स्वास्थ्य एवं
परिवार कल्याण मंत्रालय
MINISTRY OF
HEALTH AND
FAMILY WELFARE

सत्यमेव जयते

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Government of Andaman
and Nicobar Islands

ANDAMAN & NICOBAR ISLANDS

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

National Centre for
Disease Control
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Foreword

The Union Territory of Andamans & Nicobar Islands has a unique geographical location leading to complex interplay of climatic factors which make it prone to an array of disasters such as tsunami, cyclones, floods and a multitude of disease outbreaks in its aftermath. Adverse impacts of climate induced calamities are already being felt by the state and strategic planning to combat it has become the need of the hour. Preparedness for climate change is a dynamic process which mandates constant evaluation of the changing climate and assessment of vulnerabilities of the systems so as to identify and adopt necessary mitigation measures.

The people who are most vulnerable to change in climate are usually the ones who contribute the least to it and are also least able to protect themselves and their families against it being the most disadvantaged. Therefore, in order to protect and prepare its people, it becomes extremely important for states to crystalize a framework to address issues pertaining to its own geographical diversity and unique challenges related to global warming and climate changes.

Hence, I am happy to launch State Action Plan on Climate Change and Human Health (SAPCCHH) for A & N islands. It shall serve as a platform to provide an overriding framework for all climate related changes by strengthening resilience and reducing natural and socio-economic vulnerability of the population through intersectoral coordination of various departments and participative collaborations paving the way for improved climatic governance by the state.

Shri Keshav Chandra IAS
Chief Secretary
Andaman & Nicobar Islands

Foreword

Climate change crisis due to global warming as a consequence of anthropogenic influences is already affecting health in a myriad of ways. We are now witnessing heavy casualties due to extreme weather conditions, disruption of agriculture and food systems, epidemics of vector-borne diseases and even mental disorders. Apart from direct deteriorating ill-effects on health, adverse climate changes will also jeopardize livelihood sustainability of people in a geographic region like Andamans & Nicobar Islands as the population is heavily dependent on fisheries, timber products and ecological biodiversity for tourism opportunities.

India has been a forerunner in understanding the gravity of the situation and is already a member of United Nations Framework Convention on Climate Change, Kyoto Protocol as well as the Paris Agreement. Therefore, after formulation of National Action Plan, it was mandated for all the states to come up with implementation of their own Action Plan to better suit their geographical and socio-cultural needs and barriers.

I am sure SAPCCHH will play an instrumental role in upscaling our union territory's preparedness to deal with all adverse impacts of climate change be it loss of lives or catastrophic expenditure against health-related expenses by ensuring timely action against irreversible environment damage and serve as a guiding document for formulation of future policies.

Shri Nikhil Kumar IAS
Commissioner-cum-Secretary
Andaman & Nicobar Islands

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EXECUTIVE SUMMARY

Andaman & Nicobar's UT Action Plan on Climate Change (SAPCC) has been formulated in accordance with the principles and guidelines of the National Action Plan on Climate Change (NAPCC). After United Nations Framework Convention on Climate Change (UNFCCC), steps were initiated to reduce the effect of climate change such as Rio Convention, Kyoto protocol in 1997, Male' Declaration in 1998, Convention of Parties, Cancun Agreement 2010, Durban Platform 2011 and Nationally Determined Contributions (NDCs) at Conference of Parties 21.

Ministry of Environment, Forest and Climate Change (MoEFCC), India released National Action Plan on Climate Change with eight missions in 2008 to meet the challenge of climate change. Later on, four new missions (including Health Mission) were identified. The Health Mission aimed to reduce climate-sensitive illnesses through integration with other missions under National Action Plan for Climate Change (NAPCC) as well as through programmes 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 and capacity building. National Centre for Diseases Control (NCDC) was identified as the 'technical nodal agency' by Ministry of Health & Family Welfare for the proposed National Mission on Health. The Government of India through the MoEF & CC directed each state to identify their climate change concerns and prepare an action Plan to combat the local impacts and devise mitigation strategies, under various Missions of NAPCC. The SAPCC of every state was required to be formulated and prioritize financeable strategies and actions that can be made operational as per the state specific circumstances and requirements.

The impact of climate change on health needed to be addressed as Andaman & Nicobar Islands as well as it is located in high risk-prone area of experiencing climate-related illnesses and is susceptible to climate change related disasters such as rise in sea level, cyclones, tsunami, importation of diseases exotic in nature and pandemics. The UT is also vulnerable towards all kinds of disease outbreaks due to influx of high tourist load. The proposal of GoI to expand the business operations and improve tourism in the UT also poses a great threat for the same.

In this regard, an UT Task cell on Environmental health, was established under the National Mission for Strategic Knowledge on Climate Change (NMSKCC) in the UT of Andaman & Nicobar Islands. This cell was made responsible for the preparation and implementation of the State Action Plan for Climate Change and Human Health (SAPCCHH) in union territory. 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 UT and making it available on one platform. Capacity building and knowledge dissemination on climate change at individual, institutional and systemic levels are other important activities being taken up by the cell.

The State Action Plan on Climate change and Human Health, prepared by the UT Task cell for Andaman & Nicobar Islands for five years i.e., 2023 to 2028 under NPCCHH, focuses on the plan of action to adapt to these climate vulnerabilities in the UT. It is a dynamic and flexible policy framework which will follow a continuous and interactive process to reflect the changes and developments happening at the national, State and local levels. The stakeholder consultation process is an important aspect of SAPCC. Andaman & Nicobar SAPCC has been designed following stakeholders concerns and issues. The SAPCC has followed a structured approach to formulate and implement adaptation strategies, policies and measures to ensure human development in the face of climate variability and change. The implementation of UT's SAPCC will be based on the strong stakeholder engagement and capacity development at all levels of the society to enable better acceptance and implementation of CC mitigation and adaptation measures.

PART I

Climate Change and its Health Impacts

CHAPTER 1

Introduction

The emerald islands of Andaman & Nicobar scattered in Bay of Bengal stretches upto a distance of 750 km constituting 0.25% of the total geographical area of India. The archipelago consisting of more than 836 small and big islands, islets and rocks, is aligned North to South in the form of a chain of Islands between Cape Negaris (of Myanmar) in North and Achin Head in Sumatra (of Indonesia) in South. The Union Territory lies between 6°N to 14°N latitude and 92°E to 94°E longitudes. There are two groups of Islands viz. Andaman and Nicobar separated by 10° channel.

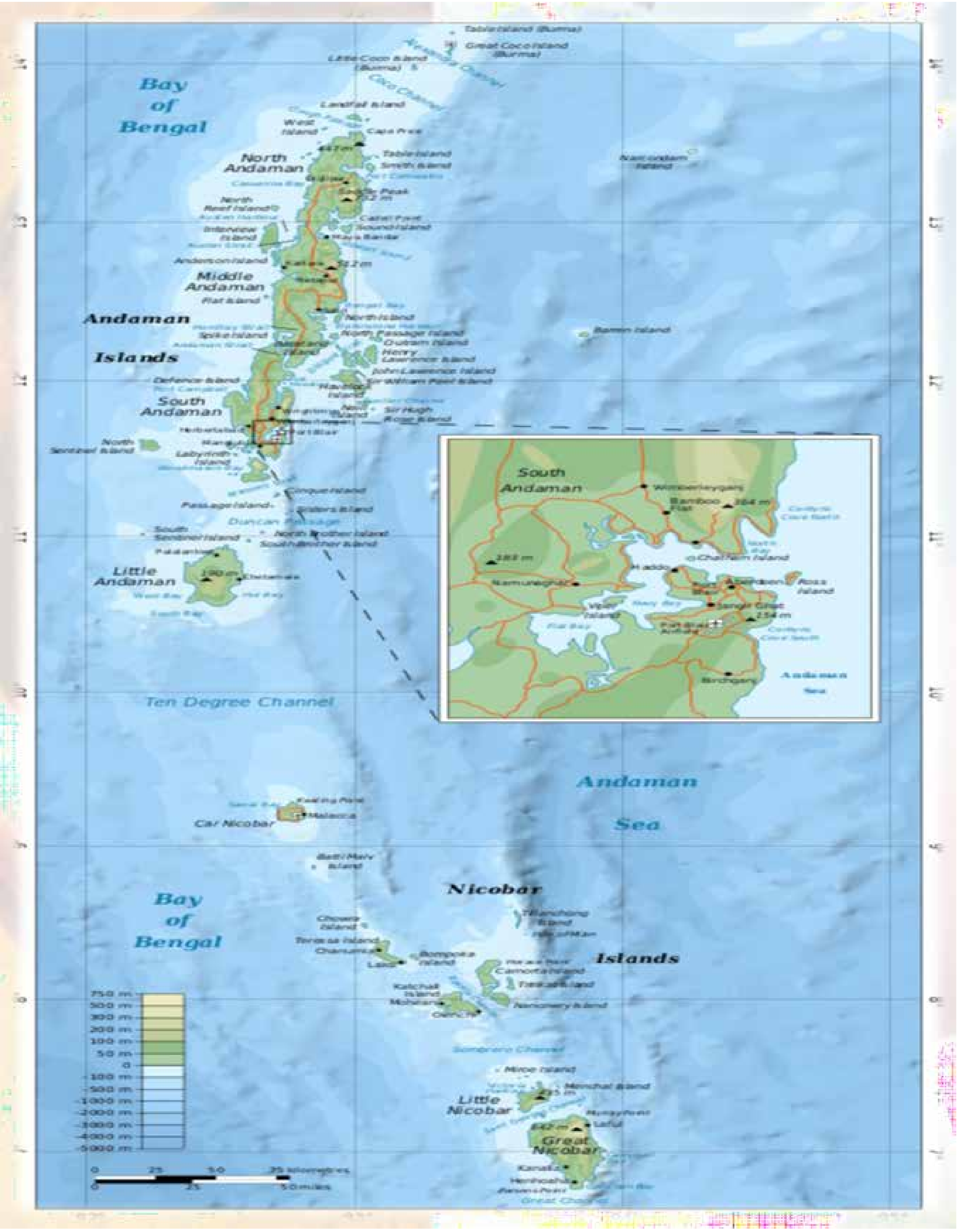
The Andaman group of Islands consists of South and North & Middle Andaman District covering a gross length of 467 km while Nicobar Islands consists of Nicobar District covering approximately 259 km. The total geographical area of Andaman & Nicobar Islands is 8279 sq km of which Nicobar Islands is 1841 sq km and 6408 sq km is of Andaman Islands. The climate of Andaman & Nicobar Islands is described as tropical and 86% of the total area is covered by Forest.

As per Census 2011, the UT is divided into 3 districts and has a total population of 0.38 million which constitute 0.03% of the country's population. The urban & rural population constitutes 62.30% and 37.70% respectively. The Tribal population is 7.61%. The Islands are home to six indigenous aboriginal tribal groups viz Jarawa, Sentinelese, Great Andamanese, Onge, Nicobarese and Shompen. Population density is 46 persons per square km which is much lower than the national average. The 19th Livestock census 2012 has reported a total livestock population of 0.15 million.

Cellular Jail, Port Blair

Radhanagar Beach, Swaraj Dweep

TOPOGRAPHY OF ANDAMAN & NICOBAR ISLANDS



CHAPTER 2

Climate Vulnerability in the UT

Demographic & Geographic Profile: Summary

Indicators	A & N Islands
Total population	3,80,581 (Census 2011)
Male	2,02,871
Female	1,77,710
Total Households	94551
Literacy Rate	86.27%
Birth Rate	10.8
Death rate	5.8
Total Fertility Rate (TFR)	1.6
Sex Ratio	876/1000 males
Total Area	8,249 sq km
Total Islands/Islets/Rocky Outcrops	836
Inhabited Islands	37
Districts	03
Tehsil	09
Climate	Tropical
Temperature	31°C (max) and 23°C (min)
Forest area	92%
Latitude	6° to 14° North
Longitude	92° to 94° East
Height	Sea level to 732 meters
Distance by sea from Main Land	• Port Blair to Kolkata (1255 km) • Port Blair-Chennai (1190 km) • Port Blair-Vishakhapatnam (1200 km)

Temperature

The climate of Andaman & Nicobar Islands, located between the Bay of Bengal and the Andaman Sea at about 10/13-degree north latitude, is tropical, hot all year round, with a dry season from January to April and rainy season from May to November as per the Indian monsoons. The temperatures are stable throughout the year, however, before the rainy season, in March and April, the hottest temperature of the year peaks around. Here are the average temperatures in Port Blair, the capital of Andaman & Nicobar Islands located in South Andaman.

Month	Mean Temperature (in °C)					
	Maximum			Minimum		
	2020	2021	2022	2020	2021	2022
January	30.3	30.4	30.5	24.0	25.0	25.0
February	30.7	30.5	30.1	24.0	24.0	24.0
March	31.6	32.1	31.4	24.0	25.0	25.0
April	32.8	32.1	32.7	26.0	25.0	26
May	32.3	31.9	30.5	26.0	26.0	26
June	30.3	31.1	30.7	25.0	25.0	25
July	30.2	30.2	30.1	25.0	25.0	25
August	30.5	29.8	30.2	25.0	25.0	25
September	30.1	29.6	30.4	25.0	24.0	25
October	30.0	30.3	30.1	24.0	25.0	25
November	30.7	30.6	30.3	26.0	25.0	25
December	29.8	30.1	30.4	25.0	25.0	25
Average	**30.77**	**30.72**	**30.62**	**24.92**	**24.92**	**25.08**

Source: IMD, A&N Islands.

Humidity

Precipitation is abundant and amounts to almost 3,000 millimetres (120 inches) per year. The rains begin in May and are very frequent. They decrease during the month of November and become quite rare in December. Here is the average precipitation data of A & N Islands:

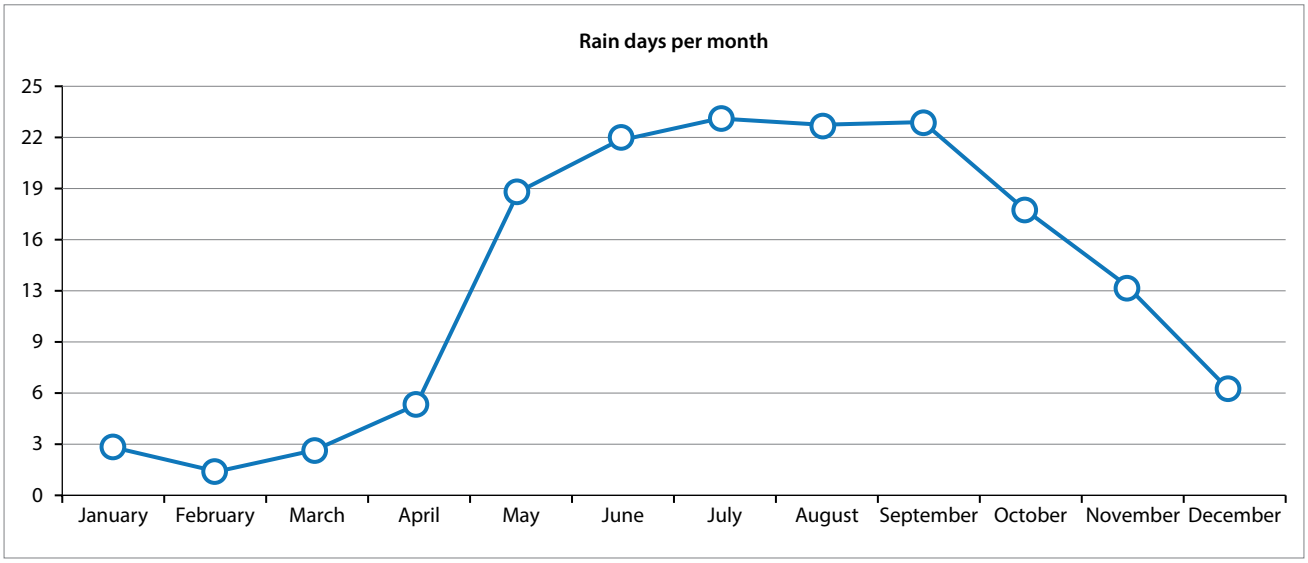
Month	Humidity (in %)					
	08:30 hrs			17:30 hrs		
	2020	2021	2022	2020	2021	2022
January	70	70	71	73	74	75
February	71	71	75	72	73	76
March	65	72	74	71	76	77
April	69	74	71	75	81	74
May	76	80	84	84	84	87

Month	Humidity (in %)					
	08:30 hrs			17:30 hrs		
	2020	2021	2022	2020	2021	2022
June	84	81	82	88	84	85
July	85	89	85	87	89	88
August	83	87	84	85	87	86
September	86	86	83	89	91	87
October	88	83	81	93	87	87
November	75	80	77	82	85	83
December	76	73	73	81	78	77
Average	**77.33**	**78.83**	**78. 33**	**81.67**	**82.42**	**81.83**

Source: IMD, A&N Islands.

Rainfall Pattern

Normal Rainfall in Andaman & Nicobar Islands is 3180 mm and average rainy days ranged from 121 to 149 days in last 5 years. July offers the maximum rain days while February has the fewest.



Climate related Hazards Risk Profile

Climate change is global but the effects are local. Localized physical impacts will be determined by geography and macro level interactions between global warming and existing weather patterns of Andaman & Nicobar Islands. Few commonly identified global climate change consequences are:

- Change in Temperature
- Pattern of Rainfall changes (Seasonal and latitudinal shift in precipitation)
- Sea level rise
- Severe events/disasters (Incidence and magnitude of extreme events will be exacerbated)

Expected Climatic Changes	Possible Impact on the People of A & N Islands
Temperature Change The warming trend has been triggered by the emission of carbon dioxide (CO_2) and other Green House Gases from various human activities (e.g. Industrial processes, fossil fuel combustion and land use changes such as deforestation). The most up-to-date projections of future warming suggest a global increase of 1.8°C to 6.4°C by 2100. There is no hard and fast line separating 'dangerous' from 'safe' climate change. However, beyond a threshold of 2°C the risk of largescale human development setbacks and irreversible ecological catastrophes will increase sharply.	• **Livelihood:** The economic thrust of ANI is on **FAT**-Fisheries, Agriculture and Tourism. • **Impact of Fisheries:** Higher temperature may lead to fish habitat modification, affect abundance and spawning of fish. • **Impact on Agriculture:** Reduce food production due to higher rate of evapotranspiration, heat stress on crops, erratic weather which undermines rain –fed agriculture systems. Higher temperatures increase the incidence of pests and diseases that affect crops and cattle/livestock • **Impact on Tourism:** Coral bleaching as a result of warming sea may have implications on tourism. • **Health:** Health facilities in ANI are limited and people depend heavily on health services of mainland. Major killer diseases (Malaria, Dengue etc.) could expand its coverage and resistance to drugs may become a significant challenge. Reduction in the variety and availability of medicinal plants on which local people continue to rely. Higher temperature will lead to quick evaporation of rainwater storage tank creating water crisis and leading to health hazards due lack of sanitation and hygiene.
Rainfall pattern change *(Seasonal & latitudinal shift in precipitation)* *Climate change is reducing the amount of useful precipitation in many parts of the world.*	• **Water Resources (Drinking and Household Use):** ANI is dependent on rainwater for drinking and household use except very few springs and one river in North Andaman. Rainwater is harvested and collected into tank and supplied to households. Erratic rainfall will create seasonal acute water crisis as was the case in year 2007. Decrease in available surface water will lower water tables and slow aquifer recharge rates. As a result, decline and/or increase variability in water supply. • **Livelihood (Agriculture):** Crop loss and reduced agricultural productivity due to seasonal variation of precipitation. • **Health:** Weather conditions determine malaria transmission to a considerable extent. Heavy rainfall will result in puddles, which provide good breeding conditions for mosquitoes. Moreover, water scarcity would affect hygiene and sanitation, leading to further health concerns.
Sea level Rise *Sea level could rise rapidly with accelerated ice sheet disintegration. Climate change is also causing many glaciers like those in the Himalayas and Andes to melt threatening the existence of low-lying land masses.*	• **Water Resources:** Increased seawater percolation may further reduce freshwater supplies. • **Livelihood (Agriculture, Fisheries, Tourism):** Agriculturally fertile coastal areas are vulnerable to inundation and salivation. Some small islands/beaches which are popular tourist destination may be lost due to inundation. • **Social Issues (Displacement and Urbanization):** Beyond actual inundation rising sea levels will also put millions of people at greater risk of flooding. This will displace a large number of people and result in rapid urbanization straining resources and putting more pressure on civic amenities. Sea level rise will make southern group of islands which are inhabited by tribal or primitive tribal groups more vulnerable due to subsidence of land due to earthquake as it happened in 2004.

Geological Disasters

1. Earthquake

As per seismic Zoning Map of India contained in IS 1893-1984, A&N Islands falls in Zone V seismic zone, which is the most severe seismic zone (very high damage risk zone). The group of islands are located near the boundary of Indian plate and Burmese Micro plate which makes them susceptible to mild/moderate/ severe earthquakes throughout the year. Every year a significant number of earthquakes takes place in these islands of mild to moderate capacity without causing any destruction so far except in 2004.

