TAMIL NADU CLIMATE SUMMIT 3.0

Environment, Climate Change and Forests Department, Government of Tamil Nadu

Tamil Nadu Climate Change Mission



Tamil Nadu Climate Summit 3.0

Key Highlights | Session Takeaways
Important Launches | Photo Gallery

CONTENTS

01 Goals of the Tamil Nadu Climate Change Mission and the Tamil Nadu Climate Summit 01

02 Key Speeches 03

03 Executive Summary 10

04 Session 1: Exploring Energy Transition Pathways 19

05 Session 2: Low Carbon Pathways for Urban Transport & Supply Chain 24

06 Session 3: Circular Economy & Sustainable Development 28

07 Session 4: Low Carbon Pathways for Industrial Sector 33

08 Session 5: Climate-Resilient Agriculture & Livestock Practices 39

09 Session 6: Climate Financing - Challenges and Opportunities 43

10 Session 7: Climate Change and Disaster Resilience 47

11 Session 8: Resilient Forest Management to Combat Climate Change 51

12 Soozhal Arivom, State Level Quiz 55



Goals of the Tamil Nadu Climate Change Mission and the Tamil Nadu Climate Summit

The Tamil Nadu Climate Change Mission (TNCCM) was set up to formulate plans to reduce overall greenhouse gas emissions in the state, increase the use of public transport, develop strategies to cut emissions by using green and renewable energy, increase forest cover, and manage waste effectively. The goals embrace and develop ways to mitigate the impact of climate change, access financial resources for adaptation, initiate climate literacy in educational institutions, and focus on climate action for women and children. The Mission also works towards adopting the 'One Health' approach that includes human, animal, and ecological health to understand health disruptions caused by climate change.

The Tamil Nadu Climate Summit is a critical platform in the state's green transition journey. It brings together policy leaders, scientists, industry experts, and community representatives to develop actionable strategies for climate mitigation and adaptation. The summit has evolved into a knowledge-sharing hub, focusing on sectoral decarbonisation, climate finance, and community-driven climate solutions.

Objectives of the Summit

The Tamil Nadu Climate Summit serves as a cornerstone in the state's broader Green Mission, aligning with its ambitious goal of achieving carbon neutrality ahead of the national target of 2070.

The summit facilitates multi-stakeholder collaboration, policy innovation and knowledge-sharing, driving transformative climate action across key sectors. The summit's objectives are deeply embedded in the TNCCM and its flagship initiatives, ensuring a holistic and integrated approach to sustainability.

01

Strengthening Tamil Nadu's Climate Governance Framework

02

Accelerating Tamil Nadu's Renewable Energy & Decarbonisation Roadmap

03

Building Climate Resilient Ecosystems & Coastal Protection

04

Revolutionising Climate-Smart Agriculture & Water Security

05

Catalysing Climate Finance for a Green Economy

06

Driving Community-Led Climate Action & Behavioural Change

07

Developing a Science-Driven, Data-Centric Climate Strategy

Tamil Nadu's long-term climate strategy is rooted in its vision of becoming India's first climate-smart state, balancing economic growth with ecological sustainability. The Tamil Nadu Climate Summit catalyses multi-stakeholder engagement, innovative policy-making, and investment mobilisation, ensuring that the state's green transition is equitable, inclusive & future-ready.



Key highlights of the speech of Thiru. M.K. Stalin,

Hon'ble Chief Minister of Tamil Nadu

Climate change is an undeniable reality and a significant challenge faced by nations across the world.

To mitigate the impacts of climate change and natural disasters, it is essential for people from all walks of life to understand:

