0.60**
Public Health Advisories	Health advisories are issued to alert the population of the potentially harmful impact of air pollution. Advisories issued at the central level will be forwarded to all the districts through the state for public dissemination. The district is to ensure timely dissemination of health advisories in locally acceptable language.		
Observation of Special Days	International Day on Clean Air for Blue Sky - 7th September: • Health facility-based plantation, awareness sessions • Community setting- based mass meetings, rallies, local/community radio programmes, street plays • Sports events: athletics, cycling • Competition and quiz		**0.41**

B. Capacity Building

Plan	Objectives	Activity	Budget (in lakhs)
Medical professional training	Strengthening & Mobilization	Training on air pollution and various health impacts knowledge building workshops	**2023-2024 – 0.50** **2024-2025 – 0.60** **2025-2026 – 0.70** **2026-2027 – 1.00** **2027-2028 – 1.00**
Sensitization			

C. Surveillance

Plan	Objectives	Activity	Budget (in lakhs)
Alert system	HRI surveillance is conducted to establish a baseline of HRI morbidity and mortality, monitor HRI incidence in relation to environmental parameters, and improve health system preparedness to extreme heat. Since UT of Lakshadweep is not identified as a vulnerable state for heat-related illnesses, surveillance on HRI is yet to start.		

NPCCHH Training Plan at the District Level

Training Programme	Trainer	Participants	Training Content
Medical Officers (3 Days)	SNO, DNO	MO (DH, CHC, PHC)	Heat related illness
Community Health Care Workers (CHW) (2 Days)	MO	Community Health Workers (ANM, PHN, HI/MPHW, ASHA)	
Panchayat Raj Institutions (PRI) (1 Day)	MO	Panchayath Raj Institutions, communities	

Schedule Plan for Training for 5 Years 2022-27

Sl. No.	Training programme	Timeline
01	DNO	February
02	MO	March
03	CHW	March- April
04	PRI	March- April

Roles and Responsibilities

The roles and responsibilities of the key implementation authorities is mentioned below:

Particulars	Responsibilities
SNO	• Disseminate early warnings at the state and district level • Finalization of IEC material and dissemination plan • Liaison with IMD for weather alerts and their dissemination • Liaison with other departments for combined IEC campaigns, coordinated response, and information sharing of health indicators for targeted action • Organize IEC campaigns at the state level on the observance of important environment-health days • Organize training sessions for the district-level officers and the surveillance nodal officers • Facilitate training of medical officers in clinical aspects of heat-health impact • Ensure daily surveillance reporting from district level • Ensure submission and analysis of heat-related deaths at the state and district level • Monitor daily health data with temperature and humidity levels to monitor trends and hotspots in the state • Review health facility preparedness and ambulance services to manage HRI • Identify health facilities at the different levels that can have heat illness wards with necessary treatment/cooling facilities • Keep existing Rapid Response Teams under IDSP prepared to manage HRI if needed for an emergency response to extreme heat • Review implementation of the IEC and surveillance activities at all levels • Evaluate and update relevant section of SAPCCHH with support from State Task Force • Create organizational support and strengthen Environmental Health Cell to implement NPCCHH vision, Goal, and Objectives • Organize sensitization workshops for other stakeholders and line departments • Organize seminars and conference to share knowledge and action under NPCCHH.

Particulars	Responsibilities
	• Collaborate with academic institute/s for support in updating SAPCCHH, Surveillance activity monitoring, training of health care professionals, vulnerability assessment, and applied research • Submit report of activities on heat-related health issues
DNO	• Disseminate early warning to the block and health facility level • Ensure IEC dissemination to the community-level • Liaison with IMD to receive daily observed temperature and relative humidity information • Liaison with other departments for combined IEC campaigns, coordinated response, and information sharing of health indicators for targeted action • Conduct training for block health officers and medical officers • Conduct sensitization of vulnerable groups, police officers, outdoor works, women, children, etc. • Organize IEC campaigns at the district level on observance of important environment-health days • Ensure daily reporting from health facilities and compile the data • Analyze daily health data with temperature and humidity levels to monitor trends and hotspots in the district • Support timely suspected heatstroke death analysis and its reporting • Submit analyzed weekly report to SNO, NPCCHH, and other departments for necessary action • Coordinate with other agencies • Update DAPCCHH with support from District Task Force • Submit report of activities on heat-health under NPCCHH
Block Health Officer	• Conduct community level IEC activities • Ensure training of medical officers • Organize PRI sensitization workshops and trainings for vulnerable groups • Implement heat mitigation efforts
City Health Department	• Support in development and implementation of island-specific heat-health action plan
Medical Officer	• Conduct health facility-based IEC activities • Support community level IEC activities • Be aware of AQI levels and health impact of air pollution • Ensure necessary health facility preparedness in early diagnosis and management of cases
Panchayati Raj Institutions	• Conduct community level IEC activities

CHAPTER 8

Health Action Plan on Extreme Weather Event-Related Health Issues

Introduction

The Indian sub-continent is highly vulnerable to both natural and man-made disasters that generally result in heavy loss of life and mass causalities. The last few decades have witnessed an increased frequency of disasters resulting in large number of human causalities and economic losses.