2. Tsunami

It is an ocean wave produced by an event at sea, like an earthquake, landslides, or volcanic eruption. These waves may reach enormous size and have been known to travel across entire oceans. Absence of coastal plantation/mangroves and non-availability of high-altitude grounds/buildings can enhance the vulnerability of the people to tsunami. Flat islands like Car Nicobar, Chowra, Teresa, Katchal, Nancowry, Pilowmillow, Little Andaman, Neil, Havelock, Strait, Long Island etc are vulnerable to tsunamis. The Nicobarese tribes are particularly vulnerable since their villages are mostly on the coastal belts.

UT's Vulnerability to Tsunami

- Dec 31, 1881: Earth Quake (7.9) beneath Andaman Islands was followed by Tsunami.
- June 26, 1941: Earth Quake (7.7) beneath Andaman Islands was followed by Tsunami.
- Dec 26, 2004: Nature jolted Andaman and Nicobar Islands on 26th Dec, 2004 at 06:28:53 AM when a major earthquake with magnitude of 9.3 shocked the earth followed by unprecedented Tsunami of the order of 12 to 15 meters height leaving many people dead, homeless and damaging property.
- April 11, 2012: Earthquake of 8.5 struck off the west coast of Northern Sumatra measuring 22 jolts.
- May 21, 2012: Earthquake hit A & N Islands but did not generate Tsunami waves due to strike-slip (lateral) fault motion of earth.

Geo-Morphological Changes Due to Earthquake & Tsunami of Dec 26, 2004

- Islands have physically moved horizontally by 2 to 3 metres in South-West direction towards the mainland and rotated in anticlockwise direction.
- Southern Group of Islands (Great Nicobar) has sunk by about 1.4 to 1.5 meters - Coast line has moved inland.
- The Northern group has risen by about 0.5 m and 0.8 - Coast line has receded.
- This has caused submergence of 1300 hectares of agriculture land under water.

3. Drought

The Islands face shortage of water during peak of Summer between March and May as the main source of fresh water is rain fall. There are so called only two rivers in Andaman & Nicobar Islands, Kalpong river of Diglipur, North Andaman and Galathea river of Southernmost Island of Great Nicobar. Almost all islands face severe scarcity of water during the summer due to lack of larger storage capacity and also sometimes due to delay in the rainfall. The water scarcity also contributes to vector borne and water borne diseases as people tend to store water in open containers for a long time leading to vector growth.

4. Flood

The Islands seldom faces floods except few flat lands, as the rainfall even though heavy runoffs into Sea very quickly due to undulating topography. The floods mainly occur when heavy rainfall occurs during high tide period. Car Nicobar is vulnerable to floods as the drainage is predominantly by seepage. The low-lying adjoining areas of Port Blair and parts of North and Middle Andaman are prone to flash floods during heavy torrential rains.

5. Volcanic Eruption

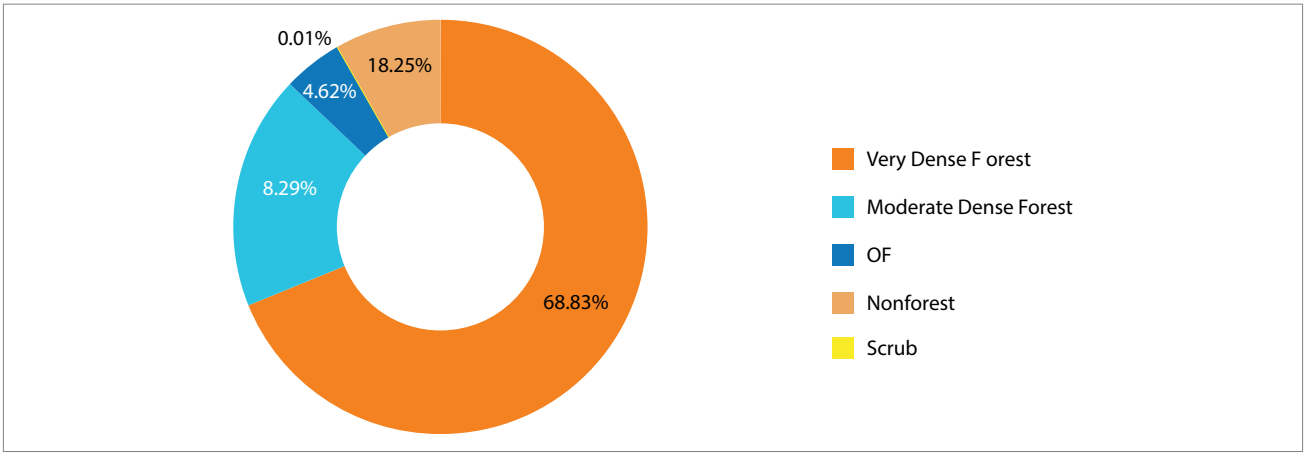
Active Volcanoes	Barren Island in Andaman district is the only active volcano in India. It interrupted in 1803, 1891, 1995 and 2005 and can become the cause of Earthquake, Tsunami-etc. The island is uninhabited and away from other inhabited islands.
Dormant Volcanoes	The other volcano at Narcondum is dormant for centuries. But it can also unpredictably become active and can be the cause of Earthquake, Tsunami-etc.

6. Cyclone

According to Cyclone Hazard Map of India, Andaman & Nicobar Islands is located in the severe damage risk zone, with probable maximum wind speed of 200 km/s. The islands lie in the path of tropical cyclones which are formed more easily between April and December with biannual peaks from late April to late May and from October to early December. However, given the warm sea, in theory, they can form all year round. The territory lies in the path of cyclones arising in the Andaman Sea to the East and Bay of Bengal to the West. The Islands face Cyclones periodically throughout the year. Some of the cyclones that occurred in Andamans in the past are AMPHAN 2020, PARADIP, GULABI, JAWAD.

Forest Cover

Andaman & Nicobar Islands support very luxuriant and rich vegetation due to tropical hot and humid climate with abundant rains. The forests in Andaman & Nicobar Islands belong to four Type Groups i.e., Tropical Wet Evergreen, Tropical Semi Evergreen, Tropical Moist Deciduous and Littoral & Swamp Forests. These forests have a tropical rainforest canopy made of a mixed flora with elements from Indo-Myanmar and Indo-Malayan floral realms. About 2,200 varieties of plants have been recorded in the Islands, out of which 200 are endemic and 1,300 do not occur in mainland India.



Source: Forest Survey of India, 2019.

District-wise Status of Forests in Andaman & Nicobar Islands

District	Geographical Area (GA)	2019 Assessment (Latest Available)				% of GA
		Very Dense Forest	Mod. Dense Forest	Open Forest	Total	
Nicobar	1,841	1,147.99	104.99	153.19	1,406.17	76.38
North & Middle Andaman	3,736	2,670.81	326.90	72.82	3,070.53	82.19
South Andaman	2,672	1,858.72	252.00	155.36	2,266.08	84.81
Grand Total	**8,249**	**5,677.52**	**683.89**	**381.37**	**6,742.78**	**81.74**

Source: Forest Survey of India, 2019.

FIRE PRONE FOREST AREAS

Geographical area under different classes of forest fire proneness:

Sl. No.	Forest Fire Prone Classes	Geographical Area	% of Total forest cover
1.	Extremely fire prone	0.00	0.00
2.	Very Highly fire prone	52.82	0.52
3.	Highly fire prone	47.84	0.42
4.	Moderately fire prone	51.44	0.38
5.	Less fire prone	8,092.41	98.68
	Total	**8,244.51**	**100.00**

Source: Forest Survey of India, 2019

Tree Cover in Andaman & Nicobar Islands

Tree Cover (in sq km)	Area
	41

* Tree cover of Andaman & Nicobar Islands has increased by 6 sq km as compared to the previousassessment reported in ISFR2017.

Estimation of dependence of people in forest fringe village Forests in A & N Islands

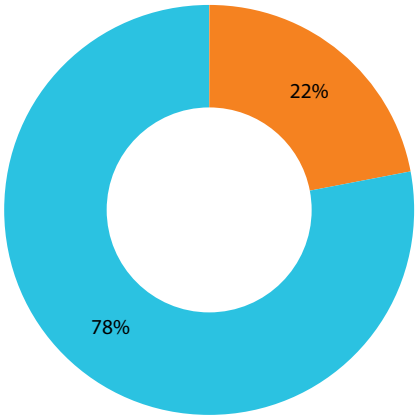
Fuel wood (tonnes)	Fodder (tonnes)	Bamboo (tonnes)	Small Timber (cum)
22,038	83,405	3,737	2,506

Tourism

Year	Domestic	Foreign	Total
2018	498279	15242	513521
2019	505398	16206	521604
2020	191207	5412	196619
2021	121491	1689	123180
2022	235061	4461	239522

Source: Department of IP&T, A&N Islands

A & N Industries



- No Large Scale Industries in ANI
- MSMEs registered in Udyam Portal as on 30/01/2023 is 7968 units
- 78% of the units are in service sector

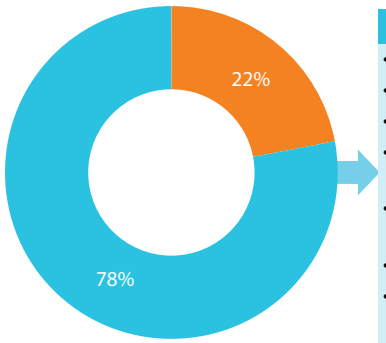
Services, 6249 units

Manufacturing, 1719 units

Source: Department of Industries, A&N Islands.

Break-up of manufacturing & servicing units

Service Sector



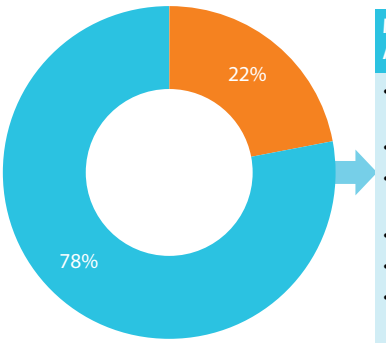
Manufacturing, 1719 units

Services, 6249 units

Major Servicing Activities

- Trading Activity
- Hotels & Restaurants
- Tour Operators
- Transportation, Clearing & Forwarding
- Automobile Repair & Service
- Manpower Supply
- Repair/ Service of House Hold Good/ Electrical Appliance

Manufacturing Sector



Manufacturing, 1719 units

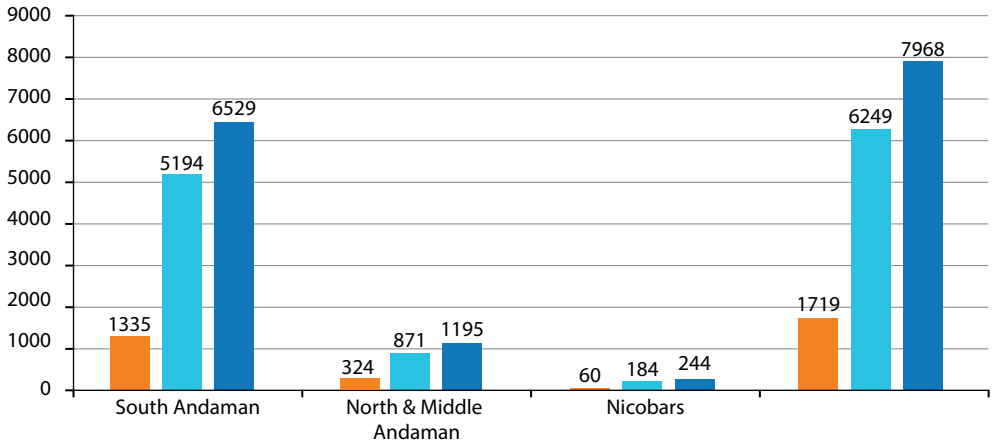
Services, 6249 units

Major Manufacturing Activities

- Steel Furniture, Wooden Furniture
- Fish Processing
- Desiccated Coconut Powder
- Copra
- Coconut Oil, VCO
- Coconut Shell/Sea Shell Wooden Handicrafts
- Bakery & Food Products

Source: Department of Industries, A&N Islands.

District wise Distribution of MSMEs



- 6529 units (77.6%) of the total registered units are in around South Andaman District.
- Only 1195 units (18.85%) and 244 units (3.4%) are set up in North & Middle Andaman and Nicobar Distric respectively

Manufacturing

Servicses

Total

Source: Department of Industries, A&N Islands.

Water Resources

Demand for water is increasing day by day for various purposes such as drinking & domestic use, irrigation, power (hydro), industry, transportation, tourism etc. Primary sectors (agriculture, animal husbandry, fisheries and forestry) are the major consumers of water resources in Andaman & Nicobar Islands. Among primary sector, forests are the largest consumer of water as they are spread over 0.825 million hectares. Water shortage in primary sector leads to poor economic output and also the agriculture in the islands is completely dependent on rainfed water and hence calls for urgent investments in water conservation infrastructure.

In the islands, the precipitation is the only source of fresh water which is recorded as 26,200 MCM, of which, 75 % goes as runoff eventually reaching the sea. The total utilizable water (harvested rain water, soil moisture and surface water resource) is estimated to be around 5240 MCM (20% of precipitation). Though surface storage capacity by dam, reservoir and ponds is 20 MCM (Dhanikari dam-5 MCM, Kalpong-15 MCM, others surface water -5 MCM), total utilizable water is only 10 MCM as entire Kalpong dam water is used for power generation.

The total estimated water demand for farm sector is 323 MCM, of which, 281 MCM is directly met through rainfall and 41.4 MCM is met through streams, nalla and ponds during dry seasons. The water demand for livestock and fisheries sector is about 0.004 and 0.0012 MCM, respectively. The water demand for establishments & institutions is more (2.17 MCM) than the industries & infrastructures (1.66 MCM) in the islands. Similarly, the domestic use of water in urban areas is double (6.54 MCM) the amount of water used in rural areas (3.44 MCM). The total water demand for non-agricultural purposes is 13.81 MCM, of which, 10 MCM is supplied through PBMC/PWD from surface storages and the shortage of 3.81 MCM is partially only met through shallow bore wells and private water suppliers. Hence, the best practices for water harvesting, storing and effective utilization of water resources are suggested to be adopted by all the stakeholders in the islands.

Kalpong Hydro-electric power project in North Andaman

CHAPTER 3

Situational Analysis & Adaptation Strategies

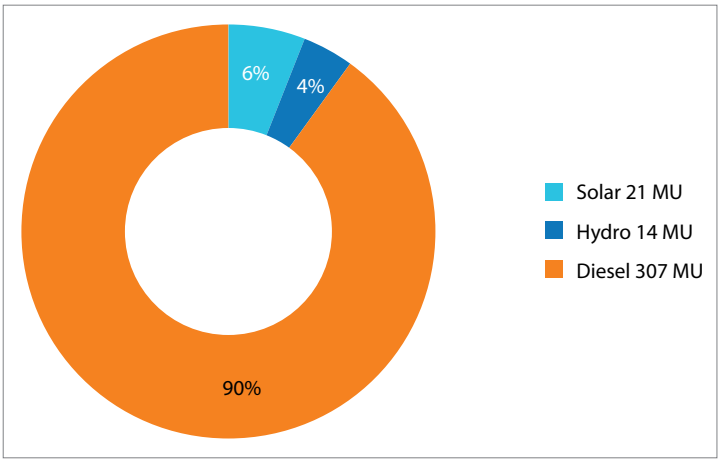
Power

Situational Analysis

Power or electricity is the most convenient and versatile form of energy. All forms of economic activity whether it be agriculture, industry or services is relied upon the un-interrupted power supply as well as it is the most crucial source of supplying domestic energy requirement. Diesel Generating (DG) sets are the major source of energy in Union Territory of Andaman & Nicobar Islands. The Electricity Department under the Administration looks after the generation and distribution of power in all the 19 inhabited Islands of Andaman & Nicobar. The department also serves as a Nodal Agency for New & Renewable Energy Programmes and is the State Designated Agency (SDA) for Bureau of Energy Efficiency (BEE) for implementation of Energy Efficiency & Conservation Programmes.

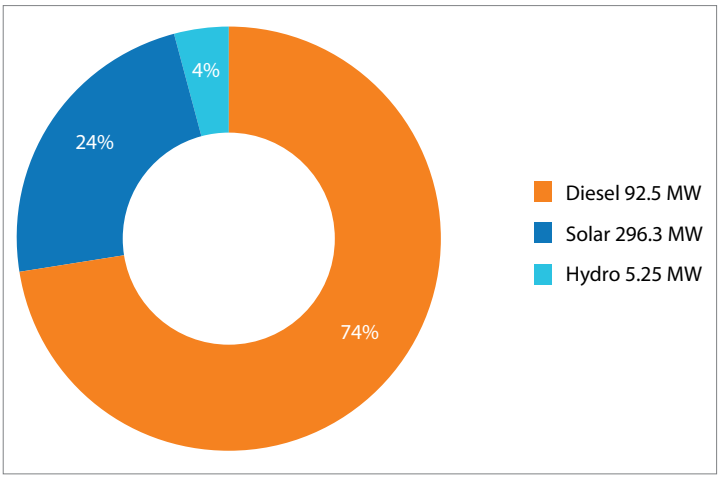
Due to the geographical and topographical peculiarities of these islands, including separation by sea over great distances, there is no single power grid for all the electrified islands and instead separate power houses cater independently to the power requirements of separate Islands. In A&N Islands the power generation started during the year 1920 with an installed capacity of

Generation (MU) for FY 2022-23



Source: Department of Industries, A&N Islands.

Installed Capacity (MW)



Source: Department of Power, A&N Islands

100 KW which has increased to 127.80 MW at present to meet the increased power demand in 19 Islands. The power generating & distribution system in each Island is without connection to any grid and therefore a "Stand Alone System". The Electricity Department, A&N Administration is providing power supply to about 1,46,950 consumers through 54 Power Houses (including ten Community Power Houses, three Solar Power Plants including RTS Plants and one hydro plant) with a total installed capacity of 127.80 MW (including six hiring power plants at Phoenix Bay, Chatham, Bambooflat, Mayabunder and Diglipur. The peak demand of 60.0 MW is met by the department. There are 1510.708 Km. of HT line and 3937.025 Km. of LT lines and 1124 Nos. of Distribution Transformers and 30 Nos. Power Transformers all over the islands.

Consumer Profile

Category	No. of Consumers	Percentage
Domestic	123710	83%
Commercial	20489	14%
Industrial	427	<1%
Others	3597	2%
Total	**148223**	**100%**

Source: Dept. of Power, A&N Islands

Share of Renewable Energy in UT

- 34.48 MW capacity of Renewable Energy installed in A&N Islands with 29.23 MWp Solar and 5.25 MW Hydro generation.
- 29.23 MWp Solar capacity includes - 4.178 MWp Rooftop Solar plants on 54 Govt. & 12 Residential Buildings and 25.05 MWp Ground Mounted Solar Plants established by NTPC & NLC at Garacharma & Dollygunj.
- Renewable Energy share is 27.15% in total installed capacity of 127 MW in entire A&N Islands.

Existing Renewable Energy Based Projects

Details of the Project	Location	Name of Agency	Capacity (MWp)	Rate per Unit (Rs.)
Hydro power plant (August, 2001)	Diglipur	ED	5.25	-
Ground Mounted Solar (April, 2013)	Garacharma	NTPC	5.00	9.35
Ground Mounted Solar (August, 2016)	Raj Niwas	ED	0.05	-
RTS, Govt. building (March, 2017)	S/A -15	SECI	1.00	4.64 (Levelized Tariff)
RTS, Govt. building (December, 2018)	S/A-33 C/N -06	Mundra Solar	3.15	2.20
RTS, Private buildings	12	Ujhas Energy (Empanelled agency)	0.028	-
Solar Power Plant with 8 MW hr BESS (2.5 MW-December, 2018 & 17.5 MW - June, 2020)	Dolly Gunj Attampahad	NLCIL	20.00	6.65
		Total	**34.477**	

Source: Dept. of Power, A&N Islands.

Energy Efficiency Projects Taken till Date

- Four Lakhs LED Lamps of 9 Watt distributed amongst the 01 Lakhs Domestic Consumers @ 4 LED bulbs/consumers at subsidized cost of Rs.10/-/bulb.
- 1100 Solar Street lights installed in A&N Islands under MNRE scheme.
- 1500 LED street lights installed in Nicobar Group of Islands during 2021-22 - BEE.
- Chowra & Teressa villages made energy efficient by replacement of conventional lights with energy efficient lights during April, 2022.
- Conventional lights at 11 Religious places were replaced by Energy Efficient ones during February, 2021.
- Energy Efficient lights for 5 market places with due approval handed over to PBMC during May, 2022 for replacement in PBMC building/Community Hall/Markets.
- 11 Schools of Car Nicobar made Energy Efficient by replacement of conventional appliances with Energy Efficient Appliances during July, 2022. Remaining 2 Schools, Kakana, Jayanti being in Dilapidated conditions replacement could not be taken up.
- Under Harminder Bay, Little Andaman complete replacement of conventional lights by Energy Efficient done during September, 2021.
- 35,000 conventional street lights replaced with LED street lights (in Municipal and Panchayats).
- Enforcement of ban on sale/purchase of filament lamps.
- For Enforcement of ban on sale/purchase of filament lamps has been notified vide Gazette Notification dated 02nd February, 2020.
- A Committee for Enforcement of ban on sale/purchase of filament lamps has also been notified.
- ECBC (Commercial) (Energy Conservation Building code for building above 50 KW connected load)
- ECBC Code and Rule notified vide Gazette Notification dated 22.08.2019.
- The building byelaws for enforcement of ECBC Code and Rules has also been notified.
- BEE has been requested for empanelling Energy Auditors.
- All Revenue Villages are electrified in A&N Islands. Around 97.60% of households and 96% of population are electrified. Only remaining 4% population under Encroached Forest Area (EFA) are un-electrified.