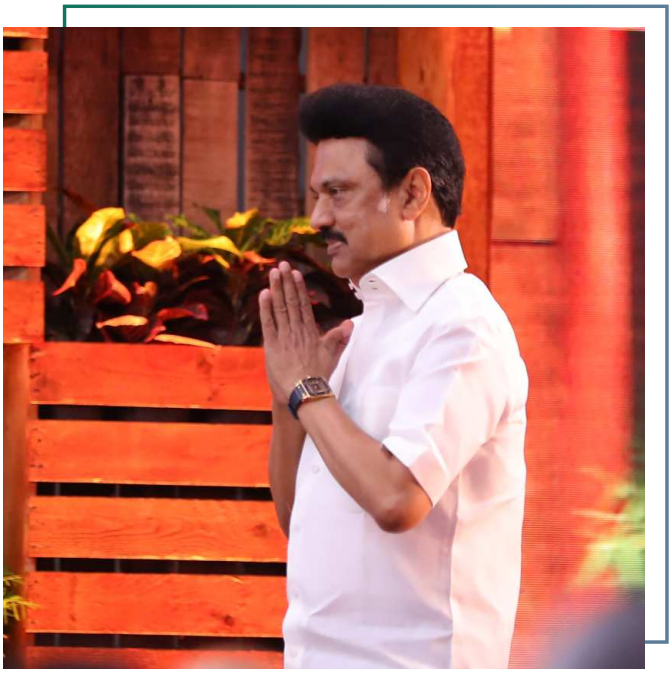
What is climate change? What are its consequences? How can we tackle it? How can we adapt to it effectively?

A society educated in climate literacy will adopt environmentally sustainable practices, prioritise the conservation of natural resources, recognise the necessity of renewable energy usage, possess resilience to protect itself from and recover from natural disasters, promote economic growth through green technologies, and contribute actively to achieving global climate goals.



The government is now advancing climate education as a movement, establishing eco-clubs in all schools, formulating dedicated climate education policies, and ensuring that students become ambassadors for spreading climate awareness across all sections of society.

Additionally, capacity-building on climate change mitigation and adaptation will be provided to government officials across various departments.



Presidential Address

"Greetings to everyone!
Climate change is an undeniable reality and a significant challenge faced by nations across the world. Our Government has not only been continuously emphasising this issue but has also been implementing various measures to tackle it through four key Missions:

- Tamil Nadu Climate Change Mission
- Green Tamil Nadu Mission
- Tamil Nadu Wetlands Mission
- Tamil Nadu Coastal Restoration Mission

As part of these efforts, annual climate summits have been organised by the Tamil Nadu Climate Change Mission, operating under the Department of Environment and Climate Change. So far, our Government has successfully conducted two climate summits in Tamil Nadu.

In this regard, the Tamil Nadu Climate Summit 3.0 will not only showcase our Government's initiatives against climate change to the world but will also serve as a platform to understand and adopt the best global practices. It will act as a tool to develop plans tailored to our state's needs and as a forum for discussions on how to adapt and respond to climate change effectively.

Around the world, several countries are experiencing natural disasters. To mention a few from the past year:

- The floods in Dubai, China, Brazil, Germany, and Spain.
- The wildfires in Los Angeles, USA.
- The heat waves affecting tropical countries like India.

Even within our country, unexpected disasters such as the Wayanad landslide in our neighbouring state of Kerala and the recent landslide in Tiruvannamalai have occurred before our eyes. Though these disasters arise from different circumstances and causes, climate change serves as the common underlying factor connecting them all.

To mitigate the impacts of climate change and natural disasters, it is essential for people from all walks of life to understand:

What is climate change?
What are its consequences?
How can we tackle it?
How can we adapt to it effectively?

When awareness on these aspects is created, our society will become one that is educated about climate change and resilient in the face of disasters. Our forefathers recognised that education is the greatest weapon. They continuously emphasised that education is the key to social liberation. In the early 1990s, when the literacy movement flourished across India, Tamil Nadu implemented the Arivoli Iyakkam (Light of Knowledge Movement) with a focus on providing both fundamental literacy and functional education to adults. The conversations initiated by this movement were countless.

While 19th-century night schools primarily emphasised "literacy & numeracy," the Arivoli Movement introduced a third crucial element —awareness.

As a result, Tamil Nadu, which once lagged in educational progress, now leads the nation in literacy rates, Gross Enrollment Ratios (GER), reducing student dropouts, and increasing higher education participation. Furthermore, the Government's emphasis on free education, scholarships, and women's education has positioned Tamil Nadu as a pioneer in social, economic, and cultural advancement, serving as a model for other states.

Additionally, through the Tamil Pudhalvan Scheme, students enrolling in colleges after studying in Government and Government-aided schools receive a monthly stipend of ₹1,000, significantly contributing to their growth. The Naan Mudhalvan Scheme further assists youth by providing career guidance, job opportunities, competitive exam preparation, and entrepreneurial training, shaping their future prospects.