There has been a paradigm shift in the government's focus from a rescue, relief, and recovery-centric approach to planning, prevention, mitigation, and preparedness-driven approach.

Extreme Weather Events and Human Health

States and UTs may have recorded raised morbidity and mortality due to the effect of extreme weather conditions i.e. frequent and severe episodes of heat waves, floods, droughts, and fires as a direct impact of climate variability and affecting the population at large.

Climate change can result in more hot days, resulting in more periods of drought, dust storms, or heavy rains (precipitation), and even flooding. The health gets directly affected due to injuries, hypothermia, hyperthermia, drowning, etc. and indirectly through population dislocation, crowding, poor living conditions, the faeco-oral transmission of gastro-intestinal pathogens causing water and food borne illnesses, respiratory illness, and other infectious diseases (e.g., leptospirosis, vector-borne disease, cholera and also mental illnesses).

Disaster events in Lakshadweep

Year	Details of calamity
2017	Ockhi Cyclone
2019	Maha Cyclone
2021	Taukate cyclone

Action Plan for Diseases Prevalent During Disasters

Disaster Management Authority coordinates with the health staff as well as other stakeholders at the time of a disaster. Immediate communication is sent to the Nodal Officer for Disaster (Health), who in turn sends a

communication to the Rapid Response Team, available in the health facility at all levels of healthcare facilities. Essential medicines, lab equipment, and ambulance facility are made available for effective management of cases. Necessary warnings and advisories are issued from time to time through social media, volunteers, Self-help group members, and NGOs are involved for the surveillance and management of cases at the community level.

The initiatives include:

Provision of safe and resilient health facility- It is proposed to strengthen the WASH standards, biomedical waste management, uninterrupted supply of electricity, transportation, and food and accommodation services during a disaster.

IEC Activities

Annual IEC dissemination plan for extreme weather events and their health impact in Lakshadweep

IEC type	Material	Timeline	Mechanism
Advisory	bit.ly/NPCCHHPrg	Seasonal	By email to DNO for further dissemination to health facilities
Early warning	Bulletins/advisory by IMD (storm, cyclone), CWC (flood) sent by NPCCHH	Seasonal	• Health department/other government website/application • Digital display of temperatures on public places and health facilities
Posters	• 2 posters on various EWE and health impacts (English, Malayalam) bit.ly/NPCCHHIEC • Posters on heat and health impacts (Malayalam& English)	Seasonal, as needed	• Printing of copies for state- level dissemination at health facilities, public places/buildings • By email to DNO for printing at district level and dissemination to health facilities, schools, and other public/government buildings
Wall painting	Using available material	Painted in July-September	• In schools and selected colleges • In health facilities
Hoardings	• Posters in Malayalam, English	Seasonal, as needed	• To be planned with Disaster management committee
Audio-Visual	Audio Jingle (Malayalam) • Video messages (Malayalam, English) bit.ly/NPCCHHIEC • Video message (Malayalam)	Seasonal, as needed	• Played seasonally and around relevant extreme weather events
Wall painting	Using available material	Seasonal as needed	Prominent places like Jetty and Beach road.
Digital display	• GIF • Above mentioned video messages	Seasonal, as needed	Display in health facilities Public digital display boards in major cities
Social medial	All the above material + Relevant activity updates	Seasonal, as needed	• Facebook and Twitter handle of state NPCCHH, NHM • WhatsApp groups (State DNO, Health facility group)

Observance of Important Environment-Health Days

Day	Activities
International Day for Disaster Risk Reduction	**IEC Campaigns** • Audio-video spots broadcasting • Targeted awareness sessions i.e. women, children, occupational groups • Mock drill, disaster response exercise • Sports events • Competition: poster, poem/essay, quiz **Health facility level activities** • Health facility-based patient awareness sessions • Conduct assessment of disaster vulnerability/energy/ water conservation measures • Review of implementation of climate-resilient measures

Capacity Building Activities

Training modules

- State-District level training modules
- Medical officer training
- Para medical officers & Health care workers
- Community level training: vulnerable population group such as women/ children/ elderly/ different type occupations

Other training resources: NPCCHH channel https://bit.ly/NPCCHHyt

Training plan for Extreme Weather Events and Health

Training Programme for	Trainer	Topics	Timeline
District level (DNO-CC, trainers)	State Level Trainers SNO-CC, Consultant	• Climate change and impact of extreme weather events in India • Formation of disaster management committees and plans • Health facility vulnerability, resilient measures and disaster preparedness • Disaster response in coordination with state/ district disaster management authority • Post-disaster health impact assessment and response	February
Health facility level (MO of DH/CHC/PHC)	District Level Trainers DNO-CC	• Health facility disaster vulnerability assessment • Disaster management committee and plan • Climate resiliency measures (structural/functional) • Health facility preparedness for EWE/disaster response • Post-disaster surveillance and damage assessment	February