Energy Efficiency Steps Undertaken

- Enforcement of ban on sale/purchase of filament lamps.
- For Enforcement of ban on sale/purchase of filament lamps has been notified vide Gazette Notification dated 02nd February, 2020.
- A Committee for Enforcement of ban on sale/purchase of filament lamps has also been notified.

Smart Metering Under DDUGJY & IPDS

Metering

- 76,000 Smart Meter installed → 54% consumers
  - Good impact on billing
  - Revenue losses reduced

- Balance Consumers: 66000
  - These meters being taken under RDSS

Future Initiatives

50 MW LNG Project

NTPC has been entrusted by Ministry of Power on 10.01.2018 for establishment of 50 MW LNG project at Hopetown, South Andaman under Long Term Power solution. Land set apart by Administration for project tender finalized for Civil and Main Plant package. Tender floated for Gas Infrastructure package which is tentatively to be finalized by August, 2023. The project will be completed in 28 months from the date of award of work.

Rooftop Solar Plant

Capacity	Rooftop Solar: 5 MW 1 MW – Resi, 3 MW – Comm, 1 MW – Indus
Subsidy	40% of installation cost, in Residential Sector.
Selection	Techno-Financial Bidding + Matching with L1
Duration	19.01.2024
Choice	Consumer to have his choice of vendor
Empanelment status	Three agencies identified for empanelment. Performance Guarantee awaited. On receipt of PG consumer/General public will have option to choose any of empanelled agency for establishing power plant.

Floating Solar Power Plant

4 MWP Floating solar plant to be set up AT Kalpong River at Diglipur for which a PPA signed on 08.07.2021.

15 MWhr Battery Storage System (BESS)

- Battery, Power System Stabilizer and SCADA to be set up by JICA which will serve the following purposes:
  - store excess energy generated by renewable plant
  - stabilization of power supply
  - better frequency management
  - avoid unwanted forced outages/grid collapse.
- Grant Agreement signed on March 30, 2022.

RDSS Scheme

The scheme was launched by Hon'ble PM on 30.07.2022 on the eve of Bijli Mahotsav.

Objectives

- Improve quality, reliability & affordability of power supply
- Operationally efficient Distribution Sector.
- Reduce the AT&C losses to levels of 12-15% by 2024-25.

Financing

- Component I : Metering
- Component II: Distribution Infrastructure Works
- Component III: Project management, Training, Capacity Building

Framing Action Plan & Sanction:

- RECPDCL was requested for engagement of PMA for preparation of Action Plan & DPR.
- ANI : Special Category status : grant of 90% of PMA cost

Renewable Energy Plan

- 30.03.2021: Expert Group of MoP & MNRE: for finalization of RE plan
- Expert group: members from MNRE, MoP, CEA, NVVN, EESL, SECI & IREDA
- 23.11.2021: Union Minister of Power directed MNRE to prepare Greening plan
  - 85% power from RE with BESS & 15% power from LNG.
  - 50% GoI Subsidy for LNG plant – one time grant.
  - Feasibility Study Report of SECI & EESL received.

Sl. No.	District	Solar (MW)	Wind (MW)	BESS (MWH)	Biomass (MW)	LNG (MW)
1	South Andaman	110.82	8	284.1	1	11.7
2	North & Middle Andaman	-	28	-	-	13.8
3	Nicobar	12.43	-	32.1	-	1.6
	Total	**123.25**	**36**	**316.2**	**1**	**27.1**

Source: Dept. of Power, A&N Islands.

Grid Interconnectivity of South, Middle & North Andaman

The PSU CTUIL has been entrusted by MOP for conducting feasibility study for inter connection of South, Middle and North Andaman through a common grid. The DPR submitted by CTUIL to MoP. MoP directed vide letter dated 11.08.2022 to incorporate the work in RDSS scheme.

Budget

Total budget proposed to Ministry of Power, Government of India:

Outlay and Expenditure for FY 2022-23

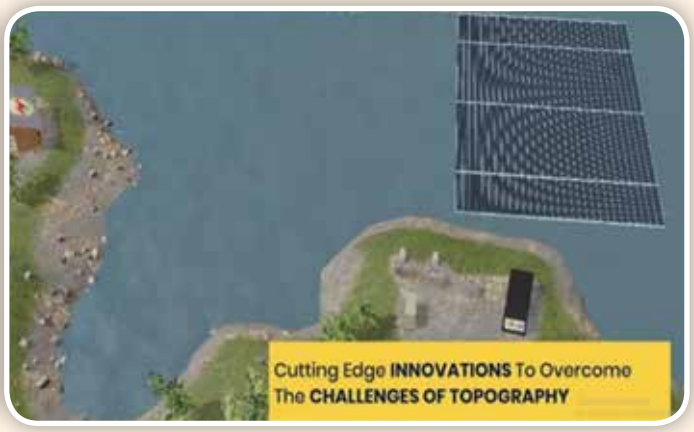
FE 2022-23	Outlay	Expenditure (In crores)	(%)
Revenue	1040.85	1040.63	99.98
Capital	14.83	14.82	99.92
Total (FE)	**1055.68**	**1055.45**	**99.98**

Outlay for FY 2023-24

FE 2023-24	Outlay (In crores)
Revenue	1056.77
Capital	60.54
Total (FE)	**1117.31**

Renewable Energy Initiatives in A & N Islands

5.25 MW Small Hydro plant functioning at Diglipur, North Andaman generates around 12 MU annually.



Installation of Floating Solar Panel

20 MW ground mounted solar plant Functioning at Atampahad/Dollygunj since July 2020 which generates around12-13 MU annually.

Energy Management Centre has been established by PGCIL

1 MW rooftop solar plant installed in 15 govt. buildings & 3.15 MW rooftop solar plant installed in South Andaman (33 buildings) & Car Nicobar (6 buildings).

Transportation

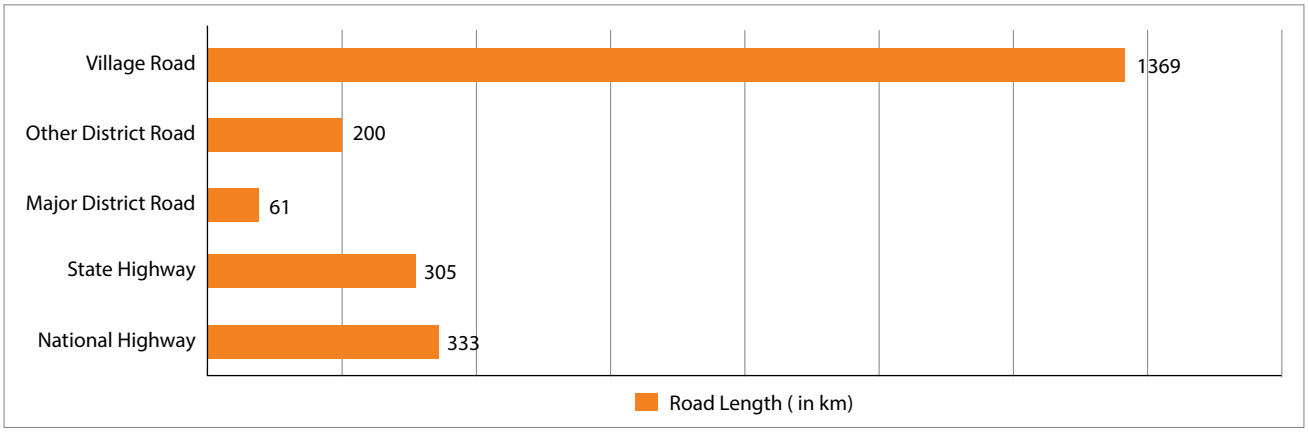
Situational Analysis

Economic growth spurs the transport sector which is heavily reliant on fossil fuels and consequently plays a significant role in emission of greenhouse gases. This sector is also responsible for the air pollution contributed by ozone, nitrous oxides and particulates. In 2010, more than fifty percent of global primary oil consumption was utilized to meet 94 percent of energy demands of transport sector.

An ultramodern and well-designed transport network enhances the productivity and profitability of various socioeconomic activities. The UT of Andaman & Nicobar Islands has placed much emphasis on infrastructure development in roads and transport in both urban and rural areas for effective utilization of resources. However, from climate change perspective there is a need to understand the impact of transportation on GHGs (greenhouse gases) and other emissions. The transport sector therefore has two main aspects that must be analysed to develop measures that address climate change adaptation and mitigation: (1) roads and related infrastructure and (2) vehicular modes of transportation.

Transportation: Roads & Related Infrastructure in A & N Islands

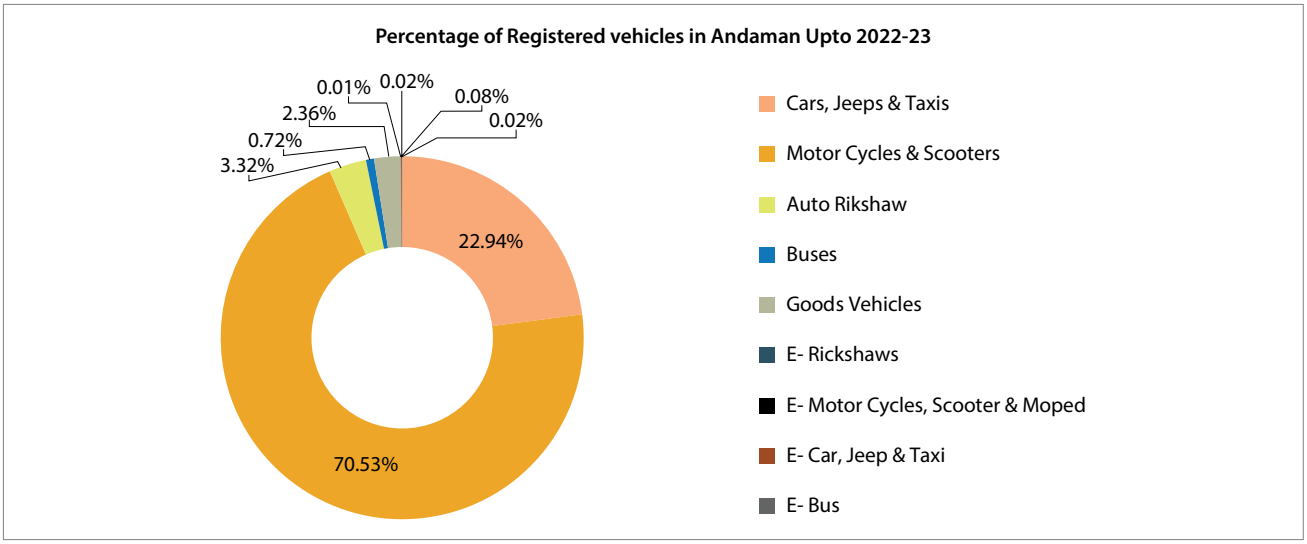
The road length of A&N Islands is 2268 km out of which National highways accounts for 333 km, State Highway covers 305 km, major district road is 61 km, other district road is 200 km while a total of 1369 km is Village Road. The quality of a roadway affects commuting time. The amount of time spent on the road is as important as the distance travelled. The quality and optimal design of roads play a key role in achieving travel efficiencies and in reducing maintenance costs. Rising temperatures and extended heat wave periods expedite damage to roads and pavements. In addition, to increase their comfort vehicle users tend to turn on their air conditioning more than ever before.



Source: Department of Transport, A&N Islands.

Composition of the Vehicular Mode of Transport

In A&N Islands, two-wheeler motorised vehicles are still a huge part of the transport system with 1,18,127 vehicles comprising 71 percent of total vehicles. However, the growing trend in the UT is car/Jeep ownership, which is at a rate of 23 percent. Similarly, new auto-rickshaws are registered at 3.3 percent. Although new vehicles are fuel-efficient, and BS-VI emission norm compliant, old vehicles still ply as per their emission norms prevalent at the time of its manufacture which is a cause of concern as these vehicles emit more pollution.



Total number of Cumulative Registered vehicles in Andaman & Nicobar Islands					
Vehicle Type	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**
Cars, Jeeps & Taxis	31766	33916	35309	36596	38424
Motor Cycles & Scooters	99494	106133	109457	113369	118127
Auto Rikshaw	4738	4835	4982	5135	5565
Buses	1119	1135	1177	1179	1198
Goods Vehicles	3048	3138	3263	3507	3959
E-Rickshaws	0	0	30	30	30
E-Motor Cycles, Scooter & Moped	0	0	0	1	18
E-Car, Jeep & Taxi	0	0	97	119	127
E-Bus	0	0	40	40	40
Total	**140165**	**149157**	**154355**	**159976**	**167488**

Source: Department of Transport, A&N Islands.

Current Initiatives in Place

- **Introduction of Electric Vehicles for Public Transport** - To augment the fleet, reduce traffic congestion, pollution, conserve biodiversity and for faster mobility 40 Electric AC Buses are procured by the Department on dry lease from NTPC for Public Transport. The Electric AC buses are operated in 74 routes in Port Blair Sub-Urban areas and Swaraj Dweep.
- **Purchase of E-cars-**Ninety-seven E-Cars have been purchased and supplied to different Departments under A & N Administration. Necessary directions have also been issued to purchase new Electric cars against condemned vehicles. By using more Electric cars, we can prevent the environment from damaging to some extent as electric cars are non-polluting but also save on purchase of diesel and petrol.

Challenges in View of Climate Change

The transport sector is itself a major contributor of emissions that contribute to climate change and global warming. Globally, the transport sector produced 7.0 gigatonnes of CO_2- equivalent of direct emissions in 2010 (or, including non-CO_2 gases, about 20 percentage of the total). Emissions from transport are projected to reach 46 percentage of global emissions by 2035.

Rising temperatures and extended heat wave periods expedite damage to roads and pavements. In addition, to increase their comfort vehicle users tend to turn on their air conditioning more than before. The use of air-conditioning is further amplified in urban areas as the temperature in those areas is a few degrees higher than in rural areas because of the heat island effects.

Heavy/incessant rains damage roads in rural areas, and increased precipitation and storm water weaken the road infrastructure. Roads near the coast will become more vulnerable to flooding and erosion as a result of the rise in sea level and extreme weather events. Also, older vehicles and overloaded vehicles emit more carbon-di-oxide than new modern vehicles or lightly loaded vehicles.

Proposed Action Plan for Next 5 Years

Good opportunities exist for both structural and technological changes around low carbon transport. Policy changes in the transport sector have the potential to institute practices that can improve the prospects for mitigation through reductions in carbon emissions. The primary objective of the A&N Islands EV Policy 2022 is to accelerate adoption of EVs for improvement in the air quality such that they contribute to 30% of the new registrations by 31st December, 2026.

1. Ensuring fuel efficiency through driver training

Training of drivers to better manage vehicle control and road and traffic signage will enhance fuel efficiency in transport sector and hence cut down emissions in A& N islands.

2. Strengthen the enforcement and emission check-up system

Pollution under control (PUC) certification has been made real time integrated with vehicle registration data base through Parivahan.gov.in with effect from 15.02.2023. The PUC test results will be updated in the m-Parivahan mobile app and Vahan application on a real time basis.

3. Use of electric Autos (e-Auto)

The central government has enacted legislations that prescribes standards for battery-powered Autorickshaws. They will be helpful in reducing the ever-increasing growth of CO_2-emitting normal autos in the islands. The government may provide for this initiative either as a back-ended subsidy or as loans offered to the operators under the priority sector.

Future Adaptation and Mitigation Strategies In Pipeline

- To achieve 100% electrification of new ride hailing services consisting of rented taxi/cabs services in 3 targeted islands of Port Blair/Swaraj Dweep/Shaheed Dweep by 2030.
- To convert 50% of existing and new bus fleet to electric buses by 2026.
- To facilitate and deploy 200 Electronic Vehicles (EV) public charging stations across the UT by 2025.
- Awareness creation and promotion of shared mobility: special drives for creating awareness on short term and long-term benefits of EVs and encouraging the use of E-Autos/Rickshaws for shared mobility.
- Improvement of public transport by inducting electric buses by the Government.
- Adopting only EVs for all Government use in the islands-Taking the lead role showcasing the use of EVs, the Government will buy only electric cars and operate electric buses for public transport.
- Creating adequate charging infrastructure that are interoperable with several models of EVs.
- Transport Department would set up public charging infrastructure and Electricity Department would be the power provider for the system.
- PSUs like NTPC would be encouraged to set up charging infrastructure by investing in it.

Budget

An amount of Rs 25.44 Crores has been kept in the 3 years Draft Annual Action Plan 2023-24 to 2025-26 towards procurement of E-Buses.

Draft Action Plan for Procurement of Electric Buses under OPEX Model for 3 Years		
Year	**Unit (in Nos.)**	**Amount (in Crores)**
2023-24	20	7.690
2024-25	20	8.450
2025-26	20	9.305

Agriculture

Situational Analysis

The major portion of the agricultural cultivable land is under coconut plantation in Andaman & Nicobar Islands covering around 17,903.80 hectares. Paddy is the main field-crop of these islands during Kharif season covering around 5,480.70 hectares, vegetables cover 5,120.02 hectares, fruits cover 3,518.03 hectares, spices cover 358.89 hectares followed by other crops like pulses, oilseeds, sugarcane, flowers etc. The average rainfall is received during May to December. January to April is usually dry period and agriculture crops suffer badly during this period due to moisture stress.

Current Initiatives in Place

Sl. No.	Proposed activity	No.	Finance	Physical progress made
Component 1: Access to Information–Use of ICT				
1.a.	Establishment of Rural Knowledge Centres	10 Nos.	-	10 no RKCs have been established in ten different Islands during 2006-07. Since then, the RKCs are run and managed by unemployed educated youth of the respective Island appointed on contractual basis except Katchal which is managed by regular staff of the department
1.b.	Sub-depots of the dept. will be linked by wide area network, & connectivity upto village level through RKC/CSC	49	5.0	Broadband/FTTH connection provided to sub-depots.
Component 2: Surveillance & Monitoring				
2.a.	Strengthening of Pest & Disease surveillance Establishment of Bio-Control lab	-	0.50	Bio-Control Laboratory functioning at Port Blair and Nimbudera, Mayabunder are functioning.
3.a.	Setting up of Automatic weather Stations	30 Nos.	1.5	30 Automatic weather Stations have been set up at various Islands
3.b.	Weather Insurance based Crop	-	-	Prime Minister Fasal Bima Yojana is implemented during Kharif and Rabi Seasons
4.a.	Promotion of Org. Farming	10000 farmers (whole of A&N Islands)	37.0	• Till date 1931 vermicompost unit has been constructed for vermicompost production and 40 vermihatcheries has been constructed in departmental farms for multiplication of earthworms. • Paramparagat Krishi Vikas Yojana implemented for promotion of organic farming.
4.b.	Protected cultivation–Polyhouses	98 (32050 sqmt) + 20 ha	1.32 + 15.0	Subsidy provided for protected cultivation under National Horticulture Mission.
Component 5: Socio-Economic Security of Farmers				
5.a.	Revolving fund for SHGs	10000 farmers	0.5	Revolving fund @ Rs 10,000/- per group is provided under ATMA.
5 b	PM Kisan Scheme	21348 farmers		Financial benefit of Rs 6000/- per year is provided in 3 equal installments of Rs 2000/- each in a period of every four months in a financial year to all small and marginal farmer families having cultivable holding.
				Till date, 13 installments have been released for an amount of Rs 38.89 Crores to the eligible farmers of A & N Islands.
Component 6: Capacity Building				
6. a	Conducting awareness/ training for disaster preparedness, workshop, demonstration, farmers' school on best practices adaptation, Diversification of livelihood options like mushroom, apiculture, coastal aquaculture, Awareness on different insurance programmes, Protected Cultivation & Post harvest and value addition	Agri-All farmers	1.0	Regular awareness programmes, demonstrations, campaigns, trainings, Farm School etc. are conducted under ATMA.

Source: Department of Agriculture, A&N Islands.