From these schemes we can understand that education has remained the foundation for Tamil Nadu's vision for the future. Hence, the Government is now advancing climate education as a movement, establishing eco-clubs in all schools, formulating dedicated climate education policies, and ensuring that students become ambassadors in spreading climate awareness across all sections of society.



A society educated in climate literacy will:

01 Adopt environmentally sustainable practices

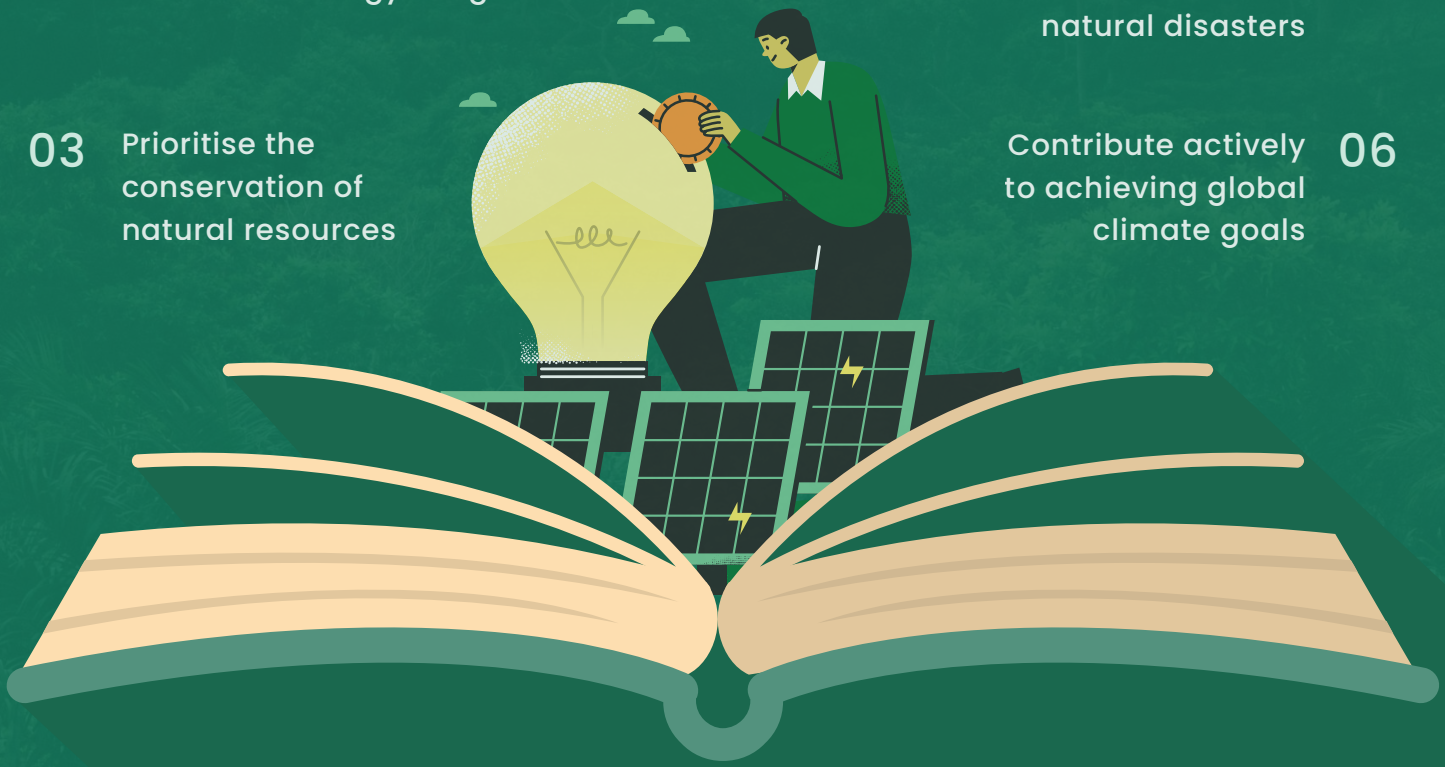
02 Recognise the necessity of renewable energy usage

03 Prioritise the conservation of natural resources

04 Promote economic growth through green technologies

05 Possess resilience to protect itself from and recover from natural disasters

06 Contribute actively to achieving global climate goals



Additionally, capacity-building training on climate change mitigation and adaptation will be provided to government officials across various departments. Special focus will be given to sectors most vulnerable to climate change and those significantly contributing to climate impacts, such as agriculture, water resources, energy, and urban development. While developmental projects in these sectors progress, parallel strategies will be implemented to reduce greenhouse gas emissions and develop institutional frameworks and policy designs that foster climate resilience and sustainable growth.