Training Programme for	Trainer	Topics	Timeline
Community Health care workers (MPHW, ASHA, ANM etc)	District Level Trainers, MO	• Climate change and health impact of extreme weather events • Disaster planning and response	February-March
Panchayat Raj Institutions	District level trainers, MO, Health care workers	• Climate change and health impact of extreme weather events • Disaster planning and response with community participation	February-April

Early Warning Dissemination

Surveillance

- Early warnings for Heat waves, Flood, Cyclone etc to health facility level and community level
- Post-disaster health impact assessment
- Support post-disaster surveillance of communicable disease, health facility affected conducted by SDMA, IDSP, or other agencies

Health Facility Preparedness

- Vulnerability assessment of health facility in context of climate change-extreme weather events
- Identify structural changes/retrofitting measures at the facility level to equip the healthcare facility
- Formalize disaster management plan and committee
- Emergency procurement arrangements & functioning of essential health services (safe water, immunization, maternal-child care etc.)
- Post-disaster damage assessment and referral plan in case of health facility damage
- Ensure routine monitoring and maintenance of support functions (water quality, waste management, etc.)
- Establish Sustainable Procurement Committee

Roles and Responsibilities

	Responsibilities
SNO	• Disseminate early warnings to the district level. • Finalization of IEC material and dissemination plan. • Formalize intersectoral coordination for disaster planning, management, and response with SDMA/IMD and other departments. • Organize training of district level officers. • Facilitate assessment and implementation of climate resilient measures in the healthcare facilities. • Review implementation of IEC, training, and surveillance activities at all levels. • Evaluate and update relevant sections of SAPCCHH with support from State Task Force. • Create organizational support and strengthen Environmental Health cell to implement NPCCHH vision, Goal, and Objectives • Organize sensitization workshops for other stakeholders and line departments • Collaborate with academic institute/s for support in updating SAPCCHH, Surveillance activity monitoring, training of health care professionals, vulnerability assessment, and applied research • Submit reports of activities on EWE and health under NPCCHH

	Responsibilities
DNO	• Disseminate early warnings to the block and health facility level • Ensure IEC dissemination to community level and facilitate community level IEC activities • Organize trainings for block health officers and MO • Formalize intersectoral coordination for disaster planning, management, and response with SDMA/IMD and other departments • Liaison with other departments for combined IEC campaigns, coordinated response and information sharing of health indicators for targeted action • Identification and communication of evacuation routes and relief camps • Support planning and management of health care services in relief camps • Provide necessary IEC on health and sanitation in relief camps • Organize training for block health officers and medical officers with relevant training manuals • Conduct sensitization of vulnerable groups: police officers, outdoor works, women, children, etc. • Organize IEC campaigns at the district level on observance of important environment-health days • Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessments and health facility damage due to EWE • Update DAPCCHH with support from the District Task Force • Submit reports of activities on EWE and health under
Block Health Officer	• Conduct community level IEC activities • Ensure training of medical officers • Organize PRI sensitization workshop and training for vulnerable groups • Facilitate disaster vulnerability assessments in health facilities and maintain records of such assessments and health facility damages due to EWE
Medical Officer	• Conduct health facility-based IEC activities • Support community level IEC activities • Preparation of Disaster Management Plan and hospital safety plan • Assessment of health facility in context of climate change- extreme weather events • Identifying structural changes/retrofitting measures at the facility level to equip the healthcare facility to better respond to community needs during and after a disaster • Ensuring routine monitoring and maintenance of support functions (water quality, waste management) • Health facility preparedness for seasonal events
Panchayat Raj Institutions	Conduct community level IEC activities

Prioritized adaptation strategies

Medical and Public Health

- Sustained awareness among local communities on waste disposal, sanitation, public health, etc.
- Augment the facilities for the safe disposal and management of bio-medical wastes.
- Special efforts to recruit doctors with a mandatory time frame to work on islands.
- Arrange for extra manpower, doctors, paramedic's as well as storage and distribution of medicines and facilities for mobile hospitals, which can be installed on a ship/ vessel.

CHAPTER 9

Health Action Plan on Vector-borne Illnesses in Context of Climate Change

Introduction

NVBDCP is an umbrella programme responsible for the implementation, supervision, and monitoring of the vector- borne diseases i.e. malaria, Lymphatic Filariasis, Dengue, Chikungunya, Japanese encephalitis and Kala Azar. The Programme is monitored at the National level through the mechanisms established under NHM, NVBDCP. The UT of Lakshadweep is in the Elimination phase for malaria.