Challenges in View of Climate Change

Agriculture in A & N Islands is vulnerable to climate change as it leads to higher temperatures and unanticipated rainfall. Rise in temperature and changes in water availability affects irrigated agricultural production in agro-ecological zones resulting in reduced crop yields and overall food production. Islands being in tropical region, by large, even small amounts of global warming will lead to decline in the crop yield, apart from encouraging weed and pest proliferation. Changes in precipitation patterns also increase the likelihood of short run crop failures and long run production declines leading to potential scarcity and rise in food process. Going by the past trend, it is evident that A&N Islands due to its unique geo-ecological settings sits within a 'thick disaster probability envelope'. Climate change risks and uncertainties exacerbate the thickness of this envelope and poses additional environmental and developmental challenges for the Island territory. The core challenges of climate change adaptation and mitigation in agriculture is to produce:

i) More food

ii) More efficiently

iii) Under more volatile production conditions, and

iv) With net reductions in GHG emissions from food production and marketing.

Adaptation & Mitigation Strategies

i) For **socio-economic security of farmers**, they are being motivated to form Farmers Producer's Organization.

ii) **Production of Planting Materials**: Tissue Culture Laboratory is being made functional for production of planting materials of banana, pineapple etc.

iii) **Marketing Facility**: E NAM markets are to be established one each at Attompahad, Port Blair and D.B. Gram, Diglipur which shall provide marketing facility to the neighbouring farmers resulting in remunerative pricing for the agriculture produces brought by the farmers.

iv) **State Specific Action Plan:** A policy document on State Action plan on climate change has already been prepared by CIARI (Central Island Agricultural Research Institute) in 2019 and currently it is also preparing State Specific Action Plan (SSAP) as consultancy project with funding from National Water Mission, Ministry of Jal Shakti which shall include detailed analysis of existing water infrastructures, estimation of future demands and innovative methods to meet these demands. It shall also include impact of climate changes on potential water resources and strategies to mitigate its effects.

v) **Research:**

   a) To evolve crop varieties requiring less water.

   b) Development of crop varieties resistant to salinity, long dry spell and pest and disease and appropriate cropping pattern.

   c) Convergence and integration of traditional knowledge and practice systems, information technologies and biotechnology.

Budget

Budget for all adaptation plans has been proposed through the Ministry of Agriculture & Farmer's Welfare, Government of India.

Preparation of Vermi-compost

Construction of RCC Ring well under minor irrigation scheme

Construction of Hi-tech polyhouse

Vegetable Cultivation at Nancowry

Livestock

Situational Analysis

Being a coastal region, unlike in Indian mainland, limited variety of livestock are found in Andaman & Nicobar Islands. Cattle, Buffaloes, Goats, Pigs and Poultry are the important livestock in these islands. The Department of Animal Husbandry & Veterinary Services provides the veterinary health coverage throughout its various institutions. The major thrust is to concentrate on treatment and control of animal diseases, creation of disease-free zones, scientific management and up-gradation of genetic resources, increasing availability of nutritious feed and fodder, motivating farmers/unemployed persons for self-employment and higher subsidiary income through Animal husbandry activities resulting in enhanced production of eggs, meat and milk and providing marketing facilities to the farmers for sale of livestock products.

Livestock and Poultry Population

Category	Livestock/Poultry Population as per 2019 Census (No.)
Cattle	36,438
Buffalo	3,700
Goat	64,761
Pig	40,488
Poultry	12,83,746

Source: Department of AH & VS, A&N Islands.

List of Veterinary Institutions In A & N Islands

Name of District	No. of Veterinary Hospital	No. of Veterinary Dispensary	No. of Veterinary Sub-Dispensary	No. of Investigation Labs	No. of Mobile Veterinary Dispensary
South Andaman	4	6	15	3	6
North & Middle Andaman	3	3	28	2	4
Nicobar	2	3	6	1	2
Total	**9**	**12**	**49**	**6**	**12**

Source: Department of AH & VS, A&N Islands.

District Wise Training – Cum – Demonstration Farms

Name of District	No. of Poultry Farms	No. of Hatcheries	No. of Goat Farms	No. of Pig Farms	No. of Cattle Farms	No. of Fodder Farms
South Andaman	3	3	3	1	1	2
North & Middle Andaman	2	4	2	1	-	2
Nicobar	4	3	3	3	-	-
Total	**9**	**10**	**8**	**5**	**1**	**4**

Source: Department of AH & VS, A&N Islands.

Challenges in View of Climate Change

Globally, the climate is changing, and this has implications for livestock as it affects livestock growth rates, milk and egg production, reproductive performance, morbidity, and mortality, along with feed supply. Some of the implications of Climate Change on livestock are summarized below:

(a) The climate is changing, exhibiting higher temperatures, increasing precipitation variation and more frequent extremes. This is driven by increasing carbon dioxide (CO_2) concentrations. Such changes have been found to alter livestock lifespan and associated feed production.

(b) Climate change will affect livestock production and consequently food security. Global warming may strongly affect production performance of farm animals and impact worldwide on livestock production and reproduction. Specifically, heat stress is a major source of production loss in dairy and meat industry.

(c) Climate change may alter the seasonal pattern and variability of resource availability and crop yield, imposing further impacts on livestock production.

(d) Increasing temperature may increase exposure and susceptibility of animal to parasites and other diseases specially vector-borne diseases.

(e) Heavy rainfall, flooding, rising sea level, long dry spell, reduction and elimination of source of water, changes in plantation pattern and yield etc are major impacts of climate change among others.

Schemes Proposed During 2023-24

A. UT PLAN

Scheme No. 01: Animal Health Programme: To establish a comprehensive veterinary health care system, disease diagnosis, disease monitoring, surveillance and reporting system for providing better veterinary health care and delivery system and to maintain disease-free status A & N islands in respect of specific diseases.

1. The Veterinary Health Care in the UT is provided through a network of 1 Veterinary Polyclinic, 9 Veterinary Hospitals, 12 Veterinary Dispensaries, 49 Veterinary Sub Dispensaries and 12 Mobile Veterinary Dispensaries spread over the entire islands.
2. The islands are also free from the contagious diseases such as RABIES, ANTHRAX, H.S. RINDERPEST, BQ etc. The Department carries out Disease surveillance, reporting, diagnosis, and disease monitoring for the same throughout the year.
3. The department conducts Veterinary Health Camps and Mobile tours over the entire territory throughout the year.

Scheme No. 02: Cattle Development: To augment the milk production

Up gradation of the local non-descript and low producing Cattle by Artificial Insemination using high quality semen is carried out through 34 A.I. Sub Centres and 17 Artificial Insemination Centres (AIC) spread over the entire territory. Scrub bulls are castrated.

1. The department maintains Dairy Farms to impart training and demonstration purposes and to supply cross bred calves to the farmers.
2. The department is implementing a programme of training and engaging part time volunteers for performing Artificial Insemination & Castration in remote areas. Dairy training is provided to farmers for setting of Private Dairy Farms.
3. The department maintains fodder demonstration farms to increase fodder resources of the islands.

Scheme No. 03: Poultry, Piggery & Goat Development Programme

a) **Poultry:** To augment egg and the poultry meat production, as well as to popularise the backyard poultry, Turkey, Vanaraja and quail farming among the farmers.

   1. There are 10 Govt. Poultry Hatcheries, 9 Govt. Poultry Training-cum-Demonstration farms, 08 Govt. Duckery-Cum-Demonstration farms in this territory. Promotion of improved Varieties like Vanaraja has been successful in popularizing Backyard Poultry in this territory. Vanaraja chicks and breeding birds are supplied to farmers and tribal farmers at economical rates.
   2. Duck rearing is also promoted and these farms supply ducklings to interested farmers.
   3. Vaccination against major poultry diseases is carried out free of cost.
   4. Turkey and Guinea fowls have been introduced in these islands and are supplied through the departmental farms.
   5. One-month practical training on scientific rearing of poultry birds with/without stipend is provided.

b) **Piggery Development:**

Increasing the productivity of pigs by transforming 80% of the pig population in the UT to cross-breed Large White Yorkshire and popularising pig keeping among the non-tribal population.

1. There are 5 Government Piggery training-Cum-Demonstration farms in this territory, providing practical training to the interested farmers on Scientific and hygienic rearing of pigs.
2. Intensive breeding of sows is encouraged to assist poor women, weaker section and tribals for adopting remunerating pig rearing.
3. Assistance on technical Support and training on scientific rearing of pigs is given to interested farmers.

c. **Goat Development**

- To improve the productivity of Goats in terms of both meat and milk by 50% of the present level and popularising goat farming on a large scale by importing improved variety of goats from mainland.
- Conservation of threatened breed of Teressa Goats for evaluation and propagation and supply of the same to the farmers.
  1. There are a total of eight Government Goat Training-Cum-Demonstration farms in this territory providing trainings in scientific goat rearing practices to interested farmers.
  2. Up-gradation of local germplasm is carried out through selected improved bucks.
  3. Artificial Insemination in goats using Boer goat semen has been introduced for upgrading the local stock.

Scheme No. 04: Strengthening of Department of AH & VS:

Training and extension:

1. The Department carries out extension activities through electronic and print media about the activities of the department.
2. The Departmental farms provide training and demonstration in Scientific Animal Husbandry Practices.
3. The Department will depute progressive farmers to mainland for better exposure in the field Scientific management of Poultry, Duckery, Goatery, Piggery and Dairy farming.

Scheme No. 5: Fodder Development:

The Department maintains Fodder Training-Cum-Demonstration farm in different parts of the territory. These farms provide training on Fodder Cultivation, Procure/Produce fodder seeds and distribute fodder slips/cutting and minikits to encourage farmers to take up fodder cultivation.

B. Centrally Sponsored Schemes

i. Assistance to State Control for Animal Diseases (ASCAD)

- Clinical survey, collection of sera from identified areas/district.
- Immunization for economically important and zoonotic diseases of livestock and poultry.

- Strengthening of state Veterinary Biological Production units and State Disease Diagnostic Laboratories.
- Workshops/seminars and training of Veterinarians and para-veterinarians.

ii. National Animal Disease Control Programme (NADCP)

- Vaccinating the entire susceptible population of bovines at six-month intervals (mass vaccination against FMD).
- Primary vaccination of bovine calves (4-5 months of age).
- Publicity and mass awareness campaigns at UT level including orientation of the UT functionaries for implementation of the programme.
- Identification of target animals by ear-tagging, registration and uploading the data in the animal health module of Information Network for Animal Productivity and Health (INAPH).
- Maintaining records of vaccination through Animal Health cards.
- Sero-surveillance/sero-monitoring of animal population.
- Procurement of cold cabinets (ice liners, refrigerators, etc.) and FMD vaccine.
- Investigation and virus isolation and typing in case of outbreaks.
- Testing of pre-vaccination and post-vaccination samples.

iii. Integrated Sample Survey for estimation of Major Livestock Products:

- Estimation of major livestock products such as Milk, Egg and Meat on seasonal basis.

iv. Assistance to conduct of Livestock Census

- Conduct of Quinquennial Livestock Census, its compilation/preparation and submission of result and submission of final data entry to GOI along with publication of census report.

v. Establishment and Strengthening of Veterinary Hospitals and Dispensaries (ESVHD) - Mobile Veterinary Units

- In order to increase accessibility of veterinary services at farmer's doorsteps, funds for Mobile Veterinary Units (MVUs) will be provided to the UTs under this scheme.
- Proposal for 05 fully equipped Mobile Veterinary Ambulatory units for these Islands is submitted to Ministry.

Budget

Budget for all schemes have been proposed through the Ministry of Animal Husbandry & Dairying, Government of India.

Fisheries

Situational Analysis

Increasing levels of man-made greenhouse gases are leading to global climate change with catastrophic long-term implications for the marine environment. Climate change will affect fish and their habitats. Warmer temperatures will influence the abundance, migratory patterns and mortality rates of wild fish stocks and determine what species can be farmed in certain regions. These climatic effects on fishes will have social and economic consequences for people dependent on fisheries and aquaculture. Curbing the rise in temperatures requires action by all industries including fishing. By implementing sustainable environmental measures, the fishing industry can lower its fuel costs, reduce its greenhouse gas emissions, and decrease the damage it inflicts on marine ecosystems.

At a Glance

Coastal length	1,912 km
Continental Shelf area	35,000 sq km
Exclusive Economic Zone (EEZ)	6,00,000 sq km
Coral Reefs	200 sq km
Marine Fishery Potential Yield	46596 tonnes
Inland fish production Yield	404 tonnes
Demersal resources	32,000 tonnes
Pelagic resources	56,000 tonnes
Oceanic resources	60,000 tonnes

Source: Department of Fisheries, A&N Islands.

Fish landing centre - Neil Island

Fishing Vessels (Mechanized/Motorized/Sport Fishing) in Islands

Registered Fishing vessels	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Motorized	1353	1379	1545	1532	1714	1938
Mechanized	31	32	37	50	94	112
Sport Fishing	54	36	50	55	60	60
Total	**1438**	**1447**	**1632**	**1637**	**1868**	**2110**

Source: Department of Fisheries, A&N Islands.

Contribution to Climate Change

The use of large amounts of fuel in fisheries results in considerable emissions of greenhouse gases. In commercial fisheries, fuel is used for activities such as onboard processing, refrigeration, and freezing but in general the most fuel consuming activity is vessel propulsion.

Current Initiatives to Combat Climate Change

1. **Installation of Fish Finder device in fishing boats:** The temperature and pressure sensitivity capability of fish finder units allow one to identify the exact location of the fish in the water by the use of a temperature gauge. Functionality present in many modern fish finders also have track back capabilities in order to check the changes in movement in order to switch position and location whilst fishing. It is easy to get more detail at screen when the frequency of fish finder is high. Deep-sea trawlers and commercial fishermen normally use low-frequency which is in between 50-200 kHz where modern fish finders have multiple frequencies to view split screen results. Hence, it will reduce the wastage of fuel used in search of fish.
2. **Implementation of Pradhan Mantri Matsya Sampada Yojana:** This scheme targets to increase the rate of fish production and aquaculture production. It also aims to generate employment opportunities and help in increasing the income level of the fishermen.

Challenges

- Geographical Isolation of the islands.
- Inadequate skilled and technical manpower.
- Non-availability of boat building yards.
- Inadequate infrastructure for handling, processing and export.
- Limited local markets.
- Non-availability of direct export facilities.
- Environmental constrains.

Future Adaptation and Mitigation Strategies to Combat Climate Change

Installation of Fish Aggregating Devices in sea: Fish aggregating devices are floating objects that are designed and strategically placed to attract pelagic fish. Many pelagic species associate with natural FADs in the open ocean, such as logs, seaweed, and coconuts. Man-made FADs are constructed from a variety of materials. Fish tend to move around FADs in varying orbits, rather than remaining stationary below the

buoys. Both recreational and commercial fisheries use FADs. These devices shall help to reduce the fishing voyage thereby will lead to reduction in fuel consumption.

Budget

Budget provision will be made in the UT Plan Budget for installation of FADs and fund facilities.

Health

Situational Analysis

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.

Considering the topography of these Islands and its remoteness, inaccessibility, forests and reserved tribal areas, providing health care delivery in these Islands is a big challenge. In view of isolation of inhabited islands, difficult terrain and communication bottle neck, Govt. of India has relaxed norms for establishing health care facilities such District Hospitals, Community Health Centres, Primary Health Centres and Sub Centres.

Key Institutional Collaborations for Health Sector are as Follows

- Directorate of Health Services
- Andaman & Nicobar Islands Institute of Medical Sciences
- Indian Council of Medical Research
- National AIDS Control Organization
- Department of Social Welfare
- Department of Tribal Welfare
- Port Blair Municipal Council
- Government Hospitals, Private hospitals, nursing homes and all primary health centres in A & N Islands

Health Institutions Across A & N Islands

Health Facility	South Andaman District	N & M Andaman District	Nicobar District	Total
Sub-Centre	38	43	40	121
PHC	10	08	04	22*
CHC	01	02	01	04
District Hospital	01 01-Proposed	01	01	02

Health Facility	South Andaman District	N & M Andaman District	Nicobar District	Total
Homeopathy Dispensary	06	06	03	15
Ayurvedic Dispensary	04	04	03	11
AYUSH Hospital	01	00	00	01
Urban Health Centres	05	00	00	05
Referral Hospital	01	00	00	01

Source: HIC, DHS, A&N Islands.

* PHC Garacharama, South Andaman is proposed to be a District Hospital.

- G. B. Pant Hospital in South Andaman is a 550 bedded tertiary care Hospital in the UT associated with ANIIMS Medical College offering specialist services in Medicine, Surgery, Gynaecology, ENT, Ophthalmology, Anaesthetics, Orthopaedics, Paediatrics, Dermatology, Radiology, Microbiology, TB and Chest Diseases, Pathology, Cardiology and Psychiatry.
- Andaman &Nicobar Islands being the tri command Head Quarters i.e. combined Defence Services (Army/Navy/IAF) is taken care of by their base Hospital INHS Dhanwantri, Minnie Bay, Port Blair and their MI rooms. A well-established emergency Air Lift/Air Evac system has been established under Andaman & Nicobar Administration wherein any emergency patient is Air Lifted through Helicopters of Civil aviation and the IAF Heli/Dornier as and when indented by Health Services through the Nodal Officer, Disaster Management and Air Evacuation.

Current Policies, Programme and Projects of UT Related to Nutrition & Climatic Disease Surveillance

A number of programmes impacting the health status of Urban and Rural Areas are in operation including midday meal schemes, Integrated Child Development Scheme (ICDS), Ayushman Bharat etc.

1. **Anaemia Mukt Bharat:** This programme aims to prevent nutritional anaemia among women and children. All school and non-school going children in the age group of 5-9 years and 10-19 years are being given pink and blue colored IFA Tablets respectively. All pregnant women are given 180 red coloured IFA tablets after 1st Trimester till delivery and lactating mothers are being given 180 Tablets once daily during postnatal period alongwith treatment of all cases of anaemia as per their severity.
2. **POSHAN Abhiyaan:** Under Poshan Abhiyaan, home visits are being conducted by ANMs/ASHAs to deliever key messages on complimentary feeding, nutrition, hygiene, breastfeeding, home based new-born care and Home-Based Young child care.

   Activities under Poshan Abhiyaan:

   - Monthly anaemia day being observed in all Anganwadi Centers.
   - Hemoglobin screening is being done for children enrolled in Anganwadi Centers followed by referral of anaemic children to nearby PHC.
   - Weight and height of children are being routinely measured to detect acute and chronic malnutrition.
3. **National De-worming Day:** National De-Worming Day is observed twice in a year i.e., on 10th February and 10th August covering all private schools/government/govt. aided/Anganwadi centers. For the year 2023, it was carried out on 10th February and the coverage percentage was 92.4%.

4. **Weekly Iron & Folic Acid Supplementation (WIFS):** The Ministry of Health & Family Welfare, Govt. of India has launched the Weekly Iron & Folic Acid Supplementation (WIFS) programme to reduce the prevalence and severity of nutritional anaemia in adolescent population (10-19 years).

   Target Groups

   - Adolescent Girls & Boys enrolled in Govt./Govt. Aided/Municipal School from 6th -12th classes.
   - Adolescent girls who are not in school 10-19 years through Anganwadi centres.

5. **Vit-A supplementation program:** This programme was started in 1970 with specific aim of preventing disability due to keratomalacia and to decrease the prevalence of Vit A deficiency in the UT.

   - A total of 12,738 doses of Vit-A has been administered to children between age group of 6-59 months in the Financial Year 2022-23.

6. **Integrated Disease Surveillance Programme**: Integrated Disease surveillance programme is being successfully implemented for early detection and containment of outbreak prone communicable diseases. DHS has successfully coordinated with different urban local bodies for control of infections/vector borne diseases such as Dengue, Malaria, Cholera etc.

Health Services Available for Particularly Vulnerable Tribal Groups

Andaman and Nicobar Islands are known to be home to six indigenous tribal groups i.e., Jarawa, Onge, Shompen, Andamanese, Nicobarese and Sentinelese. Except the Nicobarese, all other five come under 'Particularly vulnerable Tribal Groups' (PVTGs).

Population Statistics of PVTGS

Sl. No.	Name of Tribe	Total Population
1	Jarawa	602
2	Onge	128
3	Shompen	245
4	Great Andamanese	57
5	Sentinelese	50 (Estimated)

Health Facilities for PVTGs

Sl. No.	Location	PVTGS	Officer I/c
1	Louis-in-let Bay, Mayabunder, Middle Andaman	Jarawa	Tribal Welfare officer, Kadamtala
2	Phooltala, Middle Andaman		
3	Jarawa ward PHC Kadamtala, (Middle Andaman)		
4	Middle Strait, (Middle Andaman)		Tribal Welfare officer, Jirkatang
5	Jirkatang, South Andaman		
6	Jarawa ward PHC Ferrargunj, South Andaman		
7	Tirur, South Andaman		Tribal Welfare officer, Tirur
8	Jarawa ward PHC Tusnabad, South Andaman		
9	Dugong Creek, Hut Bay, Little Andaman	Onge	Tribal Welfare officer, Dugong Creek
10	Health & Wellness Centre, Dugong Creek, Hut Bay		
11	VTGs ward, PHC RK pur		
12	Strait Island, Middle Andaman	Andamanese	Tribal Welfare officer, Strait Island
13	Shompen Hut Complex, Campbell Bay, Great Nicobar Island	Shompen	Asst. Commissioner, Campbell Bay
14	PVTGs ward, PHC Campbell Bay, Great Nicobar Island		
15	Jarawa ward, GB Pant District hospital, Port Blair	For All PVTGs	Tribal Welfare officer, (HQ)

Climate-Sensitive Diseases

Communicable Diseases	Non-Communicable Diseases	Nutritional Disorders
Acute Respiratory Illnesses	Cardio-Vascular Diseases & Cancers	Protein-Energy Malnutrition
Vector-Borne & other Zoonotic Diseases	Mental Health Disorders	Micronutrients Deficiency Disorders
Food-Borne & Water-Borne Diseases	Heat-Related Illnesses	Diseases related to Food adulteration

Vulnerable Population - Andaman & Nicobar Islands (2022 mid-year population)

	Total	South Andaman	N & M Andaman	Nicobar
Pregnant women	4590	2846	1285	459
0-5 years old children	16580	10280	4642	1658
Above 45 years	76380	47356	21386	7638

Prevalence of Vector Borne Diseases in Andaman & Nicobar Islands

Vector Borne Diseases	2022
Dengue	288
Chikungunya	0
Malaria	42

Source: IDSP unit, A&N Islands.