Our Government is proactively planning and implementing all necessary measures to tackle climate change, keeping in mind the environmental challenges that may arise in the future. This summit serves as a platform to showcase these efforts to the world. I would also like to emphasise that the Government will continue to take steps to raise awareness among the people about climate change. With this, I conclude my address.



Key Highlights of the speech from Thiru. Thangam Thennarasu,

Hon'ble Minister for Finance and Environment & Climate Change

Climate change is a disaster that affects all sections of people, from marginalised communities to major capitalists, and all industries without discrimination. Recognising this, our Government, under the directive of the Honourable Chief Minister, is establishing all necessary frameworks to address it.

To control the emission of greenhouse gases from residential and commercial buildings and to promote energy conservation by reducing energy consumption, awareness seminars have been conducted in 21 municipal corporations for construction industry professionals and residents' welfare associations.

The Green Schools Program has selected 197 schools to instill awareness among school students from a young age about environmental conservation, climate change, its impacts, and necessary adaptation and mitigation measures.

Each of these schools has been provided up to ₹20 lakh to establish green infrastructure, including solar energy utilisation, rainwater harvesting, organic fertilizer production, and vegetable and medicinal gardens.

Under the Green Tamil Nadu Mission, 8.3 Crore trees have been planted across Tamil Nadu to increase the state's green cover.

Speech

"Climate change is a disaster that affects all sections of people, from marginalised communities to major capitalists, and all industries without discrimination. Recognising this, our Government, under the directive of the Honourable Chief Minister, is establishing all necessary frameworks to address it.

As a continuation of this effort, four Missions have been created to implement climate adaptation and mitigation measures. As a result of this, various climate adaptation and mitigation measures are being implemented across the state through the Tamil Nadu Climate Change Mission.

Specifically, district-level Climate Change Missions have been established in every district, with the District Collector as the head and the District Forest Officer serving as the Climate Officer. Stakeholder consultations on climate change have been conducted in all districts with the participation of various Government departments, non-governmental organisations, and educational institutions.

To rehabilitate coastal habitats through nature-based solutions in response to climate change, coastal districts have been planted with special species of trees such as casuarina, palm, cashew, and others, creating bio shields.

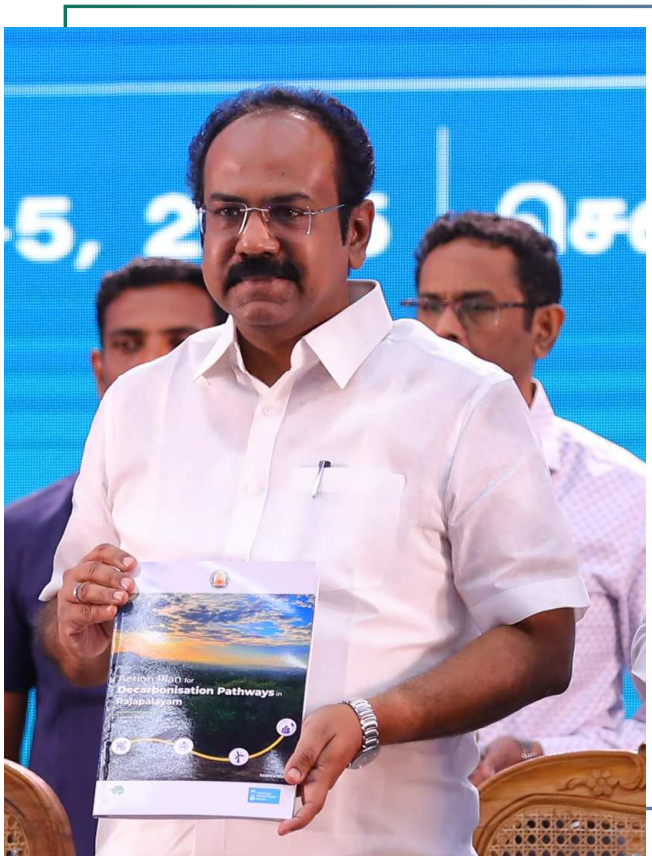
To enhance soil fertility and increase organic carbon storage in the soil, 6,000 native tree saplings have been planted in the Madhurapakkam Reserve Forest using soil obtained from the bio-waste excavation facility set up by the Greater Chennai Corporation at Perungudi. This initiative is being continuously monitored and documented by the Climate Change and Disaster Management Center at Anna University, Chennai.