Diseases	Agents (vectors)
Malaria	Anopheles species of mosquito
Lymphatic filariasis (nematode worm)	Culex, Anopheles, Aedes species of mosquito
Chikungunya	Aedes species of mosquito
Dengue (virus)	Aedes species of mosquito
Kala azar (Leishmaniasis) (protozoan)	Mainly Phlebotomus species of sandfly
Japanese Encephalitis	Culex tritaeniorhynchus

Infrastructure

Lakshadweep islands has fairly good health infrastructure with 1 District Hospital, 2 Sub District Hospital (1 referral Hospital) along with 6 AB-Health & Wellness Centre apart from these, two FACs are also there one each at Bitra and Bangaram islands and in addition to this allopathic centers there are 1 Deen Dayal Upadhyaya AYUSH Hospital, 7 AB-AYUSH Health & Wellness Centre & 2 Co-located AYUSH Dispensary also available at various Islands. As there is a total absence of private health facilities, all the health requirement of the public has to be met under public sector.

Laboratory Facilities

Laboratory facilities to diagnose malaria are available in GH, CHCs and in designated PHCs. No positive cases are reported in recent years. During the monsoon season Dengue cases are reported.

Dengue and Chikungunya

Effective control of the vector mosquitoes with the help of community support and increased awareness is very important to control the transmission of these diseases. The role of healthcare providers in these areas is very important to increase the awareness in the community and motivating the people.

Source reduction Method

- By elimination of all potential vector breeding places near the domestic or peri-domestic areas.
- Not allowing the storage of water for more than a week. This could be achieved by emptying and drying the water containers once in a week.
- Observance "**Dry day"** in all the islands.

Chemical Control

- Use of Pyrethrum for Outdoor Fogging to kill adult mosquitoes.
- Use of Hits, Baytex etc.

Use of larvicides

- Where the water cannot be removed but used for cattle or other purposes, Temephos can be used once a week at a dose of 1 ppm (parts per million).
- Pyrethrum extract (0.1% ready-to-use emulsion) can be sprayed in rooms (not outside) to kill the adult mosquitoes hiding in the house.

Biological control

- Like introduction of larvivorous fish, namely Gambusia and Guppy in wells and other water sources like ponds.

Task and responsibilities of stakeholders for VBDs control

Sl. No.	Stakeholder	Task/activities	Responsibilities
1.	NVBDCP	Overall guidance and policy formulation	To guide the state government in resurgence and containment of any VBD.
2.	ICMR-NIMR and other related institutes	To provide technical expertise to find solution to any outstanding research question related with epidemiology	ICMR-NIMR to work in close collaboration with NVBDCP/vulnerable state in analysis of relationship between climatic parameters and particular VBDs. To help in identification of microfoci of transmission.
3.	State Nodal Officer, Climate Change	To supervise the state govt. in control of VBDs particularly in climate sensitive Areas	To supervise the action taken in consultation with SPO.
4.	India Meteorological Department	To provide meteorological data as and when required	To help the state govt. in collaboration with any research institute, in analysis of relationship between climatic factors and a particular VBD so as to warn the outbreaks.
5.	NGO at state and district level for reach to community	Heath education at community level	To conduct workshops for IEC activities for different levels of staff in the identified areas in consultation with the state govt.
6.	State Programme Officer	Overall planning and execution of Surveillance and intervention measures to control VBDs	To supervise and guide the DMOs in control of VBDs

Sl. No.	Stakeholder	Task/activities	Responsibilities
7.	State Entomologist	To provide guidance in vector control	To generate data on fortnightly fluctuations in density of vector species so as to guide the state in choosing appropriate time of IRS activities. To generate data on susceptibility status of disease vectors for using appropriate in secticide for IRS/ larvicide for vector control.
8.	Chief Medical Officer/ District Malaria Officer/ Disease Surveillance Officer	Execution of task assigned by the SPO	To supervise and guide surveillance and intervention measures for control of VBDs in the district.
9.	Media	To be vigilant for report of any upsurge/ outbreak of any VBD	To impart health education to masses through print and audiovisual means of communication.

Action plan for Vector- Borne diseases

1. Rapid response team at the PHC level is formed with MO, Health Inspector, Health Assistant, ANM and ASHA for immediate action, control and prevention of transmission, whenever a VBD case is reported.
2. Through inter-departmental coordination- Health Inspector will have a periodical interaction with the local departments towards the sudden climatic change and its sequence, initiate the Health Field Staffs to deploy preventive methods on VBD.
3. The Health Inspector and Health Assistant will have details of low- lying and water logged areas in their jurisdiction, thus supporting them to undertake immediate action in the area, and also perform periodic surveillance and monitoring.
4. The RRT (Rapid Response Team) will have good relation with the local leaders of the area concerned and will immediately give the necessary advice to the local people about the ways and means of avoiding and protecting from the vector-borne diseases.
5. Several hot spots have been identified and will be monitored periodically during the sudden as well as seasonal climatic changes.