Food & Water Borne Diseases between April 2022- Feb 2023

Diseases	Total
Acute Diarrheal Diseases	2301
Typhoid Fever	42

Source: IDSP unit, A&N Islands.

Nutrition - related illnesses

Sl. No.	Prevalence of Malnutrition	NFHS-5 (%)
1	Children under 5 years who are stunted	22.5
2	Children under 5 years who are wasted	16.0
3	Children under 5 years who are underweight	23.7
4.	Children under 5 years who are overweight	5.4
4	Pregnant women with anaemia	53.7
5	Anaemia in children between 6-59 months	40.0

Source: NFHS-5 datasheet, A&N Islands.

Respiratory illnesses

Prevalence	2022
Acute Respiratory Infection (ARI)/Influenza Like Illness	3109

Source: IDSP unit, A&N Islands.

Morbidity Statistics related to Mental Health Disorders (2022)

Prevalence	South Andaman	North & Middle Andaman	Nicobar
Mental Health disorders	496	113	15

* As per NCRB 2020, Andaman & Nicobar Islands has one of the highest rate of suicide (45%) in India.

Zoonotic Diseases

Sl. No.	Year	Total no. of Leptospirosis cases
1	2021	0
2	2022	117
3	2023 (Upto Feb)	10

Source: IDSP unit, A&N Islands.

Key Priorities Action Areas

1. Targeted healthcare for sensitive populations

- Mapping of the community-wise proportion of the sensitive population in all the three districts and assessing the gap in the services to the identified groups (very young, very old, or living with disabilities).
- Strengthening routine & emergency healthcare services (general, neonatal, and paediatric) in all the three districts.

2. Building the capacity of health sector personnels on issues relating to climate change

Formulation of a state level plan by the environment task force to sensitise all healthcare providers, rapid response teams and grassroot workers from all the villages to the issue of disaster response and climate change as well as to train staff in the use of renewable energy such as solar water heating, rainwater harvesting and energy efficiency measures to reduce the carbon footprint of hospitals and healthcare facilities.

3. Strengthen approaches to manage vector-borne and zoonotic diseases that worsen because of climate

This activity would expedite disease surveillance, entomological study, vendor control measures, and environmental engineering to reduce vector density and parasite loads in endemic communities. It would involve assessment of morbidity and mortality statistics and develop/adapt health micro-plan based on recent VBD diseases trend:

1. Mapping of vulnerabilities: population at risk, geo-climatic conditions, seasonal variation, change in population demography, migration (in & out), available resources, health care infrastructure, laboratories, etc.
2. Strengthen/Develop active and passive surveillance and establish sentinel sites for vector borne diseases.
3. Capacity building and increasing awareness for individuals, communities, health care workers through involvement of various media as well as campaigns and training workshops.
4. Develop or translate IEC on effects of climate change on VBDs in local language, and make a communication plan for dissemination of health-related alerts/education materials.
5. Ensure adequate logistic support, including equipment and other treatment modalities and supplies for case management at all levels of health care and also under 'Emergency response Plan' in case of any disaster or an outbreak.
6. Vaccination of animals and animal handlers for vaccine preventable diseases.
7. 'Environmental Health Impact Assessment 'of new development projects.
8. Early warning system for vector borne diseases.
9. Enforce legislation and regulations of vector borne diseases.

Coordination with other sectors for reducing Zoonotic Diseases

(As per the suggested sectors in the NVBDCP)

- Inter-sectoral collaboration for vector control
- Providing equipment and other related logistics for control of vectors

- Elimination and reduction of vector breeding sites.
- Encourage research on new safe and effective control measures

Intervention by veterinary task force

- Early diagnosis & prompt referral
- Prevention and control of animal diseases and zoonosis
- Vaccination of animals & control on population of stray animals
- Safe destruction of cases and other material of animal origin
- The care of food animals, including collection, feeding, sheltering, slaughtering etc.

Intervention by Community & Individual

- Obliteration of natural & man-made vector breeding sites
- Make barriers for human dwellings to keep stray animals away from human dwellings by fencing the residential areas especially if in approximation to forests etc.
- House protection by using screening windows, doors and fencing the garden etc.
- Use self-protection measures like protective clothing etc.

4. Strengthen approaches to dealing with heat wave conditions in the state

This activity would continuously sensitise the staff of control rooms on treatment protocols from March to June to deal with heat stress and provide sufficient drugs, consumables, and facilities to deal with heat related illnesses.

CHAPTER 4

Vision, Goal and Objectives

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

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

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

Specific Objectives

Objective 1: To create awareness amongst the general population (vulnerable community), healthcare 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 the state/district/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 state in coordination with the Ministry of Health & Family Welfare.

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

CHAPTER 5

Institutional Framework

Andaman & Nicobar Islands has 3 District Nodal Officers i.e., 1 DNO for each of its 3 districts under National Programme for Climate Change and Human Health (NPCCHH). The other stakeholders in the state are Department of Science and Technology, Department of Meteorology, Port Blair Municipal Council (PBMC), Andaman Public Works Department (APWD) and Panchayati Raj Institution members.

A) UT Level-Governing Body for Environmental Health

The UT level governing body for policy level decisions shall be working under Chairpersonship of Principal Secretary (Health), Andaman & Nicobar Administration and shall meet annually. The other members on board are as follows:

Commissioner cum Secretary (Health)	Chairperson
PCCF, Department of Environment & Forest	Member
Secretary (Health)	Vice Chairperson
Secretary, PBMC	Member
Mission Director-National Health Mission	Member
Deputy Commissioner, South Andaman District	Member
Deputy Commissioner, North & Middle Andaman District	Member
Deputy Commissioner, Nicobar District	Member
Representative of Commander-in-Chief, Andaman & Nicobar Command	Member
Representative of Director General of Police	Member
DD (Health), DHS	Member Secretary
Director, DHS	Member
Director, ANIIMS	Member
Director, Science & Technology/PCB	Member
Director, Disaster Management	Member
Director, Directorate of Shipping Services	Member
Director, Agriculture	Member
Director, Fisheries	Member
Director, Industries	Member
Director, Transport	Member

Director, Animal Husbandry	Member
Director, IP & T	Member
Head of Department, Zoological survey of India	Member
Chief Engineer, APWD	Member
State Nodal Officer - Climate Change EHC	Member

*The proposed U.T. Level Structure of an Environmental Health Cell to be created under DHS is as follows:

Structure at UT/UT Environment Health Cell

State Nodal Officer - Climate Change	1
Representative, Department of Community Medicine, ANIIMS	1
Consultant-Capacity building/Training/HR Management/EHC	1
Divisional Assistant/Data Entry Operator	1

Executive Members of EHC

U.T. State Nodal Officer - Climate Change	Chairperson
State Programme Manager –NHM	Member
Deputy SP(Admn.)	Member
Officer In-charge/Nodal Officer - ICMR	Member
Officer In-charge/Nodal Officer - NVBDCP	Member
Officer In-charge/Nodal Officer - IDSP	Member
Officer In-charge/Nodal Officer - IEC/HIC	Member
Epidemiologist, UT NHM attached to DD(H), NO/IDSP	Member
Microbiologist, ANIIMS	Member
Nodal Officer, Department of Agriculture	Member
Nodal Officer, Department of Transport	Member
Nodal Officer, Department of Power	Member
Nodal Officer, APWD	Member
Nodal Officer, PBMC	Member
Nodal Officer, Department of Environment & Forests	Member
Nodal Officer, Disaster Management	Member
Nodal Officer, Directorate of Shipping Services	Member
Nodal Officer, Department of Fisheries	Member
Nodal Officer, Pollution Control Committee	Member
Nodal Officer, Animal Husbandry	Member
Nodal Officer, Tourism	Member
Nodal Officer, PBMC	Member
Nodal Officer, Zoological survey of India	Member
Nodal Officer, APWD	Member
State Nodal Officer - Climate Change EHC	Member

Roles and Responsibilities of the UT Environmental Health Cell

- Preparation and Implementation of UT Action Plan for Climate Change and Human Health.
- Conduct Vulnerability assessment and risk mapping for commonly occurring climate sensitive illnesses in the UT.
- Assessment of needs for health care professionals (like training, capacity building) and organize training, workshop and meetings.
- Maintain UT and District level data on physical, financial, epidemiological profile for climate sensitive illnesses.
- Ensure Convergence with NHM activities and other related programs in the U.T./District.
- Monitor programme, Review meetings & Field observations.
- Timely issue of warning/alerts to health professionals and related stakeholders as well as general public through campaign or mass media (Electronic or printed).
- Social mobilization against preventive measures through involvement of women's self-help groups, community leaders and NGOs.
- Advocacy and public awareness through media (Street Plays, folk methods, wall paintings, hoardings etc.).
- Conduction of operational research and evaluation studies for the Climate change and its impact on human health.

District Level

The DHS shall appoint the District Medical Officer/Chief Medical Health Officer as the District Nodal Officer–Climate Change. A District Level Task Force will be constituted by the District Nodal Officer - Climate Change in consultation with the SNO-CC.

Structure of District Level Task Force-Environmental Health

Deputy Commissioner	Chairperson
Chief Medical Officer/District Nodal Officer–Climate Change	Vice Chairperson
District Programme Manager–NHM	Member
District Head, Department of Revenue (Disaster)	Member
District Head, Department of Agriculture	Member
E E, APWD	Member
District Head, Department of Transport	Member
District Head, Department of Animal Husbandry	Member
District Head, Department of Environment and Forests (DFO)	Member
District Head, Department of Women and Child Development/Social Justice (ICDS)	Member
DEO	Member
EE, Electricity Department	Member
P A O	Member
Dy. SP	Member
PRI, ZPM	Member

The District level Environmental Health Cell shall be constituted by the District Nodal Officer - Climate Change, at District level which shall comprise of the following:

Structure at District Environment Health Cell

District Nodal Officer - Climate Change	Chairperson
Community Health Officer	Member
LHV	Member
District Veterinary Officer	Member
District Immunization Officer	Member
Data Entry Operator/Amalgamated Staff	Supporting staff

Roles and Responsibilities of the District Environmental Health Cell

- Preparation and Implementation of District Action Plan for Climate Change and Human Health.
- Conduct Vulnerability assessment and risk mapping for commonly occurring climate sensitive illnesses in the district.
- Maintain and update district database of illnesses identified in the district.
- Assess needs for health care professionals and conduct sub-district/CHC/PHC/Health Sub-Centre/ HWC level training/workshop and meetings for capacity building.
- Maintain District level data on physical, financial, epidemiological profile for climate sensitive illnesses.
- Arrangement of necessary Funds to be managed through DPM NHM and RKS funds.

Health Facility Level (PHC)

At the health facility level, the responsibility for programme implementation lies with the Medical Officer (In-charge) of the facility. The existing machinery of NHM is utilised for the related activities. The Rogi Kalyan Samiti (RKS) is responsible for reviewing and monitoring the programme implementation at the health facility level. The ANM, ASHA, and Anganwadi workers are to assist in activities related to the implementation of action plan at the grassroot level.

Monitoring & Evaluation

The Monitoring & Evaluation of the implementation of SAPCCH has been stipulated with a mix of internal and external approaches. The U.T. MoHFW, District Health Officers and the individual health facilities along with MoHFW will be involved in regular internal monitoring. External Monitoring will be done by an independent agency.

The Monitoring & Evaluation of the implementation of NAPCCHH has been stipulated with a mix of internal and external approaches. MoHFW, U.T. MoHFW, District Health Officers and the individual health facilities will be involved in regular internal monitoring. External Monitoring will be done by an independent agency.

a) Internal

Monthly/quarterly progress monitoring for climate sensitive illnesses has to be done at all levels, i.e. District to U.T. to MoHFW. These Monthly/Quarterly Progress Reports should include a collation/aggregation of the data/information compiled in each health care facility. The District Cell will have the responsibility of collation/aggregations of the data/information compiled in each health care facility and submit to the U.T. Cell which will validate and forward the data to the National Cell through the executive body. The GB will annually meet to assess the performance through the available data.

b) External

The U.T. shall commission an independent evaluation every 2 years hiring an external agency. At the minimum, the audit should cover one well performing district and one not so good performing district as per the latest available data. The agency to conduct the SAPCCHH Implementation Audit should be chosen based on the background, experience in the U.T.'s health sector, environmental auditing and reputation of reliability. The recommendations of the audit should be developed into an action plan to strengthen the existing system.

PART II

Health Action Plans on Priority Climate Sensitive Health Issues

CHAPTER 6

Health Action Plan on Air Pollution Related Diseases

Prominent causes of Ambient Air Pollution in the Andaman & Nicobar Islands:

1. Pollution by Automobiles
2. Increase number of deforestations
3. Increase number of constructions
4. Illegal dumping and increase shipping activities

Prominent causes of Household Air Pollution in the Andaman & Nicobar Islands

1. Increase use of non-biodegradable item
2. Increase in Indoor Construction

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 of various pollutants into a single number (index value), nomenclature and colour.

Air Quality Index (AQI) Category	
Good	0-50
Satisfactory	51-100
Moderately Poor	101-200
Poor	201-300
Very Poor	301- 400
Severe	401-500

Number of AQI monitoring stations with in Andaman & Nicobar Islands:

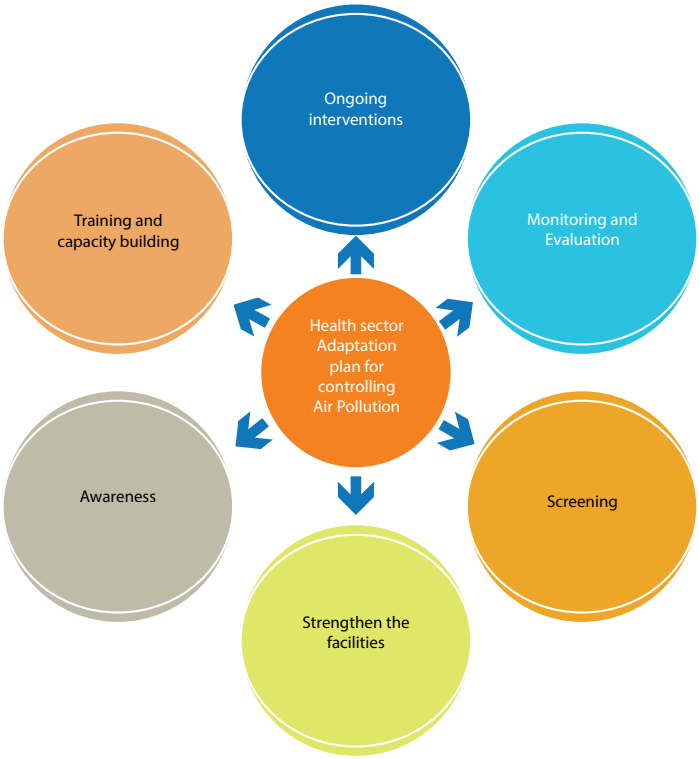
1. System of Air Quality and Weather Forecasting and Research (SAFAR Yojana GoI).
2. Pollution Control Committee, Department of Environment and Science, Dollygunj, Port Blair - 03192250370, Email-dstpcc-andamans@nic.in/dstandamans@gmail.com

- About 92% area of Andaman & Nicobar Islands is covered with evergreen tropical forests, hence the AQI ranges between 6 to 50 which comes under category of good and no city/town is under National Clean Air Program (NCAP) in the Andaman & Nicobar Islands.

Action Points in Accordance with Air Quality Index

AQI	Associated Health Impacts	Action Points
Good (0-50)	Minimal Impact	
Satisfactory (51-100)	May cause minor breathing discomfort to Sensitive people.	-
Moderately polluted (101-200)	May cause breathing discomfort to people with lung disease such as asthma, and discomfort to people with heart disease, children and older adults.	Stop garbage burning, Close/stringently enforce all pollution control regulations in brick kilns and industries, stringently enforce pollution control in thermal power plants through PCB monitoring, Periodic mechanized sweeping, Strict norms vigilance and enforcement of PUC, stringently enforce rules for dust, Control in construction activities and closer on-compliant sites, Information Dissemination - social media, mobile Apps should be used to inform people about the pollution levels.
Poor (201-300)	May cause breathing discomfort to people on prolonged exposure, and discomfort to People with heart disease.	Alert in newspapers/TV/radio to advise people with respiratory and cardiac patients to avoid polluted areas and restrict outdoor movement.
Very Poor (301-400)	May cause respiratory illness to the people on prolonged exposure. The effect may be more pronounced in people with lung and heart diseases.	Stop use of diesel generator sets Stop use of biomass fuels for cooking, heating purposes.
Severe (401-500)	May cause respiratory impact even on healthy people, and serious health impacts on people with lung/heart disease. The health impacts may be experienced even during light physical activity.	Stop entry of heavy diesel vehicles, stop construction activities, Shutting of schools Task force to shut down brick kilns, Hot Mix plants, Stone Crushers, power plants, increase frequency of mechanized cleaning of road and sprinkling of water on roads.

Integrated Approach to Combat Air Pollution



Alerting System in Place

24/7 Tele-assistance communication services and devices has already been established at Dy. Commissioner Office, South Andaman for the on-going Covid-19 Pandemic. Emergency call no. 1070 & 1077 which can be utilized for SAPCCHH. Under Disaster Management Act DHS has been provided with a Satellite phone –08991120500 -- which is kept active 24*7.

Actions further proposed to reduce the burden of Air pollution in Port Blair City & other Tourist Islands of the UT A&N Islands

Proposed Alerting 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. Air quality alerts, based on the air quality index thresholds determined by the local government.

b) Leaflets and pamphlets describing prevention guidelines.

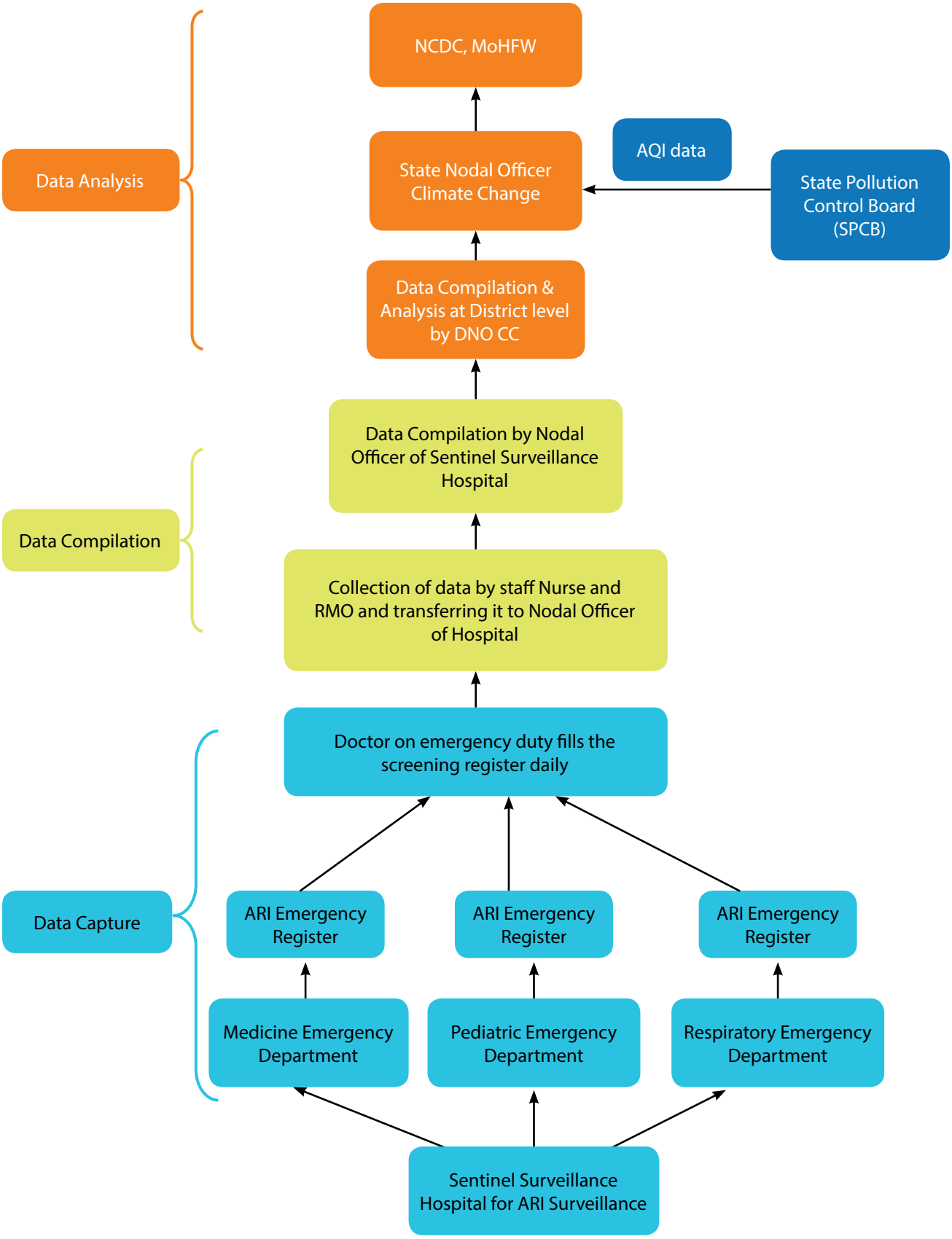
Advertisement and Promotion Through IEC

- Regular advertisement in Local Newspaper
- Regular advertisement in Local Radio
- Mass SMS and WhatsApp messages
- Hoarding

Training and Capacity Building

- Three days training of Medical Officer and District Nodal Officers
- One day training of Front-line workers including ASHA.