Climate change is a disaster that affects all sections of people, from marginalised communities to major capitalists and all industries, without discrimination. Recognising this, our Government, under the directive of the Honourable Chief Minister, is establishing all necessary frameworks to address it.

To control the emission of greenhouse gases from residential and commercial buildings and to promote energy conservation by reducing energy consumption, awareness seminars have been conducted in 21 municipal corporations for construction industry professionals and residents' welfare associations.

Additionally, detailed project reports are being developed to transform the cities of Coimbatore, Rajapalayam, Nilgiris & Rameswaram into carbon-neutral hubs. To fully harness the energy of young people in this major fight against climate change, our Government, under the Honorable Chief Minister's Green Fellowship Program, has selected 40 talented youth with the support of Anna University and appointed them as Green Fellows in all districts. These Green Fellows will assist in implementing environmental initiatives at the district level.

To instil awareness among school students from a young age about environmental conservation, climate change, its impacts, and necessary adaptation and mitigation measures, 197 schools have been selected under the Green Schools Program. Each of these schools has been provided funding of up to ₹20 lakh to establish green infrastructure, including solar energy utilisation, rainwater harvesting, organic fertilizer production, and vegetable and medicinal gardens.



To honour and recognise the tireless efforts of individuals, NGOs, and social welfare organisations working to protect water bodies in Tamil Nadu, one volunteer from each of the 38 districts has been selected to receive the Honorable Chief Minister's Water Body Conservator Award. Furthermore, under the Green Tamil Nadu Mission, 8.3 Crore trees have been planted across Tamil Nadu to increase the state's green cover.

Additionally, 75 Maragatha Pooncholai (Emerald Green Groves) have been established in all districts for the benefit of the public. To protect wetlands, which act as natural buffers during extreme weather events, the Tamil Nadu Wetlands Mission was launched. As a result of efforts to secure global recognition for key wetlands across the state, Tamil Nadu now holds the highest number of Ramsar sites in India, with 18 wetlands designated under the Ramsar Convention.

The crown jewel of all these climate change initiatives and actions is the Tamil Nadu Climate Summit, organised by the Tamil Nadu Department of Environment and Climate Change.

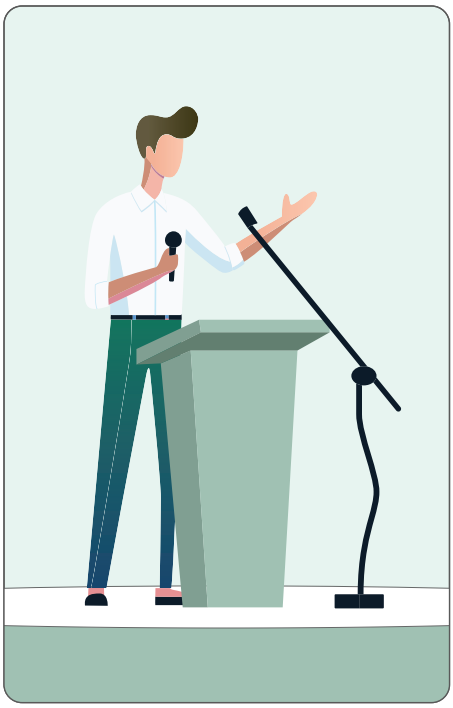
With this summit, Tamil Nadu has positioned itself as a pioneer among Indian states, serving as a model for policymaking and a guiding force for other states in combating climate change.

This summit also provides a significant platform for discussions and collaborations with various national and international leaders on climate resilience initiatives in the state. With a deep commitment to public service and leadership that not only anticipates needs but delivers solutions before challenges arise, the Honourable Chief Minister continues to steer Tamil Nadu towards a sustainable & climate-resilient future.

