TAMIL NADU CLIMATE CHANGE MISSION
DOCUMENT

Department of Environment,
Climate Change & Forest

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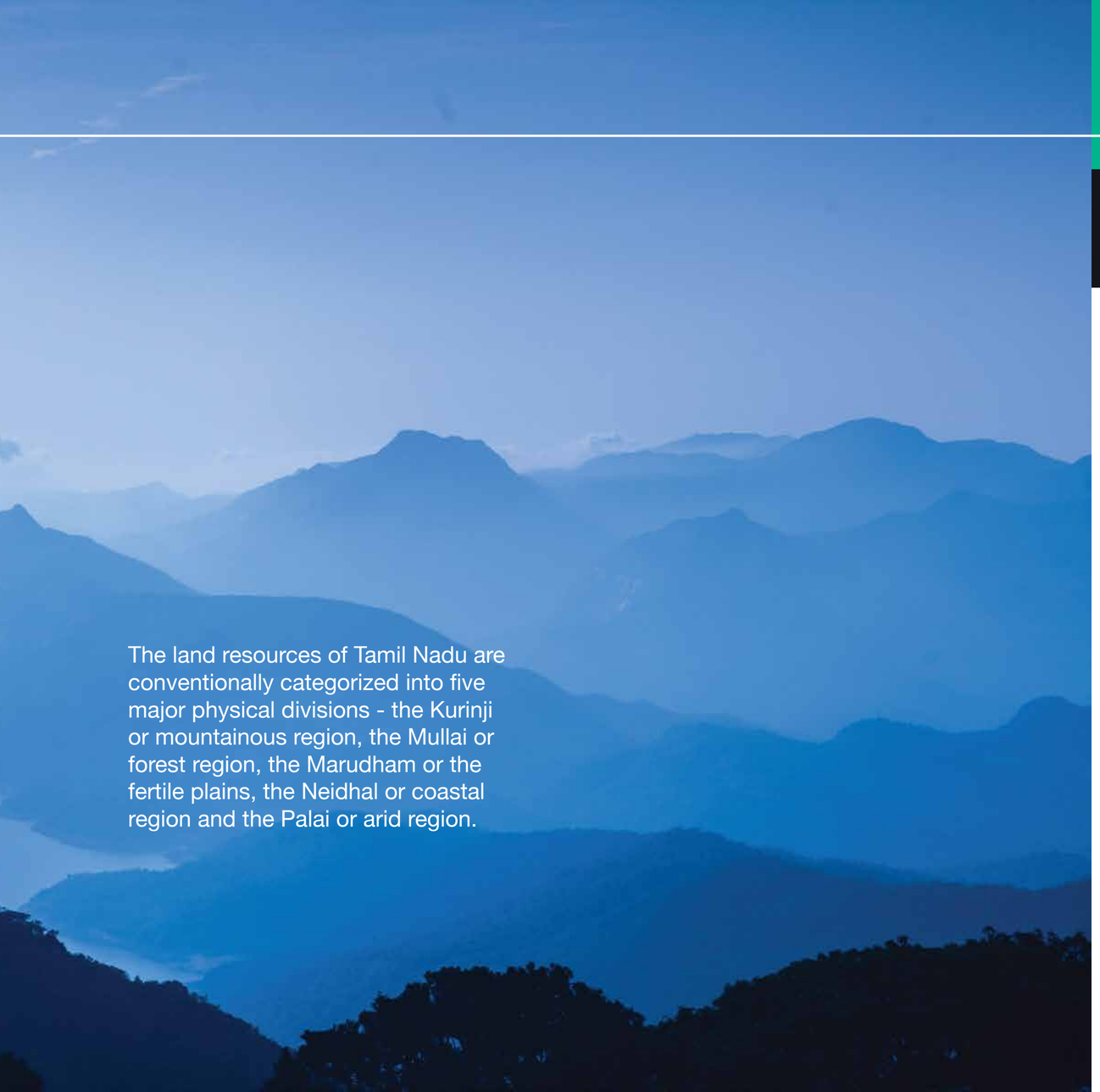


The land resources of Tamil Nadu are conventionally categorized into five major physical divisions - the Kurinji or mountainous region, the Mullai or forest region, the Marudham or the fertile plains, the Neidhal or coastal region and the Palai or arid region.