ARI Surveillance-Data Flowchart



Ari Surveillance Activity At A & N Islands

- U.T. Nodal Hospital for ARI Surveillance - GBPH/Port Blair
- Name & Contact detail-mobile no. & e-mail Id: MS, GBPH/PB, SA, 03192-234941
- Number of cities selected for ARI Surveillance: 03
- Names of the cities selected for ARI surveillance: Port Blair, Mayabunder, Car Nicobar

City wise list of sentinel hospitals selected for ARI surveillance activity

Name of City	Name of Hospital	Type	Type of Hospital (Medical College, District Hospital, Rural Hospital, Paediatric Hospital, Respiratory Disease Hospital)	Name of Nodal (reporting) Officer of hospital	Contact Details of Nodal Officer of hospital (Mobile No. & Email ID)
Port Blair/SA	GBPH	Govt.	Medical College Hospital (ANIIMS)	Dr. Ajay Raj NO, e-Hospital.	9474241340
Mayabunder/ N&M	Dr. RPH	Govt.	District Hospital	Dr. P. K. Palit MO I/c	9474249723, E-mail ID drrphmd@gmail.com
Car Nicobar	BJR	Govt.	District Hospital	Dr. Anwar Moosa MO I/c	9531839321, E-mail ID bjrcn @gmail.com
South Andaman	NHM	Govt.	State Epidemiologist, under DD (Health) & NO, IDSP	Dr. Tapash Kumar Dakuya, NO/SA	9476051793

CHAPTER 7

Health Action Plan on Heat Related Illnesses

Roles and Responsibilities of Health Department

Sl. No.	Department	Season	Roles and responsibilities
1	**Department of Health**	During **Pre-Heat** Season (Annually from January through March)	• Create list of high risk areas (heat-wise) of districts/block/cities. • Update surveillance protocols and include tracking daily heat-related data. • Develop/revise and translate IEC in local language. • Make a communication plan for dissemination of heat related alerts education materials. • Check inventories of medical supplies in health centres. • Capacity building of health care personnel to detect and treat heat related illnesses. • Community involvement for workers and trainers 'education. • Issue health advisory to healthcare personnel based on IMD seasonal prediction or warning. • Reassess 'Occupational Health Standards 'for various types of Occupation.
		During **Heat** Season (Annually from February Through April)	• Ensure real-time surveillance and monitoring system in case of extreme event. • Prepare rapid response team. • Distribute "Dos and Don'ts" to community. • Effectively send a "Don't Panic!" message to community. • Ensure access to Medical Mobile Van in the Red Zone. • Ensure additional medical vans available. • Ensure strict implementation of legislative/regulatory actions as per Occupational Health Standards. • Coordination with meteorological department for analysing cases and death data with meteorological variables like maximum temperature and relative humidity.
		During **Post-Heat** Season (Annually from April through December)	• Participate in evaluation of heat action plan and revision. • Review revised heat action plan.

Sl. No.	Department	Season	Roles and responsibilities
2	**Medical College and Hospitals**	During **Pre-Heat** Season (Annually from January through March)	• Get additional hospitals and ambulances ready. • Update surveillance protocols and programs, including tracking daily heat-related data. • Establish more clinician education. • Continue to train medical officers and paramedics.
		During **Heat Season** (Annually from March through April)	• Adopt heat-illness related treatment and prevention protocols. • Equip hospitals with additional materials. • Deploy all medical staff to be on duty. • Keep emergency ward ready. • Keep stock of small reusable ice packs to apply to PULSE areas. • Report heat stroke patients to DSU daily. • Expedite recording of cause of death due to heat related illnesses.
		During **Post-Heat** Season (Annually from April through December)	• Participate in annual evaluation of heat action plan. • Review revised heat action plan.
3	**Health centres and link workers**	During **Pre-Heat** Season (Annually from January through March)	• Distribute pamphlet and other materials to community • Sensitize link workers and community leaders • Dissemination of materials in slum communities • Coordinate outreach efforts with other community groups, non-profits, and higher education.
		During **Heat** Season (Annually from March through April)	• Visit at-risk populations for monitoring and prevention. • Communicate information to tertiary care and ambulance services.
		During **Post-Heat** Rainy Season (Annually from April through December)	• Participate in annual evaluation of heat action plan. • Review revised heat action plan.

Inter - Departmental Collaborations for Heat Related Illnesses

Sl. No.	Department	Season	Roles and Responsibilities
1	**Meteorological Department**	**Pre-Heat**	Issue weather forecasts on Short/Medium/Long range duration.
		Heat	• Issue Heat wave alerts • Coordination with health department for analysing cases and death data with meteorological variables like maximum temperature and Relative humidity
		Post-Heat	• Participate in annual evaluation of heat action plan. • Review revised heat action plan.

Sl. No.	Department	Season	Roles and Responsibilities
2	**APWD**	**Pre-Heat**	• Identify vulnerable places. • To construct cool shelters/sheds at public places, bus stands etc.
		Heat	• Provide drinking water points at identified places and worksites. • To maintain shelters/sheds, bus Stands
		Post-Heat	• Participate in annual evaluation of heat action plan. • Review revised heat action plan.
3	**PBMC**	**Pre-Heat**	Review the heat preparation measures.
		Heat	Ensure implementation of guidelines of heat action plan
		Post-Heat	Review the heat preparation measures and make a note of the lessons learnt for the next season
4	**Department of Education**	**Pre-Heat**	• Train and Sensitise teachers and students towards health impact of extreme events and disseminate • Health ministry approved Prevention and first-aid measures
		Heat	• Rescheduling school timing during summer • During extreme events keep a check on out-door activities of students • Close teaching institutes in case of issue of alert from Government.
		Post-Heat	• Participate in annual evaluation of heat action plan • Review revised heat action plan
5	**Department of Labour & Employment**	**Pre-Heat**	• Reassess 'Occupational Health Standards' for various types of Occupation. • Utilize maps of construction sites to identify more high-risk outdoor workers • Heat illness orientation for factory medical officers and general practitioners • Communicate directly about heat season with non-factory Workers.
		Heat	• Encourage employers to shift out door workers' schedules away from peak afternoon hours (1pm- 5pm) during a heat alert or consider extended afternoon break or alternate working hours for workers. • Provide water at worksites
		Post-Heat	• Participate in annual evaluation of heat action plan • Review revised heat action plan
6	**Department of Electricity**	**Pre-Heat**	• Maintenance of electrical lines
		Heat	• Ensure uninterrupted supply of electricity
		Post-Heat	• Participate in annual evaluation of heat action plan • Review revised heat action plan Participate in annual evaluation of heat action plan • Review revised heat action plan
7	**Department of Transport**	**Pre-Heat**	Review the road map for preparation for the heat season
		Heat	Ensure implementation of guidelines of heat action plan

Sl. No.	Department	Season	Roles and Responsibilities
		Post-Heat	• Participate in annual evaluation of heat action plan • Review revised heat action plan
8	**Department of IP & T**	**Pre-Heat**	• Secure commercial airtime slots for public service announcements. • Identify areas to post warnings and information during heat season. • Activate telephone heat hotline. • Begin placing temperature forecasts in newspapers. • Increase installed LED screens • With scrolling temperature.
		Heat	• Issue heat warnings in heat and electronic media. • Contact local FM radio and TV stations for announcements. • Use SMS, text and whatsapp mobile messaging and centralized mobile data bases to send warnings. • Contact transport department to Place warnings on buses.
		Post-Heat	Evaluate reach of advertising to target groups and other means of communication such a social media

Undertake measures to manage food & water-borne diseases that have worsened because of climate change impacts

This approach would strengthen disease surveillance units for early detection and control of food & water-borne diseases and periodic and monitoring of water quality. Provisions would be made for separate diarrhoea and isolation wards in each district.

Vulnerability assessment

Availability of safe water supply to all, sanitation facilities in general and in urban slums and remote rural areas, personal hygiene, political willingness, Socio-economic status, cultural beliefs, natural disasters, demographic changes, accessibility to health care

CHAPTER 8

Health Action Plan on Extreme Weather Event-Related Health Issues

Addressing mental health issues in the context of the frequent occurrences of extreme events

Tele-MANAS aims to provide free tele-mental health services all over the country round the clock, particularly catering to people in remote or under-served areas. A toll-free, 24/7 helpline number (14416) has been set up across the country allowing callers to select the language of choice for availing services. Service is also accessible with 1-800-91-4416.Services offered by Tele-MANAS are:

- Tele Counselling by trained counsellors.
- Tele Consultation by Mental Health professionals when required.
- Referral Services to other Mental Health Establishments such as Medical Colleges, DMHP services and speciality institutes.

Disaster Management

Risk Analysis

The directorate of Disaster Management has done the following risk analysis with regard to the disaster potentiality of various hazards in A & N islands.

Types expected hazards/Disaster agents

- Earthquake
- Tsunami
- Floods
- Cyclones
- Sea Erosion
- Drought
- Landslides and Mudflows
- Dam Bursts
- Chemical & Industrial Disaster
- Nuclear Disaster

- Urban, Village, Forest Fire
- Serial Bomb Blasts
- Oil Spill
- Festival related Disasters
- Air, Road and Rail Accidents
- Boat Capsizing

The UT already has a SOP in place which encompasses the following five phases of disaster management for effective and efficient response to natural disasters and will be reviewed annually:

(i) **Preparedness Phase:** This phase will include taking all necessary measures for planning, capacity building and other preparedness so as to be in a state of readiness to respond, in the event of a natural disaster. This Stage will also include development of Search & Rescue Teams, mobilization of resources and taking measures in terms of equipping, providing training, conducting mock drills/ exercises etc.

(ii) **Early Warning Phase:** This phase will include all necessary measures to provide timely, qualitative and quantitative warnings to the disaster managers to enable them to take early measures for preventing loss of life and reducing loss/damage to the property. On the occurrence of a natural disaster or imminent threat thereof, all the concerned Agencies will be informed/notified for initiating immediate necessary follow up action.

(iii) **Response Phase:** This phase will include all necessary measures to provide immediate succour to the affected people by undertaking search, rescue and evacuation measures.

(iv) **Relief Phase:** This phase encompasses providing for all necessary measures to provide immediate relief to affected people by arranging for essential needs of food, drinking water, health & hygiene, clothing and shelter.

(v) **Restoration Stage:** This phase will include all necessary measures to stabilize the situation and restore the utilities.

Duties & Responsibilities of Various Departments for Co-ordination During Disaster

Agency/Dept.	Roles and Responsibilities
State Emergency Operation Centre, DDM	• Observing, monitoring, analysing & evaluating of incidents and dissemination of Advisories Direction of the Chief Secretary A&N Administration (RO). • Disseminate information with advisories to Tour Operators and Tourists through their registered mobile numbers in IP&T. • Ensure Action as per IAP prepared by the IC of State and or Districts. • Coordinate all efforts with in the response time and check the response Mechanism of UTDMA. • Check the deployment of SAR Teams, QRTs consists of Police, Police Fire Services, IRBns, Home Guards, Civil Defence and Village Voluntary Task Teams (VVTS). • Check the deployment of MFR/Paramedics with sufficient resources. • Ensure the facilities of the nearby Relief Shelters and their route map for evacuation and civic amenities. • Ensure the availability of proper transportation. • Ensure availability of emergency relief items like food, utensils tentages, power backups, lightings, drinking water supplies.

Agency/Dept.	Roles and Responsibilities
Deputy Commissioners of District Administration	• Vulnerability Mapping of flood area and setting up of Incident Action Plan (ICP) • Observe website of IMD and MOSDAC or message from SCR • Analyses of information and intimate to the higher authorities • Disseminate alert/warning to departments/agencies/public. • Mapping of Evacuation Sites/staging areas in nearby identified relief shelters, high rise areas or in the refuge area. • To prepare Incident Action Plan (IAP). • Assess the Incident Report from affected areas. • Requisition accommodation, vehicles and equipment for relief operations. • Set up transit camps and arrange food distribution. • Arrange for dry ration and family kits for cooking. • Arrange for clothing. • Provide gratuitous relief. • Set up information centre for sharing of information with the media and the public. • Activation of Standard Operating Procedure • Ensure activation of EOCs concerned in consultation with SCR. • All EOCs to be in touch with all other Control Rooms established by the Line Depts. • Direction for evacuation, if necessary. • Establishment of Incident Command Post equipped with al communication equipment viz. SAT Phones, VHF etc. • Ensure Air and Ship Ambulances. • Request for involvement of other agencies for evacuation viz - Air support, Ship support etc. • Ensure deployment of SAR teams viz. NDRF Police, Fire, MFR (Medical), VTF, APWD, Electricity, Forest, PMB, PBMC, PRIs Tribal Council Members, representatives of Public and other agencies • Ensuring Law & Order, Traffic Management and Guidance & Assistance. • Arrange for the area of operation to be cordoned off at each site under their jurisdiction. • Establishment of MFR Centre. • Ensure activation of Hospitals. • Ensure Gender Issue and their arrangements • Ensure facilities available at Refuge areas, Relief Shelters. • Ensure immediate dispatch of Relief Materials and equipmens to the site of operation. • Reports at regular intervals to RO/IC and/or to the SCR. • Ensure logistic arrangements at Relief Shelters. • Assessment of Damage. • Restoration of essential services and arrangement of food for task teams and relief shelters. • All EOCs have to maintain events reports and submit final report to SCR.
A&N Police	• On receipt of the alert/warning, disseminate information to all police officers/personnel and ensure action is initiated in each District as per SOP. • SP to prepare IAP in coordination with Deputy Commissioners. • SP to maintain law and order situation during evacuation. • Police department to make sure the area suitability for action by the Task Teams. • DGP to furnish regular reports to Chief Secretary (RO) and a Coordinating Officer to report to Commissioner-cum-Secretary (RR&DM) (UT level IC). • Take stock of the situation and monitor the deployment of Quick Response Team (QRT) for SAR operations. • Arrangement to receive the incident reports from the incident site. • Overall supervision of the action taken up by the Police and Fire Services.

Agency/Dept.	Roles and Responsibilities

	• Police Coordinating Officer (DM) to supervise the following:
	  ▪ PCR to open their VHF Channel 7 exclusively for the use of disaster management purposes.
	  ▪ All other communication channels and SAT phones to be operationalized.
	  ▪ Trigger the mechanism to activate all the task forces immediately.
	  ▪ Cordon off the flood affected site
	  ▪ Make arrangement for deployment of Gemini boats in the flood affected areas.
	  ▪ Ensure Law and order
	  ▪ Traffic should be diverted from the flood affected area
	  ▪ Immediate deployment of QRTs and SAR Teams to the flood affected areas.
	  ▪ Leader of QRTs and SAR teams to intimate the position of the area immediately to the State Control Room.
	  ▪ The leader of QRT will assist the NDRF in SAR & MFR.
	  ▪ Assess the situation and spontaneously intimate the requirement.
	  ▪ Make note of victims: males, females and children intimate to SCR.
	  ▪ Extricate and stabilize the victims
	  ▪ Evacuate with the assistance of SAR team and or the VTFs identified by the district Admn. and/or the NGOs.
	• Maintain/send events management reports to SCR for updating sequential report to the RO/IC and submit the authenticated final report to RO.
	• Wait for all clear messages before demobilizing the personnel in operation in shift wise.

A&N Police Fire Services	• Chief Fire Officer/officer-in-Charge Fire Service move immediately as per the direction to the spot with all flood rescue equipment and follow SOP. • Deploy Fire Service Ambulances on the spot. • Intimate the action from time to time to SEOC. • Coordinating Officer (DM) Fire to report to IC/RO. • Initiate action as per IAP • Rescue persons. • Transport injured persons to hospitals. • Evacuate persons from the affected areas. • Ensure safety from electrical installations or power supply at the disaster site. • Clear roads or path-way of uprooted trees. • Carry out salvage operations. • Officer-in-Charge after assessing the situation will intimate to SCR regarding additional requirement of tactical resources, if any. • Fire Service Secure the scene. Identify the affected area and cordon off the area with scene tape. • Identify potential victims • Stabilize the victims • Extricate the victims • Evacuate victims with the assistance of Tehsildars and NGOs • Move injured to nearest hospital by ambulance/other vehicles. • Maintain events management reports and submit final report to SCR.

Agency/Dept.	Roles and Responsibilities
Health Services	• After receipt of the distress disaster alert, the Coordinating Officer (DM) (Health) immediately alerts all the staff concerned and ensure that action is initiated in each District as per the SOP. • Coordinating Officer (DM) (Health) to report to IC/RO. • Initiate action as per IAP. • Check the availability of sufficient stock of medicines. • Medical First Responder Team consisting of a Doctor, Nurses and Ward Boy with first aid equipment. • Organise on-site treatment of injured with tagging and triage and their transport to hospitals. • Provide treatment to the injured at hospitals. • Organise post-mortem examination and corpse disposal. • Undertake epidemic prevention measures. • Involve and coordinate with Government and private hospitals and medical entities in the discharge of above functions. • Set up Information Centre for sharing of information with the media and the public. Triage Action. ▪ Green-Ambulatory ▪ Yellow-Serious ▪ Red-Critically injured ▪ Black-Dead or fatally injured • First Aid in the ICP • Move injured to nearest hospital by ambulance/other vehicles. • Ensure availability of emergency medicines. • Call the off-duty Doctors, Staffs, Nurses and other staff as per requirement. • Make suitable arrangements of Doctors and paramedical staff & first aid equipment at incident site • Coordinating officer (Health) to make note of the victims' location-wise. • Ensure safe evacuation after first aid. • Activate Hospitals (both Govt. & Private) • Special Ward for Victims • ICU activation & create Surgery Capacity/Capability at al hospitals • Open up trauma centre for the victims • Wait for alert status green before demobilising the teams from the operation. • Maintain events reports and final report and submitted to SEOC.
Transport Department	• Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action is initiated in each District as per their SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Provide information to the public regarding cancellation, re-routing and delays in operation of buses, location of temporary shelters and the measures being undertaken to restore normalcy of service. • Deploy additional buses along certain routes to clear passenger traffic. • Organise transport for stranded passengers, particularly for children from schools. • Set up information centre for sharing of information with the media and the public. • Call on duty and all the off-duty staff as per requirement. • Ensure immediate arrangement of transportation for evacuation of flood affected people from the affected site to the Relief Shelters. • Restoration of Transport Services at the affected site. • Maintain events management reports and submit final report to SCR.

Agency/Dept.	Roles and Responsibilities
Shipping Services	• Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC. • Initiate action as per IAP • DSS Control Room to watch for any SOS/Distress Call and if so, take necessary action. • Intimate SOS calls so received to SEOC through VHF in International Channel No. 16. • Request for any additional requirement, if necessary. • Restoration of Shipping Services. • SITREP Report from time to time regarding location of the ships on regular intervals to SEOC by the Port Towers, • Provide ship support for deployment of task forces and essential commodities to affected Islands. • Provide Ship support for evacuation. • Wait for alert status green before demobilising the teams in operation. • Maintain events management reports and submit final report to SCR.
Port Management Board	• After receipt of the disaster alert, the Coordinating Officer (DM) to issue immediately alert to all staff and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP • In case of cyclone alert, all the PMB towers in the islands for dissemination of alert warning to nearby boats/ships to be stationed away from the shore side till the threat status green has not been issued by the SCR. • PMB Control Room to watch for any distress alerts/SOS and take necessary action. Intimate SOS calls so received to SCR. • Request for any additional requirement, if necessary.
APWD	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • All the staff of the APWD to report on duty immediately. • Keep blasting sirens till release of dam water, if dam is about to overflow. • Drain flood waters and remove impediments to movement from all roads under its flow zone. • Repair, restore and maintain all roads, storm water drains, etc under its control. • Supplement and coordinate the disaster management activities of various public agencies. • Set up information centre for sharing of information with the media and the public. • Take information regarding disaster sites from SEOC and activate their available resources and/or the tactical resources of the agencies for rescue operation. • Initiate action as per IAP. • List of available resources to be provided to the IC/RO. • Ensure Water Supply, Sanitation in the Refuge areas, Relief Shelters and Relief Camps. • Restoration of Services by APWD Task Force. • Clearance and restoration of road at affected sites. • All tactical resources to be moved to the incident sites to assist SAR team. • Assessment of damage and request for additional support if required. • Maintain events management reports and submit final report to SCR.