Any hike in the fever cases, larval indices, and adult vector mosquito population will be noted and remedial measures will be taken.

Capacity Building

The plan for the training of ToTs, DNO-CC, and Medical officers regarding the guidelines and operational framework of green and climate resilient measures in Health Care Facilities is mentioned in the table below:

Sl. No.	Training programme	Timeline	Budget (in lakhs) for 5 years				
			2022-23	2023-24	2024-25	2025-26	2026-27
1	DNO	February	0.5	0.6	0.7	1	1
2	MO	March					
3	CHW	March-April					
4	PRI	March-April					

IEC

1. Audio Visual Skits in the local cable networks during peak and monsoon season.
2. VBD awareness notices to the public during field visits, surveys and camps.
3. Banners and sign broads in public places, schools, colleges, institutions, Traffic squares, bus stands, railway stations, public offices and private organizations.
4. Mass mike propaganda in special vehicles in the peak hours of the VBD cluster areas.
5. Illuminated LED display in Public junctions and in Beach road.
6. LED display in the Traffic Signals of the Election Department and Police Department.
7. Mobile LED display mounted on special vehicles at evening hours in crowded places.
8. Awareness Scrolls in local cable networks.
9. Awareness Skits and songs on VBD prevention and control in local FMs.
10. Conduct of VBD exhibitions to create mass and practical awareness to public.
11. Models of mosquito with awareness audio at the shops and public gathering palaces.
12. Placing giant gas balloons with captive mosquito picture and wordings.

CHAPTER 10

Action Plan for Green and Climate Resilient Health Care Facilities

"Climate-resilient and environmentally sustainable healthcare facilities anticipate, respond to, cope with, recover from and adapt to climate-related shocks and stresses, while minimizing negative impacts on the environment and leveraging opportunities to restore and improve it, so as to bring ongoing and sustained health care to their target population and protect the health and well-being of future generations. (WHO)".

As the climate continues to change, risks to health systems and facilities including hospitals, clinics, and community care centers are increasing, reducing the ability of health professionals to protect people from a range of climate hazards. Healthcare facilities are the first and last line of defense against climate change impacts as they can be responsible for large emissions of greenhouse gases (GHGs), and because they provide the needed services and care to people harmed by extreme weather and other long-term climate hazards.

Framework for building climate-resilient and environmentally sustainable HCF

Source: WHO Guidance for Climate-resilient and Environmentally Sustainable Health Care Facilities.

The National Programme on Climate Change and Human Health (NPCCHH) is engaging critically with strengthening the healthcare services and facilities to adapt to as well as mitigate the impacts of climate change. The key components recognized under the programme include:

1. **Environmentally Sustainable (Green) Measures at Healthcare Facilities:**
    a. Energy Auditing
    b. Installation of LED lighting at Health care Facilities
    c. Installation of Solar panels
    d. Water Conservation Measures – Rain-water Harvesting
2. **Climate Resilient Infrastructure at Healthcare Facilities including Retro Fitting of the Existing Healthcare Facilities**

Environmentally Sustainable (Green) Measures at Healthcare Facilities

a. Energy Auditing

An energy audit identifies all the energy end-uses within the building, estimates how much energy is used in each department, and determines the amount of energy used in relation to the desired values.

The guiding principles in this respect include:

- The HCFs would develop a plan for the energy audit to assess the level of energy consumption.
- The responsibility for the energy audit would be of the IPC committee of the facility. If the healthcare facility lacks qualified staff, then the energy audit would be conducted by the state health department as well.
- The energy audit would also consider load management, poor maintenance aspects, and extreme temperature to avoid fire-related accidents. Audit would be conducted in the facility biannually.
- Installing sub-meters in the facility premises would be useful in understanding how much energy is used across the healthcare facility

b. Replacing the existing non-LED lights with LEDs

Replacing the incandescent bulbs with LEDs leads to 75% less energy consumption. Each LED light saves approximately INR 700-1400 over the course of a year.

The guiding principle in this respect would be:

- Healthcare facilities would have a policy on purchasing and using energy-efficient equipment and devices. The facilities would gradually phase out the incandescent bulbs with LEDs.

c. Installation of Solar panels

Healthcare facilities consume a lot of energy throughout the day as the electrical equipment used directly or indirectly to treat patients requires uninterrupted power.

The guiding principle in this area would be::

- The state i would, in a phased manner, install PV solar panels in unused spaces like the roof of the facility. This would reduce grid- based electricity consumption and decrease the peak demand of a facility, which means the organization has lower operating costs, and hence these saved costs can be utilized for better patient care.

d. Water conservation:

In an HCF, sanitary fixtures consume 42% water while heating ventilation and air conditioning (HVAC) consumes 23% water, thus, major water-consuming area needs to be focused on reducing water consumption.