1.1. BACKGROUND

INTRODUCTION

The State of Tamil Nadu, India is located in the extreme south of the Indian subcontinent. Bound by the Indian Ocean to the east and south and flanked by the states of Kerala to the west, Karnataka to the northwest, and Andhra Pradesh to the north, the state holds a strategic position amidst the southern states of India. The land resources of Tamil Nadu are conventionally categorized into five major physical divisions - the Kurinji or mountainous region, the Mullai or forest region, the Marudham or the fertile plains, the Neidhal or coastal region and the Palai or arid region. Each of the five categories represents distinct geographical features and have prominent climatic conditions leading to availability of diverse resources within the state.

Tamil Nadu is endowed with rich biodiversity that is protected and conserved through a network of five National Parks, seventeen Wildlife Sanctuaries, 14 Ramsar Sites – the highest in the country and three Biosphere Reserves surrounded by both Eastern Ghats and Western Ghats. On the other hand, the State has recorded impressive economic growth along with significant progress in human development in recent years. The evidence being that Tamil Nadu has the highest level of urbanization in India, where 48.45 per cent of the population live in urban areas. This conjunction brings with it a plethora of associated environmental problems. Thus Tamil Nadu has an urgent call for action on Sustainable Development.

It is now widely recognized that there is high probability of increase in the frequency and intensity of climate related natural hazards due to climate change posing potential threat in all states of India. Though there is fairly enhanced community awareness, still there is relative absence of robust regional climate models and vulnerability studies in Tamil Nadu. This makes it highly sensitive and vulnerable to climate change and its impacts.

1.2. CURRENT STATE OF GLOBAL CLIMATE CHANGE

INTRODUCTION

There is now enough evidence that the earth's climate is changing, and it is adversely affecting both biophysical (mountains, rivers, forests, wetlands, etc.) and socio-economic systems (hill and coastal communities, agriculture, animal husbandry, etc.)[1]. Many of those challenges can be directly connected to human activity such as unchecked industrialization, unplanned urbanization, unregulated drilling, overfishing and bottom trawling, deforestation, strip mining, fracking, and the list goes on[2].

Climate change, a matter of international concern, poses a serious menace to human existence. Over the past two decades, with the effects of global climate change becoming increasingly manifested and visible at the local level, Climate Policy and Planning has become an urgent necessity across the country. Many countries are realizing the need to begin adapting to a warming world. As this climate phenomenon is constantly evolving and changing, responses to mitigation & adaptation must also be dynamic, scalable, and in line with emerging scenarios. The concentration of greenhouse gas (GHG) emissions in the atmosphere are wreaking havoc across the world and threatening lives, economies, health and food. The world is far from securing a global temperature rise to below 2°C as promised in the Paris Agreement. With a baseline in 1990, some countries are emitting more, some the same and others are emitting less.[3]

Individual structures, such as the Kyoto Protocol, International Carbon Action Partnership, Cancun Agreement, Paris Agreement etc. have led the countries to implement their own measures to reduce emissions and take mitigation and adaptation measures reflected in the "Nationally Determined Contributions". Paris Agreement in which countries have agreed in the year 2015, to limit global mean temperature within 2 degree, the country is committed to working towards a limit of 1.5 degree[4].

[1] IPCC, 2014
[2] IPCC Special report on Climate Change and Land 2019
[3] UNEP-State of the Climate 2022
[4] Paris Agreement- UNFCCC

CURRENT STATE OF GLOBAL CLIMATE CHANGE

Various International scientific organizations have made the below observations using satellite measurements indicating the current state of climate change at the global level.

- Earth's temperature has risen by 0.14° Fahrenheit (0.08° Celsius) per decade since 1880, but the rate of warming since 1981 is more than twice that: 0.32° F (0.18° C) per decade. For 2021, the average temperature across global surfaces was 1.51°F (0.84°C) above the 20th-century average. This is the sixth highest among all years in the 1880-2021 record. The year 2021 marks the 45th consecutive year (since 1977) with global temperatures, at least nominally, above the 20th-century average. The nine years spanning 2013 through 2021 rank among the 10-warmest years on record[5].