Agency/Dept.	Roles and Responsibilities
Port Blair Municipal Council	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Drain flood waters and remove impediments to movement from all roads under its control. • Repair, restore and maintain all roads, storm water drains, etc. under its control. • Repair, restore and maintain all other municipal infrastructure, services, facilities, amenities, etc. • Rescue persons. • Transport injured persons to hospitals. • Transport and dispose of corpses • Transport/shift/evacuate stranded/affected persons. • Organise temporary shelters with food and water supply. • Issue passes/identification stickers for vehicles on relief duty. • Issue passes/identity cards to persons on relief duty. • Coordinate the activities of NGOs and other private entities engage in relief work. • Aid and supplement efforts and activities of all other departments and agencies with regard to disaster management. • Town Plan Map to be present before the IC/RO. • Seepage map along with low lying area map is to be ready for IAP. • Clearance and restoration of road at affected sites in municipal area. • To assist SAR team. • Deployment of Task Team to the affected sites. • Restoration of water supply, sanitation in the refuge areas, and relief godowns. • Restoration of Services by PBMC Task Force. • Timely Assessment of Damage is to be undertaken. • Wait for alert status green before demobilising the teams in operation. • Maintain events management reports and submit final report to SCR.
Electricity	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action isinitiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Shutdown power where necessary and intimate to SEOC. • Deployment of Task Team at the affected sites. • Provide power backup at SEOC, EOCs, Incident Command Po's (ICP), Hospitals, Relief Shelters, Refuge Areas and Relief Godowns. • Restoration of Power Supply at appropriate stage. • Wait for alert status green before demobilising the teams in operation. • Maintain events management reports and submit final report to SCR.
Civil Supplies & Consumer Affairs	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Ensure sufficient stock of edible items. • Immediate supply of emergency relief supplies to the Refuge Areas and Relief Shelters after confirming the requirement from districts.

Agency/Dept.	Roles and Responsibilities
	• Pre-contractual Arrangement is to be made with shops for emergency release of food and other immediate required products under immediate relief in isolated areas. • Procurement of additional requirement for emergency relief stores and its deployment/ dispatch to other required stations as per the requirement generated from districts. • Maintain events management reports and submit final report to SCR.
Education	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff & schools concerned and ensure action is initiated in each District as per the SOP/School DM Plan in respective schools. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Ensure safe evacuation of students from the affected areas. • Ensure operation of Relief Godowns, Refuge Area and Relief Shelters identified in schools of ANI. • Make reports regarding casualties and damages. • Coordinate all the work in support for rescue operation. • Ensure arrangements in the Relief Shelters for basic civic amenities. • Time to time report of action and requirements may be intimated to SCR. • Ensure damage assessment of schools from the heads of the institutions reaches immediately. • Maintain events reports and submit final report to SCR.
Fisheries	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Dissemination of Tsunami warning to fishermen/women to not move fishing vessels/boats/ trollers into deep sea during rough weather and sloppy sea. • Report casualties and damage in fisherman settlement areas. • Maintain events management reports and submit final report to SCR.
Social Welfare Department	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Arrangement to be made for trauma counselling/psycho social support at relief camps/ shelters. • To extend all support to District Administration for shelter management. • Maintain events management reports and submit final report to SCR.
Information, Publicity & Tourism Department	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Prepare and release information about the incident to the media/agencies/persons/officers with the approval of Relief Commissioner/IC. • Disseminate of warnings in all Tourist places in ANI and to all local Tour Agencies/Operators. • Proper dissemination of information through SMS to tour operators and tourists if necessary • To extend support to District Administration for safe evacuation of tourists from affected sites.

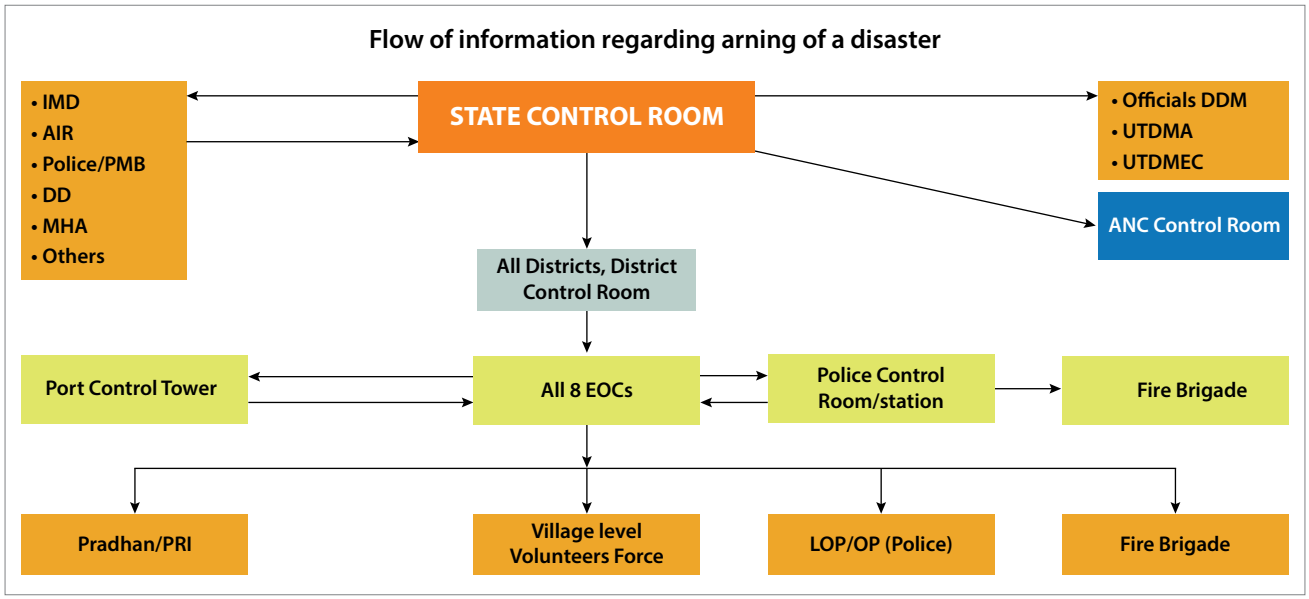
Agency/Dept.	Roles and Responsibilities
	• To undertakes Media Management and to assist RO in this regard. • Obtain information from all agencies including Media regarding the incident that may be useful to incident planning. • Display and keep updating incident status for information to public. • Coordinate with IMD to collect weather information and pass it to all concerned. • Perform any other duties as instructed by IC. • Maintain records of various activities performed. • Maintain events management reports and submit final report to SCR.
BSNL	• After receipt of the disaster alert, the Coordinating Officer to immediately alert all the staff concerned and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC. • Initiate action as per IAP • All action for disseminating alerts with advisories to a particular location which comes under the surveillance of BSNL Tower of that location. • Assessment of damage and restoration of communication network. • Ensure all communication equipment installed at SCR, EOCs isfunctioning. • Ensure other available means for fail safe communication channelsbetween SCR, EOCs and important emergency support functionaries. • One JTO to be stationed at SCR and EOCs. • Maintain events management reports during Mock Exercise and submit final report to SCR.
Department of Animal Husbandry & Veterinary Services	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Make arrangements for taking stock of livestock. • Prepare area wise report and submit to SCR. • Disposal of animalcarcasses. • Maintain events management reports and final report will besubmitted to SCR.
Agriculture Department	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action isinitiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP • Make arrangements for taking stock of damage to crops and food grains. • Prepare area wise report and submit to SCR. • Maintain events management reports and submit final report to SCR.
IT Department	• After receipt of the disaster alert, the Coordinating Officer (DM) to alert all the staff concerned and ensure action is initiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Coordinating Officer (DM) to check with SCR and EOCs the situation regarding communication links available for rescue and relief operations and assist in this regard. • Maintain events management reports and submit final report to SCR.
Finance Department	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action isinitiated in each District as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • To assist in procurement and making fund available where ever necessary.

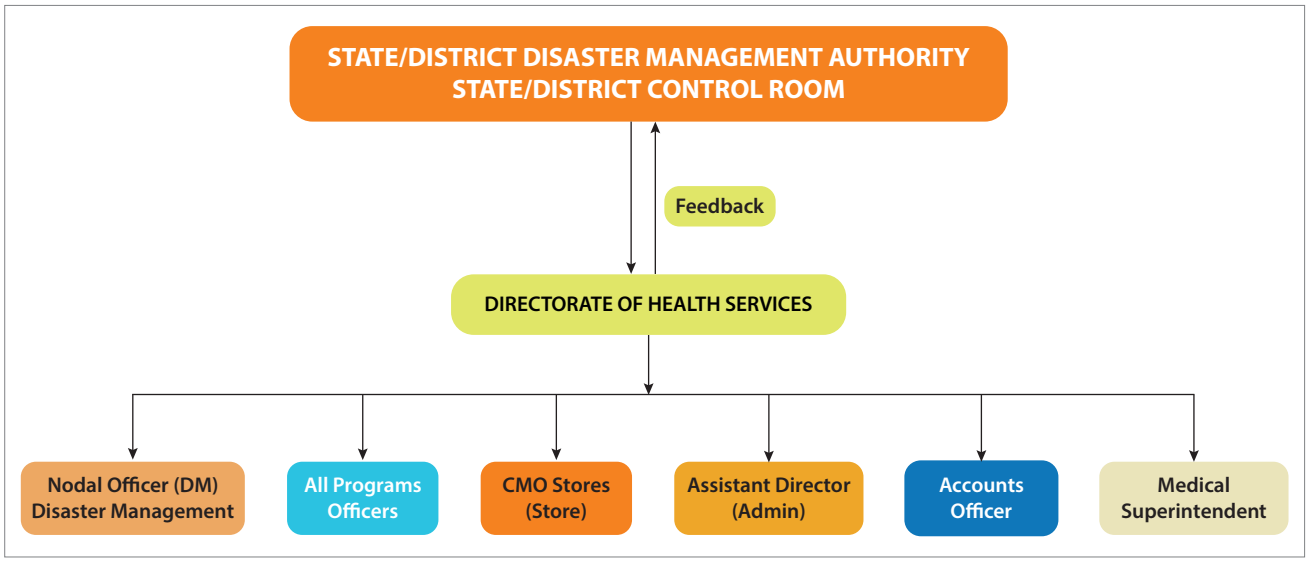
Agency/Dept.	Roles and Responsibilities
	• In accordance with IAP Prepare list of resources to be procured/outsourced, obtain orders of competent authority as per financial rules and take steps for their procurement without procedural delay. • Ensure that time records of hired equipment, personnel and their services are accurately computed as per government norms for payment. • Examine/Scrutinize cost involved in the disaster management operations keep IC/RO informed. • Ensure that all obligation documents initiated at the incident are properly prepared, verified, completed and signed by appropriate authority. • Brief on all incident–related financial issues needing attention or follow-up. • Perform such other duties as instructed by RO/IC. • Maintain records of various activities performed.
Airport Authority of India, Port Blair	• After receipt of the disaster alert, the Coordinating Officer (DM) to immediately alert all the staff concerned and ensure action isinitiated as per the SOP. • Coordinating Officer (DM) to report to the IC/RO. • Initiate action as per IAP. • Assess situation at air strip/airport and intimate it to SCR. • Ensure accesses of the SAR, MFR teams and other disaster managers. • Ensure the air strip functioning and arrange for landing of emergency operation teams from mainland with relief materials.
PRIs	• After receipt of the disaster alert, the PRI Members to issue alert immediately to concerned communities and ensure action of Village Voluntary Task Forces. • PRI members intimate the readiness of VTF with the concerned Deputy Commissioner (District Level Responsible Officer) or Assistant Commissioner (Incident Commander). • PRIs to ensure clearance and restoration of road at affected sites to assist approach of SAR team. • Ensure restoration of water supply, sanitation in the Refuge AreasRelief Shelters and Relief Godowns. • Ensure assistance for assessing damage of their concerned area. • Request to District level Responsible Officer/Incident Commander for additional requirement, if any. • Ensure safety and security of the VTF and community. • Maintain events management reports and submit final report to District Level RO/IC. • Periodical situation report be given to SCR.
Community	• Community Task Forces after activation of alert/warning should report to the nearest incident site and assist in smooth evacuation, in places where damage has occurred. • Pre-Identified Voluntary task teams must report to the Incident Command Post and divide themselves as per the expertise in the field of Search and Rescue, Evacuation Team, First Aid Team and coordinate with MFR teams, NDRF teams and Quick Response Teams in the rescue operation. • Demobilisation of their task team must be reported in Incident Command Post.
NGOs	• After the disaster alert, all NGOs will engage themselves in SAR operation as per the directions of the RO/IC/SCR. • Assist informing all concerned for smooth evacuation and inmaintaining law and order. • Reports regarding affected area to be given to SCR/EOC. • Assist SAR & MFR Teams. • Details of participants must be recorded in the Incident Command Post. • Demobilisation of their task team must be reported in Incident Command Post.

Agency/Dept.	Roles and Responsibilities
NDRF	• NDRF personnel to be deployed for SAR ops at affected sites as per the directions so received from the RO/IC/SCR. • Commandant, NDRF (stationed at Port Blair) will act as Coordinating Officer and report to RO from time to time. • The team after receiving the orders will activate their Standard Operating Procedures in coordination with quick response team o Police.

Source: Directorate of Disaster Management, A & N Islands.

Trigger Mechanism for Response to Disaster





Current Preparedness

- **A&N Islands Union Territory Disaster Management Authority** has been constituted under the Chairpersonship of Hon'ble Lt. Governor, A&N Islands.
- **District Disaster Management Authorities** for all the three Districts has been constituted.

- **Incident Response Teams (IRTs):** IRTs have been identified with pre-designated roles and responsibilities to function at UT, district, sub-division and tehsil levels as per the Incident Response System of NDMA in case of disasters.
- **Andaman & Nicobar Disaster Management Plan** has been prepared in 2012 and has been reviewed in 2017 which provides for measures to be taken and system to be established for disaster management under NDMA's incident response system guidelines.
- **Disaster Management Coverage to all inhabited Islands:** The senior most officers of any other department has been notified as **"Responsible Officer" and "Assistant Responsible Officers"** for the purpose of Disaster Management in small islands where an officer of Revenue Department (District Administration) not below the Rank of Tehsildar is not posted. With these arrangements, the concept of individual **Island level SOP** is also introduced.
- **CAP (COMMON ALERT PROTOCOL**) for emergency response preparedness is under process for the islands.
- **AAPDA MITRA SCHEME:** Proposed for training 300 Community Volunteers out of which 100 volunteers from Nicobar District and 92 volunteers from N&M Distract have been finalised and training will be imparted.

Foreign Aid

As a state policy of the GOI, no appeals shall be made seeking foreign aid for disaster response. However, foreign national government voluntarily offer assistance as a goodwill gesture in solidarity of the disaster victims, after information to proper channel, the Ministry of Home Affairs will coordinate with the Ministry of External Affairs for obtaining and channelizing such assistance. And all national and international non govt. agencies while rendering emergency support functions on the ground will function under the overall command of the State Government through the Incident Commander.

Capacity Building for Disaster Management

Capacity building will be based on the baseline and follow-up situation which should be assessed periodically. Communication and training are crucial in adaptation to variability or changes in the climate. Communication programmes based on a thorough needs assessment must aim to enable and empower people, in particular, the illiterate, poor and other vulnerable people such as women, children, the elderly, people suffering from debilitating medical problems and those living in coastal areas, high lands and urban slums. Such programmes should have adequate and appropriately designed communication tools that are locally suitable, popular and comprehensible.

- Effective communication and public awareness activities/advocacy: sensitize, orient and take support of leaders/opinion makers/stakeholders/celebrities/civil societies.
- Communication intervention for target audience: Appropriate, efficient and cost-effective measures include clear and timely information covering who is involved; what happened; when it happened; where it happened; and why or how it happened or what may happen – how, why, where, among whom and how to face it.
- U.T. and district level capacity building institutions needs to be identified for capacity building of health staff: include training and imparting technical skills for case management, risk assessment

skills, entomology, epidemiology, climate models, disaster management, meteorology, monitoring and evaluation and research.

- Conducive institutional and management arrangements to ensure involvement of private sector by forming public private partnerships.
- Hospital and all other health-care systems must be strengthened. Involve community in the process of strengthening and in managing and maintaining the system.
- Inventory management: standardized list of adequate and appropriate logistics medicines, kits, equipment and machines along with efficient storage systems.
- Specific strategies and standard operating procedures for managing climate sensitive diseases need to be developed in light of the future impacts of climate change with prevention in mind.
- Communication interventions in schools are effective approaches for which teachers would need materials and training to educate the children.

CHAPTER 9

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

Role of Health Sector (U.T. Nodal Officer and Task Force)

1. Development of health micro-plan for food borne illnesses (case management, resources required like logistics, drugs, vaccines, and laboratories' role).
2. Mapping of vulnerabilities: population at risk, geo-climatic conditions, recent trend of climate variability (flood, drought), change in population demography (migration), available resources, healthcare infrastructure, laboratories, burden of chronic illnesses in the community etc.
3. Build capacity of healthcare personnel to detect and treat food borne illnesses.
4. Strengthen/Develop real-time surveillance, evaluation and monitoring system for food borne illnesses, enhance this surveillance during high risk period.
5. Issue advisory to healthcare personnel, laboratories and related stakeholders.
6. Develop or translate IEC in local language, and make a communication plan for dissemination of health related alerts/education materials.
7. Ensure adequate supplies (vaccines and medications) for cases management with other required logistic as identified to the affected region
8. Improve access to health care facilities by vulnerable population, especially those in remote areas.
9. Coordinate with related stakeholders like Municipalities to keep a check and strengthen surveillance of food handling units, local vendors, water supply etc.
10. Explore collaborative mechanisms (e.g. Memorandum of understanding) with other departments, stakeholders for sharing of data and for coordinating efforts to manage health risks.

Coordination with other sectors for reducing water and Food borne illnesses

Department of Water & Sanitation

- Ensure minimum household safe water supply.
- Reuse treated waste-water for non-household use.
- Encourage water saving technologies like low-flow toilets & Showers, rainwater harvesting etc.

Municipalities and other Local regulating bodies

- Ensure safe water supply and good sanitation to check transmission of infective agents.
- Regulate street vendors, food handling units for quality food.

Food Safety Department

- Regular Checking of food stall, street vendor, hotel
- Strict implementation of Food safety law across the islands.

Department of Civil Supply

- Regular Checking of food stall, street vendor, hotel
- Regular checking for adulteration of food.

The resources required/available to mitigate/reduce burden of the food borne diseases are

- Inter department coordination with all the stalk holder
- Regular joint inspection and monitoring of food stall and food items for adulteration

Mechanism of Generation of Alert system for the outbreak of Food borne diseases

- IDSP have Media Screening Unit, which scan for any news regarding food born disease in these islands
- Regular reporting of Food borne diseases and suspect Outbreak from Medical Officers

CHAPTER 10

Action Plan for Green and Climate Resilient Health Care Facilities

Green House Gases (GHG) profiling for A & N Islands

According to Intergovernmental Panel on Climate Change (IPCC), "Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere and clouds". The GHGs include water vapor (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), ozone (O_3), sulphur hexafluoride (SF_6), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). India stands at 4th position among top 15 emitter countries of the world although its per capita emission is the least among them. The same will be estimated for the islands and initiatives will be put in place to boost the economy of the UT keeping the GHG emissions low as far as possible.

Contribution of GHG Emissions from Various Sources					Emissions in tonnes/year				
CH_4		CH_4 (%)	CO_2	CO_2 (%)	N_2O	N_2O (%)	HCF	tCO_2e	tCO_2e (%)
Municipal Solid Waste Burning									
Vehicles									
Domestic									
Refrigerant									
Livestock									
Industries									
Cropland									
Incinerators									
Green Cover									
Restaurant									
Landfills									
Agriculture									
DG Sets									

Contribution of GHG Emissions from Various Sources					Emissions in tonnes/year				
Cremation									
Aircraft									
Drains									
Wetland									
Power Plants									

Vulnerability assessment & Index Scoring for all sectors of A & N Islands

Each district will conduct its vulnerability assessment and identify potential hazards. While making such assessment, the risks involved and capacity to respond will be taken into account. The local community will be informed about their vulnerability to potential hazard/disasters through the representatives of Panchayati Raj Institutions/Local Self-Government and NGOs.