Rainwater harvesting for healthcare facilities has the potential to save thousands of litres of water every year. This in turn can result in substantial cost savings in addition to adopting climate-smart practices.

The guiding principles for water conservation in a HCF would be as follows:

- The healthcare facility would develop a strategy for the optimum usage of water.
- The HCFs would develop a plan for the conservation of water. e.g., water-efficient fixtures, dual flush mechanism, sensor- operated urinals, waterless urinals, rainwater harvesting.
- The HCFs would have a plan for wastewater treatment. e.g., sewage treatment plant and effluent treatment plant at sites of generation of contaminated grey water, like pathology.
- The HCFs would develop a programme/plan for the conservation of water.
- The HCFs would have a water management programme for the conservation of water by establishing a team, setting goals with timelines, conducting water audits, determining the cost of water, and preparing an action plan.
- The HCFs would have an ongoing educational programme for the efficient usage and conservation of water for all the stakeholders (staff, patients and visitors)
- The HCFs would have a plan to train the staff on water savings techniques.
- The HCFs would develop a wide variety of methods to communicate through IEC materials, new and/ or revised operating guides and manuals.

Climate Resilient Infrastructure at Health Care Facilities Including Retro Fitting of Existing Health Care Facilities

It is essential that HCF planning and designing should be responsive to local climate and hazard profile of the district. Strong focus should be given to designing all aspects of infrastructure and services as per relevant IS standards, building codes and local byelaws, and history of emergencies in the district to ensure patient safety and continuity of health service during emergencies. Few key interventions that would be undertaken to make the HCFs into green buildings would include:

New Buildings

- Climate risk assessment at the time of planning and designing the building.
- Use of high-performance glass on windows, doors, and roofs to prevent the heat inside and allows sunlight and fresh air to enter the room.
- Use double glazing glass on windows; it provides thermal and optical properties to the building and reduces the noise level.

- Ensure the plinth level is above the high flood level as known locally or storm surge level and make the building accessible with ramps and railing to create a barrier free environment.
- Installation of Rainwater Harvesting System.
- Installation of alternative energy systems.

Existing Infrastructure

- Introduction of electronic patient records in the facility to reduce the use of paper.
- Availability of 10-30 percent area for the herbal garden in the facility.
- Floor and wall finishes are conducive for infection prevention control practices.
- Modifications in the critical care rooms to make them functional during disaster.
- Installation of Rainwater Harvesting System.
- Installation of alternative energy systems.

Awareness Generation

As a part of the green and resilient measures, awareness generation measures will be undertaken covering, but not limited to following key areas of concern:

- Awareness and sensitization on all climate change induced events and health impacts
- Sensitization workshop on Sustainable Procurement
- Energy efficient measures and water conservation measures

IEC Dissemination Plan

IEC type	Material	Dissemination Timeline	Budget in lakhs				
			2022-23	2023-24	2024-25	2025-26	2026-27
Posters	2 Posters for 10 Healthcare facilities	November	0.3	0.4	0.5	0.55	0.6

Capacity Building

The plan for the training of ToTs, DNO-CC, and Medical officers regarding the guidelines and operational framework of green and climate resilient measures in Health Care Facilities is mentioned in the table below:

Sl. No.	Activities	Priority Districts	Timeline	Budget				
				2022-23	2023-24	2024-25	2025-26	2026-27
1.	Training of TOTs	4 districts	November	0.5 lakh	0.6 lakh	0.7 lakh	1 lakh	1 lakh
2.	Training of DNO-CC		December					
3.	Training of Medical officer		December					

Roles and Responsibilities

The table below highlights the roles and responsibilities of the associated staff to help support green climate and resilience infrastructure development in order to strengthen healthcare infrastructure.

Particulars	Responsibilities
SNO	• Finalization of IEC material and dissemination plan • Organize training sessions for the district-level officers and trainers • Identify health facilities for priority implementation based on disaster and health facility vulnerability • Identify relevant state level nodal agencies and collaborate with them for assessment of health facilities for implementation of measures • Facilitate and monitor necessary assessments at the health facility level • Facilitate implementation of structural and functional measures at the health facility level • Monitor the implementation of the activities • Support districts to identify sources of funding • Advocate for reduction in greenhouse gas emissions
DNO	• Conduct training for block health officers and medical officers with relevant training manuals • Support conduct of the following assessment at the health facility level: ▪ Energy audit ▪ Water audit ▪ Disaster-vulnerability assessment • Support the following functional measures at the health facility level: ▪ Formation and working of Water Management committee ▪ Formation and working of Sustainable Procurement committee ▪ Operational measures to make health facilities function during the disasters or power cut • Coordinate with other agencies for assessment and implementation of identified structural and functional measures • Update the DAPCCHH with support from District Task Force
Block health officer	• Ensure training of medical officers • Organize PRI sensitization workshops • Coordinate with other agencies for assessment and implementation of identified structural and functional measures
Medical officer	• Conduct health facility assessment - ▪ Energy audit ▪ Disaster-vulnerability assessment • Lead following functional measures- ▪ Formation and working of Water Management committee ▪ Formation and working of Sustainable Procurement committee ▪ Operational measures to make health facility functioning during disasters or power cut • Support community level IEC activities • Identify local funding opportunities: e.g. CSR initiative, NGO funding
Panchayati Raj Institution	• Support retrofitting and new health facilities with local funding source and community involvement