- Disasters have increased in the last 20 years (2000-2019). In the period 2000 to 2019, there were 7,348 major recorded disaster events compared to 4,212 between 1980-1999. Climate-related disasters have increased the most, accounting for 6,681 events[6].

- There is a 50:50 chance of the annual average global temperature temporarily reaching 1.5 °C above the pre-industrial level for at least one of the next five years and the likelihood is increasing with time, according to a new climate update issued by the World Meteorological Organization (WMO)[7].

- According to preliminary analysis of satellite measurements by Copernicus, the European Union's climate agency, atmospheric concentrations of CO2 reached an annual record of approximately 414.3 parts per million (ppm) in 2021 with April recording the highest monthly concentrations of 416.1 ppm[8].

- To put this into context, the amount of CO2 in the atmosphere before the Industrial Revolution and large scale burning of fossil fuels was 280 ppm. Meanwhile, atmospheric concentrations of methane (CH_4), a more potent but shorter-lived gas that trap heat in the atmosphere 80 times more effectively than CO2, also reached an annual record of approximately 1,876 parts per billion (ppb) in 2021.

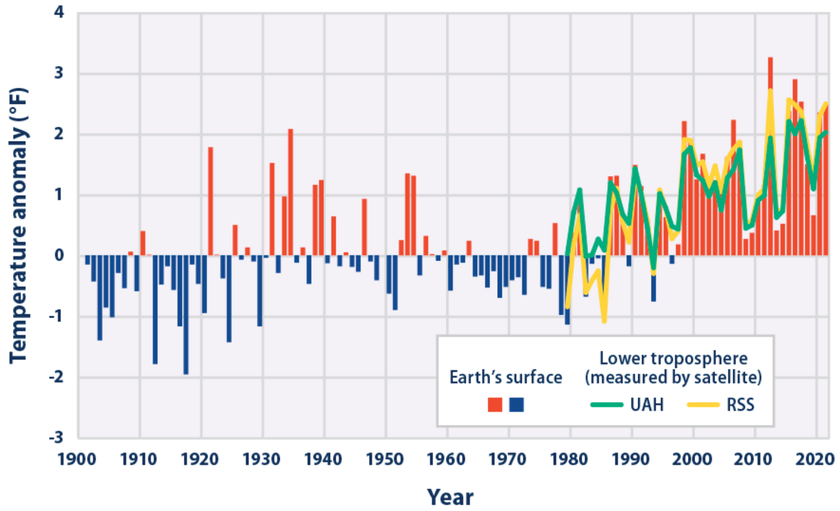
- Natural ecosystems have declined by 47 per cent on average, relative to their earliest estimated states and approximately 25 per cent of species are already threatened with extinction[9].

- Global sea level rise accelerated since 2013 to a new high in 2021, with continued ocean warming and ocean acidification.[10]

[5] UNEP-State of the Climate 2022
[6] UNDRR 2020
[7] WMO-Climate Update 2022-2026
[8] GHG concentrations-Copernicus-2021

- With regard to the total volume of atmospheric concentration of greenhouse gases, the IPCC's Sixth Assessment Report observed that in 2019, atmospheric concentrations of CO2 were higher than at any time in at least 2 million years and that of CH_4 and nitrous oxide (N_2O), another potent greenhouse gas, were higher than at any time in at least 800,000 years. It is therefore certain that atmospheric concentrations greenhouse gases will continue to increase with potentially dire consequences for the Earth's climate system.

- The concentration of greenhouse gases (GHG) in the atmosphere causes global temperatures to rise with a host of impacts and catastrophic consequences. At the moment the world is heading for a rise in excess of 3°C this century[11]. UNFCCC provides the opportunity to the Global leaders to take credible action on climate change and transition towards clean energy, through their commitments to limit GHG emissions to restrict the temperature rise below 1.5 °C.



[9] IPBES, 2019
[10] State of Global Climate 2021-WMO Provisional report
[11] UNEP State of Climate Emergency 2022