Automated sirens with public address system at all vulnerable locations to communicate heat, air pollution, disaster warnings

Communication and dissemination systems overcoming language barriers & tailored to the needs of specific groups such as urban and rural populations, women and men, older people and children, people with disabilities etc. should cover the entire population, including seasonal populations and those in remote locations, through multiple communication channels (e.g. satellite and mobile-cellular networks, social media, flags, sirens, bells, public address systems, door-to-door visits, community meetings). They should be installed at all public places and vulnerable locations with the understanding of last-mile connectivity to know which population groups can be reached by which services, including mobile-cellular, satellite and radio services.

Imposing restrictions for the oil liners of eastern countries

Sunda Strait connects the Java Sea with the Indian Ocean and presence of liners pose a great risk of oil spills into the ocean jeopardizing marine biodiversity of our beautiful emerald islands. Legislations needs to be formulated and implemented to address this issue by bringing it into awareness of Indian Government.

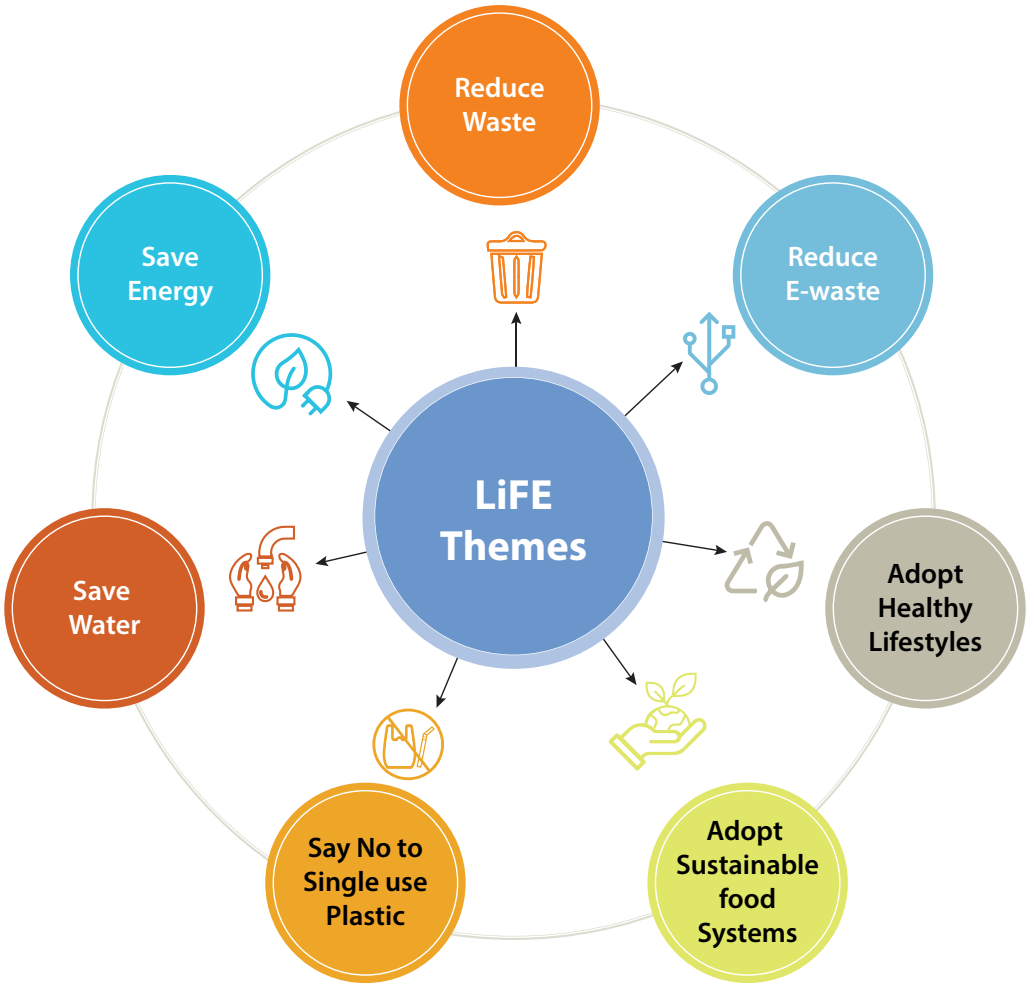
Awareness Generation

- To create awareness among new generation, sessions regarding impact of climate change will be taken in schools all over the UT.
- Seminars/workshops will be conducted specifically for media personnel and public representatives.
- The States will ensure appropriate awareness programme to solicit community response, which will in turn reduce the burden on administration to a considerable extent.

Implementation of Mission LiFE

Implementation of Mission LiFE (Lifestyle For Environment) in Andaman & Nicobar Islands: It is aimed to mobilise at least one billion Indians and other global citizens to take individual and collective action for protecting and conserving the environment in the period 2022–28. At least 80 percent of all Indian villages and urban local bodies are aimed to become environment-friendly by 2028.It shall be done in 3 phases:

- **Phase I:** Change in Demand
- **Phase II:** Change in Supply
- **Phase III:** Change in policy



PART III

Budget

CHAPTER 11
Budget

Budget proposed under NPCCHH/SAPCCHH as per MoH&FW, Government of India to be included in PIP of UT NHM, Andaman & Nicobar Islands - (RE) 2021-22/2022-23

A. Hiring of Manpower					
Designation	**No. of Posts**	**Salary (per month)**	**Duration**	**Total**	**Role**
Consultant-Environmental Health	01	95,000	12 Months	11,40,000	Organization & co-ordination of all trainings & meetings, Capacity Building
Divisional Assistant, Environment Health Cell, DHS	01	25,000	12 Months	3,00,000	Data handling & Analysis
Peon Environment Health Cell, DHS	01	12,000	12 Months	1,44,000	Assisting administrative staff in wide range of office duties as required.
Total (A) = 15,84,000					

B. Training	
Training to MO, Nursing Officers, ANMs & ASHA	Rs. 2,50,000
Total (B) = 2,50,000	

C. Equipments & connectivity			
	Specification	**Qty**	**Amount**
Equipments	Computer & Peripherals	01	1,50,000
	PC (Photo Copying) Machine	01	
FTTH Connection	10 Gb	01	4,000*12 Months = 48,000
Total (C) = 1,98,000			

D. IEC Activities			
Amount in Rupees	**Total**	**Frequency**	**Grand Total**
5,000 x 23 PHC	1,15,000	2	2,30,000
10,000 x 04 CHC	40,000	2	80,000
20,000 x 02 District Hospital	40,000	2	80,000
50,000 x 01 GB Pant Hospital	50,000	2	1,00,000
50,000 x 01 SNO	50,000	2	1,00,000
Total (D) = 5,90,000			

E. Meetings			
Governing Body Meeting	50,000	1	50,000
State Task Force Meeting	25,000	2	50,000
TA/DA for Consultants/SNO Movements	8000	4 visits per year	32,000
Total (E) = 1,32,000			

F. Vehicle Hiring	
1,000/8 hrs./Day* 12 months	3,60,000
Total (F) = 3,60,000	
Grand (A+B+C+D+E+F) = 31,14,000	

(Rupees Thirty-One Lakhs Fourteen Thousand Only)

*The nominated District Nodal Officers viz North & Middle, South Andaman and Nicobar Groups will project their own budget through SPM (UTNHM) of their District respectively.

Budget for rest other Departments has been proposed through their concerned Ministries, Government of India.

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Annexures

Annexure 1: List of health Institutions in Andaman & Nicobar Islands

Details of Health Facility of Andaman & Nicobar Islands				
Sl. No.	Name of Health Facility	Type	Place	District
1	G. B. Pant Hospital	Referral Hospital	Port Blair	South Andaman
2	AYUSH Hospital	AYUSH Hospital	Port Blair	South Andaman
3	UHC Shadipur	Urban Health Centre	Port Blair	South Andaman
4	UHC Junglighat	Urban Health Centre	Port Blair	South Andaman
5	UHC Dairy farm	Urban Health Centre	Port Blair	South Andaman
6	UHC Delanipur	Urban Health Centre	Port Blair	South Andaman
7	UHC Haddo	Urban Health Centre	Port Blair	South Andaman
8	PHC Garacharama	Primary Health Centre	Port Blair	South Andaman
9	CHC Bambooflat	Community Health Centre	Bambooflat	South Andaman
10	PHC Manglutan	Primary Health Centre	Manglutan	South Andaman
11	PHC Chouldhari	Primary Health Centre	Chouldari	South Andaman
12	PHC Tushnabad	Primary Health Centre	Tushnabad	South Andaman
13	PHC Ferrargunj	Primary Health Centre	Ferrargunj	South Andaman
14	PHC Wimberlygunj	Primary Health Centre	Wimberlygunj	South Andaman
15	PHC Havelock	Primary Health Centre	Havelock	South Andaman
16	PHC Neil Island	Primary Health Centre	Neil Island	South Andaman
17	PHC Hut Bay	Primary Health Centre	Hut Bay	South Andaman
18	PHC R.K.Pur	Primary Health Centre	R.K.Pur	South Andaman
19	Dr R. P. Hospital	District Hospital	Mayabunder	North & Middle Andaman
20	CHC Rangat	Community Health Centre	Rangat	North & Middle Andaman
21	CHC Diglipur	Community Health Centre	Diglipur	North & Middle Andaman

Details of Health Facility of Andaman & Nicobar Islands				
Sl. No.	Name of Health Facility	Type	Place	District
22	PHC Baratang	Primary Health Centre	Baratang	North & Middle Andaman
23	PHC Kadamtala	Primary Health Centre	Kadamtala	North & Middle Andaman
24	PHC Long Island	Primary Health Centre	Long Island	North & Middle Andaman
25	PHC Billiground	Primary Health Centre	Billiground	North & Middle Andaman
26	PHC Tugapur	Primary Health Centre	Tugapur	North & Middle Andaman
27	PHC Kalighat	Primary Health Centre	Kalighat	North & Middle Andaman
28	PHC Radhanaga	Primary Health Centre	Radhanagar	North & Middle Andaman
29	PHC Kishornagar	Primary Health Centre	Kishornagar	North & Middle Andaman
30	BJR Hospital	District Hospital	Car Nicobar	Nicobar District
31	CHC Nancowry	Community Health Centre	Nancowry	Nicobar District
32	PHC Katchal	Primary Health Centre	Katchal	Nicobar District
33	PHC Teressa	Primary Health Centre	Teressa	Nicobar District
34	PHC Campbell Bay	Primary Health Centre	Campbell Bay	Nicobar District
35	PHC Gandhinagar	Primary Health Centre	Gandhinagar	Nicobar District

List of Sub centres in Andaman & Nicobar Islands

Sl. No.	DH/CHC/PHC	Sl. No.	Sub-Centre	District
1	**PHC Garacharama**	1	SC Teylarbad	South Andaman
		2	SC Carbyn Qarry	
		3	SC Brichgunj	
		4	SC Calicut	
		5	SC Prothrapur	
		6	SC Beodnabad	
		7	SC Rangachang	
		8	SC Bimblitan	
2	**CHC Bambooflat**	9	SC Shore Point	
		10	SC Stewart Gunj	
		11	SC Hopetown	
		12	SC Tsunami Shelter (CPWD)	
3	**PHC Manglutan**	13	SC Wandoor	
		14	SC Nayasehar	
		15	SC Guptapara	
		16	SC Rutland	

Sl. No.	DH/CHC/PHC	Sl. No.	Sub-Centre	District
4	**PHC Chouldari**	17	SC Chouldari	
5	**PHC Tushnabad**	18	SC Temple Myo	
		19	SC Mithakhari	
		20	SC Namunaghar	
6	**PHC Ferrargunj**	21	SC Mathura	
		22	SC Miletilak	
		23	SC Jirkatang-2	
7	**PHC Wimberlygunj**	24	SC Kanyapuram (Nayapuram)	
		25	SC Manarghat	
		26	SC Shoal Bay-12	
		27	SC Shoal Bay-19	
8	**PHC Havelock**	28	SC Krishnapur	
		29	SC Kalapather	
		30	SC Strait Island	
9	**PHC Neil Island**	31	SC Sitapur	
10	**PHC Hut Bay**	32	SC Netaji Nagar	
		33	SC Onge Tikrey	
		34	SC Farm Tekri	
		35	SC Harminder Bay	
11	**PHC R.K. Pur**	36	SC V.K. Pur	
		37	SC Rabinder Nagar	
		38	SC Dugong Creek	
12	**DR R.P. Hospital**	39	SC Rampur	North & Middle Andaman
		40	SC Burma Dera	
		41	SC Webi	
		42	SC Mohanpur	
		43	SC Karmatang	
13	**CHC Rangat**	44	SC Nimbutala	
		45	SC Dashratpur	
		46	SC Sabari	
		47	SC Bakultala	
		48	SC Kalsi	
		49	SC Koushalya Nagar	
		50	SC Shyamkund	

Sl. No.	DH/CHC/PHC	Sl. No.	Sub-Centre	District
14	**CHC Dilglipur**	51	SC Khudirampur	
		52	SC Ganesh Nagar	
		53	SC Gandhi Nagar	
		54	SC Smith Island	
		55	SC Shibpur	
		56	SC Aerial Bay	
		57	SC Deshbandugram	
		58	SC Sitanagar-I	
		59	SC Sitanagar-II	
15	**PHC Baratang**	60	SC Flatbay	
		61	SC Adaijig	
		62	SC Oral Katcha	
		63	SC Jarawa Creek	
16	**PHC Kadamtala**	64	SC Kataidera	
		65	SC Pooltala	
		66	SC Uttara	
17	**PHC Billiground**	67	SC Panchavati	
		68	SC Betapur	
		69	SC Dharmpur	
		70	SC Nimbudera	
18	**PHC Tugapur**	71	SC Tugapur-6	
		72	SC Bajota	
		73	SC Chainpur	
		74	SC Hanspuri	
19	**PHC Kalighat**	75	SC Ramnagar	
		76	SC Nabagram	
		77	SC Nischintapur	
		78	SC Jagannath Dera	
20	**PHC Radhanagar**	79	SC Milangram	
		80	SC Laxmipur	
21	**PHC Kishorinagar**	81	SC Kishorinagar	
		82	SC Paschim Sagar	

Sl. No.	DH/CHC/PHC	Sl. No.	Sub-Centre	District
22	**BJR Hospital**	83	SC Malacca	Nicobar District
		84	SC Kakana	
		85	SC Kimious	
		86	SC Kinyuka	
		87	SC Tapoiming	
		88	SC Mus	
		89	SC Big Lapathy	
		90	SC Small Lapathy	
		91	SC Teetop	
		92	SC Sawai	
		93	SC Arong	
23	**CHC Nancowry**	94	SC Bada Inaka	
		95	SC Vikasnagar	
		96	SC Kakana	
		97	SC Pililow	
		98	SC Champin	
		99	SC Balu Basti	
		100	SC Hitui	
		101	SC Munak	
		102	SC Tapong	
		103	SC Daring	
		104	SC Changua	
24	**PHC Teressa**	105	SC Luxi	
		106	SC Alorong	
		107	SC Enam	
		108	SC Minyuk	
		109	SC Chowra	
25	**PHC Katchal**	110	SC E-Wall	
		111	SC Meenakashi Ram Nagar	
		112	SC Upper Katchal	
26	**PHC Campbell Bay**	113	SC Kamal Basti	
		114	SC Rajiv Nagar	
		115	SC Chingam Basti	

Sl. No.	DH/CHC/PHC	Sl. No.	Sub-Centre	District
		116	SC Govind Nagar	
		117	SC Joinder Nagar	
		118	SC Affra Bay	
		119	SC Makachuha	
		120	SC Pillalow	
27	**PHC Gandhi Nagar**	121	SC Laxmi Nagar	
		122	SC Shastri Nagar	

Annexure 2: NPCCHH - Organizational Structure of UT of Andaman & Nicobar Islands

1. Structure of A&N UT Environment Health Cell

State Nodal Officer	**Dr B. Ajith Kumar, 9474208080**
Consultant-Environmental Health	Vacant*
Data Manager & Analyst	Vacant*
Secretarial Assistants cum Data entry Operator	Vacant*

* To be hired after approval of funds

2. District Nodal Officers- UT of Andaman & Nicobar Islands

District	Name	Designation	Contact Details
South Andaman	Dr. Tapash Kumar Dakuya	State Epidemiologist- IDSP	M: 9476051793 E-mail ID: drtapashbhms@g mail.com
North & Middle Andaman	Dr. P. K. Palit, MO I/c	Medical Officer i/c North & Middle Andaman	M: 9474249723 E-mail ID: drrphmd@gmail.com
Nicobar Islands	Dr. Anwar Moosa MO I/c	Chief Medical Officer, NFSG	M: 9531839321 E-mail ID: bjrcn @gmail.com

Annexure 3: Andaman and Nicobar Islands Union Territory Disaster Management Authority (UTDMA)

In exercise of the powers conferred under sub-section (1) of the section 14 of the Disaster Management Act 2005, the UT Administration has established **the A&N Islands Union Territory Disaster Management Authority** which presently consists of the following:

1. Lt. Governor, A&N Islands - Chairperson
2. Member of Parliament, A&N Islands - Member
3. Chief Secretary, A&N Admn - Member
4. Director General of Police, A&N Admn - Member
5. Chief of Staff, Andaman &Nicobar Command - Member
6. Inspector General Indian Coast Guard, Port Blair - Member
7 Principal Chief Conservator of Forest, A&N Admn - Member
8. Development Commissioner/Secretary (Agriculture and Fisheries), A&N Admn - Member
9. Principal Secretary (Health), A&N Admn - Member
10. Commissioner-cum-Secretary (RR&DM), A&N Admn - Member

Union Territory Disaster Management Executive Committee

The Union Territory of Andaman Administration in exercise of the powers conferred under sub-section (1) of the section 20 of the Disaster Management Act 2005 has established the Union Territory Disaster Management Executive Committee which presently consists of the following members: -

1. Chief Secretary, A&N Admn - Chairperson
2. Director General of Police, A&N Admn - Member
3. Chief of Staff, ANC - Member
4. Development Commissioner/Secretary (Agriculture and Fisheries), A&N Admn - Member
5. Commissioner-cum-Secretary (Shipping), A&N Admn - Member
6. Principal Secretary (Health), A&N Admn - Member
7. Commissioner-cum-Secy (APWD), A&N Admn - Member
8. Inspector General, Indian Coast Guard, Port Blair - Member
9. Chief Engineer, APWD, A&N Admn - Member
10. Chief General Manager, BSNL - Member
11. In-Charge, Meteorological Dept., A&N Islands - Member
12. Officer-in-charge, NIOT, A&N Islands - Member
13. Commissioner-cum-Secretary (R&R) - Member Secretary

DISTRICT DISASTER MANAGEMENT AUTHORITIES FOR THE DISTRICT OF SOUTH ANDAMAN, NORTH & MIDDLE ANDAMAN AND NICOBAR DISTRICT.

The Union Territory of Andaman & Nicobar Administration in exercise of the powers conferred under sub-section (1) of the section 14 of the Disaster Management Act 2005 has established the District Disaster Management Authority for the districts of South Andaman, North & Middle Andaman and Nicobar District which presently consists of the following:

A) South Andaman District

1. Deputy Commissioner, South Andaman - Chairperson
2. Adhyaksha, Zilla Parishad - Co-Chairperson
3. Superintending Engineer (CC-1, APWD) - Member
4. Superintendent of Police (South Andaman) - Member
5. General Manager, BSNL, A&N Islands - Member
6. Director (Health Services) - Member
7. Director (Education) - Member
8. Superintending Engineer (Electricity) - Member
9. Director (Shipping Services) - Member
10. Additional District Magistrate (South Andaman) - Chief Executive Officer

B) North and Middle Andaman District

1. Deputy Commissioner (N&MA) - Chairperson
2. Adhyaksha, Zilla Parishad - Co-Chairperson
3. Superintendent of Police (N&M Andaman) - Member
4. Dy. General Manager/SDO BSNL - Member
5. Chief Medical Officer, Mayabunder - Member
6. Superintending Engineer (APWD.), N&MA - Member
7. Deputy Education Officer, Middle Andaman - Member
8. Executive Engineer (Elec.), N&M Andaman - Member
9. Asst. Commissioner, Mayabunder - Chief Executive Officer

C) Nicobar District

1. Deputy Commissioner, Nicobar - Chairperson
2. Chairperson, Tribal Council, Car Nicobar - Co-Chairperson
3. Station Commander, Indian Air Force, Car Nic. - Member
4. Superintendent of Police, Nicobar - Member
5. Dy. General Manager/SDO BSNL, C/N - Member
6. Medical Superintendent, Car Nicobar - Member
7. Superintending Engineer (APWD), Nicobar - Member
8. Education Officer, Car Nicobar - Member
9. Executive Engineer (Elec.), Car Nicobar - Member
10. Asst. Commissioner (HQ), Car Nicobar - Chief Executive Officer