PART III

Budget

CHAPTER 11
Budget

Sl. No.	Activities	Budget (in lakhs)				
		Year 1	Year 2	Year 3	Year 4	Year 5
1	Task Force Meeting	0.1	0.1	0.2	0.25	0.3
2	Sensitization meeting for program officials	0.6	1	1.25	1.5	1.75
3	IEC material/ campaign/	2	2	2.2	2.5	2.8
4	Capacity Building	2	2	2.2	2.5	2.8
5	Green & Climate Resilient HCF	0	5	0	0	0
	a. Energy audit	0	2.5	2.5	2.75	2.8
	b. LED lighting	0	2.5	3	3.5	4
	c. Solar Panel	0	-	20	25	25
	d. Rain Water Harvesting	0	-	10	10.5	11
	e. Retrofitting of healthcare facility	0	-	5	0	5
6	Monitoring & Evaluation	0	-	0.5	0.6	0.75
7	Other operational cost	0.25	-	0.5	0.6	0.75
	Total	**4.95**	**15.1**	**41.5**	**42.95**	**56.95**

Note: Year 1 = FY 2022-23; Year 2 = FY 2023-24; Year 3 = FY 2024-25; Year 4 = FY 2025-26; Year 5 = FY 2026-27.

Annexures

Health Institutions in Lakshadweep

Institution	Number	Bed Strength
Hospitals	2 IGH Kavaratti GH Minicoy	70 (50+20)
AB-HWCs (CHC)	3 (Androth, Amini, Kadmat)	90
AB-HWCs (PHC)	3 (Kiltan, Chethlath, Kalpeni)	30
PHC	1 (Agatti)	-
Specialty Hospital	1 (RGSH Agatti)	50
Sub center	15	-
First Aid Center	2 (Bitra & Bangaram)	-
Ayush Hospital (Deen Dayal Upadhya)	1 Kavaratti	20
Co-located AYUSH Dispensary	1 (Kadmat)	-
AB-AHWC	7 (Minicoy, Amini, Androth, Kalpeni, Kiltan, Chetlat, Agatti)	

Constitution of State Level Governing Body – Environmental Health

Administration Of The
Union Territory Of Lakshadweep
Directorate of Health Services
National Health Mission, Kavaratti - 682555
Phone 04896-262115 /263748/263217
e-mail Id:rchlakshadweep@gmail.Com

F.No.1/62/2022-N HM (1)

Dated 18 .07.2023

ORDER

Sub:- UTL- National Programme on Climate Change and Human Health(NPCCHH)- Constitution of State Level Governing Body- Environmental Health- Order issued.

Ref: - F.No.62/NCDC/NPCCHH/2022-23 dated 14th March, 2023

In pursuance of the directions issued by the Govt.of India, Ministry of Health & Family Welfare vide D.O letter cited, the Secretary (Health), Union Territory of Lakshadweep is pleased to constitute the State Level Governing Body- Environmental Health in Lakshadweep with following composition to monitor the progress of implementation of National Programme on Climate Change and Human Health((NPCCHH)

1. Secretary (Health) : Chairperson
2. Secretary (Disaster Management) : Member
3. Secretary (Agriculture) : Member
4. Secretary (Environment& Forest) : Member
5. Secretary (S&T) : Member
6. District Collector : Member
7. Director (Health Services) : Member Secretary
8. Mission Director (NHM) : Member
9. State Nodal Officer (Climate Change) : Member
10. Head-NAPCCHH,CEOH&CCH Division, NCDC : Member

The state level Governing Body has the following roles and responsibilities.

1. Recommend strategies for mitigating the adverse effects of climate change on human health
2. Prepare an Action Plan for Climate Change and Human Health
3. Review epidemiological data on environmental health and climate change
4. Recommend strategies for monitoring and evaluation of health impacts due to climate change
5. Recommend coordination mechanisms with various stakeholders
6. Recommend means of financial assistance to states and other agencies working in the field of health and climate change
7. Recommend National Environmental Health Policy and Strategy
8. Any other matter as directed by MoHFW, Govt. of India.

This has issued with the approval of Secretary (Health),UTL vide diary no.1119 dated 28.04.23

(Dr.K.Shamsudheen)
Mission Director (NHM)

To: All concerned
Copy to: 1.PA to Secretary (Health),UTL
2. Additional Secretary, GoI,MoHFW,Nirman Bhavan, New Delhi- 110011
3. PA to DHS,UTL

Constitution of State Level Task Force – Environmental Health

Administration Of The
Union Territory Of Lakshadweep
Directorate of Health Services
National Health Mission, Kavaratti - 682555
Phone 04896-262115 /263748/263217
e-mail Id:rchlakshadweep@gmail.Com

F.No.1/62/2022-N HM(2) **Dated 19 .07.2023**

ORDER

Sub:- UTL- National Programme on Climate Change and Human Health(NPCCHH)- Constitution of State Level Task Force - Environmental Health- Order issued.

Ref:- F.No.62/NCDC/NPCCHH/2022-23 dated 14th March, 2023

In pursuance of the directions issued by the Govt.of India, Ministry of Health & Family Welfare vide D.O letter cited, the Secretary (Health), Union Territory of Lakshadweep is pleased to constitute the State Level Task Force - Environmental Health in Lakshadweep with following composition.

1. Secretary (Health) : Chairperson
2. District Collector : Member
3. Mission Director (NHM) : Vice Chairman
4. Director (Health Service) : Member Secretary
5. Director (Environment& Forest) : Member
6. Director (S&T) : Member
7. CEO, (Disaster Management) : Member
8. Director (ICMR Institute) : Member
9. State Nodal Officer (Climate Change) : Member
10. Head-NAPCCHH,CEOH&CCH Division, NCDC : Member

The task force of the Environmental Health Cell coordinates with the Centre (MoHFW, NCDC) for the execution of the SAPCCHH.

This has issued with the approval of Secretary (Health),UTL vide diary no.1119 dated 28.04.23

(Dr.K.Shamsudheen)
Mission Director (NHM)

To: All concerned
Copy to: 1.PA to Secretary (Health),UTL
2. Additional Secretary, GoI,MoHFW,Nirman Bhavan, New Delhi- 110011
3. PA to DHS, UTL

Constitution of State Environmental Health Cell

Administration Of The
Union Territory Of Lakshadweep
Directorate of Health Services
National Health Mission, Kavaratti - 682555
Phone 04896-262115 /263748/263217
e-mail Id:rchlakshadweep@gmail.Com

F.No.1/62/2022-N HM(3) **Dated 19 .07.2023**

ORDER

Sub:- UTL- National Programme on Climate Change and Human Health(NPCCHH)- Constitution of State Environmental Health Cell (EHC) - Environmental Health- Order issued.

Ref: - F.No.62/NCDC/NPCCHH/2022-23 dated 14th March, 2023

In pursuance of the directions issued by the Govt.of India, Ministry of Health & Family Welfare vide D.O letter cited, the Secretary (Health), Union Territory of Lakshadweep is pleased to constitute the State Environmental Health Cell (EHC) in Lakshadweep with following composition.

1. State Nodal Officer (Climate Change) : Chairman
2. Programme Officer (Cancer) (NCD) : Member
3. Health Education Officer : Member
4. Consultant, SHSRC : Member

This has issued with the approval of Secretary (Health),UTL vide diary no.1119 dated 28.04.23

(Dr.K.Shamsudheen)
Mission Director (NHM)

To: All concerned
Copy to: 1.PA to Secretary (Health),UTL
2. Additional Secretary, GoI, MoHFW, Nirman Bhavan, New Delhi- 110011
3. PA to DHS,UTL

Constitution of Island Level Task Force – Environmental Health

Administration Of The
Union Territory Of Lakshadweep
Directorate of Health Services
National Health Mission, Kavaratti - 682555
Phone 04896-262115 /263748/263217
e-mail Id:rchlakshadweep@gmail.Com

F.No.1/62/2022-N HM(4)

Dated 19 .07.2023

ORDER

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Sub:- UTL- National Programme on Climate Change and Human Health(NPCCHH)- Constitution of Island level Task force- Environmental Health - Order issued.

Ref: - F.No.62/NCDC/NPCCHH/2022-23 dated 14th March, 2023

In pursuance of the directions issued by the Govt.of India, Ministry of Health & Family Welfare vide D.O letter cited, the Secretary (Health), Union Territory of Lakshadweep is pleased to constitute the Island level task Force - Environmental Health in Lakshadweep with following composition.

1. Deputy Collector/BDO : Chairman
2. Medical Superintendent/Medical Officer in Charge : Member Secretary
3. Health Inspector : Member
4. Environmental Warden : Member
5. Multipurpose Health Worker : Member

This has issued with the approval of Secretary (Health),UTL vide diary no.1119 dated 28.04.23

(Dr.K.Shamsudheen)
Mission Director (NHM)

To: All concerned
Copy to: 1.PA to Secretary (Health),UTL
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