Under a Government that steadfastly follows the ethical path, Tamil Nadu stands as a leading state in establishing frameworks to combat climate change. Witnessing this progress, it is certain that Tamil Nadu will achieve net-zero carbon emissions well before India's national net-zero target of 2070.







Executive Summary

The Tamil Nadu Climate Summit 3.0 brought together diverse stakeholders to discuss climate change and sustainability. The summit emphasised Tamil Nadu's commitment to climate action and its ambition to be a leader in building a sustainable future. Over two days, participants discussed mitigating climate risks and creating policies for a greener future, aligning state-level priorities with global sustainability goals. The event featured experts from various sectors, including scientists, government leaders, and non-governmental organisations.

The event encouraged the adoption of cleaner technologies, renewable energy sources and nature-based solutions while ensuring that Tamil Nadu's development goals remained aligned with environmental preservation.

The summit marked a pivotal moment in the state's ongoing efforts to confront climate change and position Tamil Nadu as a frontrunner in climate leadership. With its focus on actionable outcomes, the summit laid the groundwork for policies and initiatives that could drive the state towards a greener future.

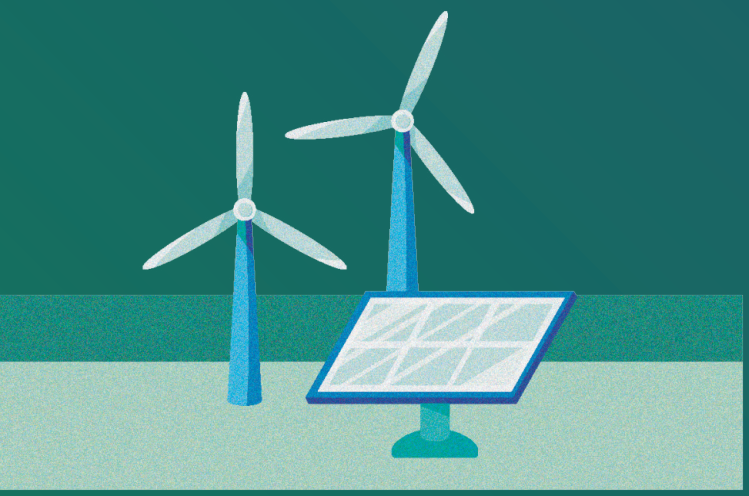
Key takeaways from the Summit

01

Energy Transition

Discussions on energy transition pathways highlighted the need for clean energy sources such as solar, wind, and storage solutions.

Setting sector-wise goals & translating them into legislation is the need of the hour.





02

Sustainable Transport Systems

Regarding urban transport & supply chains, the focus should shift to sustainable solutions like e-buses, digital ticketing, & multi-modal integration.

03
Circular Economy

To enhance the circular economy, decentralised models and the integration of the informal sector are needed.

Need to learn and replicate successful decentralised waste management models.

Multi-stakeholder partnerships and community involvement in waste management and sustainability efforts were key to a sustainable journey.





04
Low Carbon Pathways for Industries

Low-carbon pathways for the industrial sector, focusing on transitioning Micro, Small & Medium Enterprises (MSME) is crucial going forward.

Sustainable solutions and addressing heat stress through innovations like district cooling could solve the problem of increased power demand.

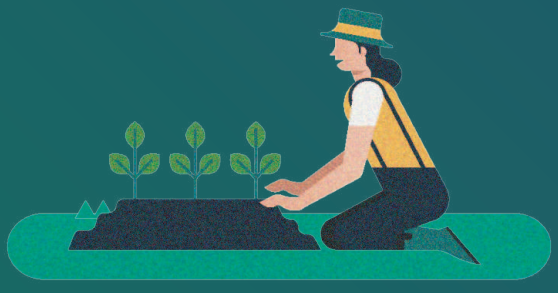
05
Sustainable Agriculture

Climate-resilient agriculture and livestock practices are crucial going forward.

To increase crop yield growth in the face of climate change, it is critical to focus on adaptation strategies like identifying location-specific risks & developing climate-resilient varieties.

Amid the growing impact of climate change on crops, such as wheat and rice, and the decline in coconut productivity, technologies to improve productivity and reduce emissions from livestock are needed.

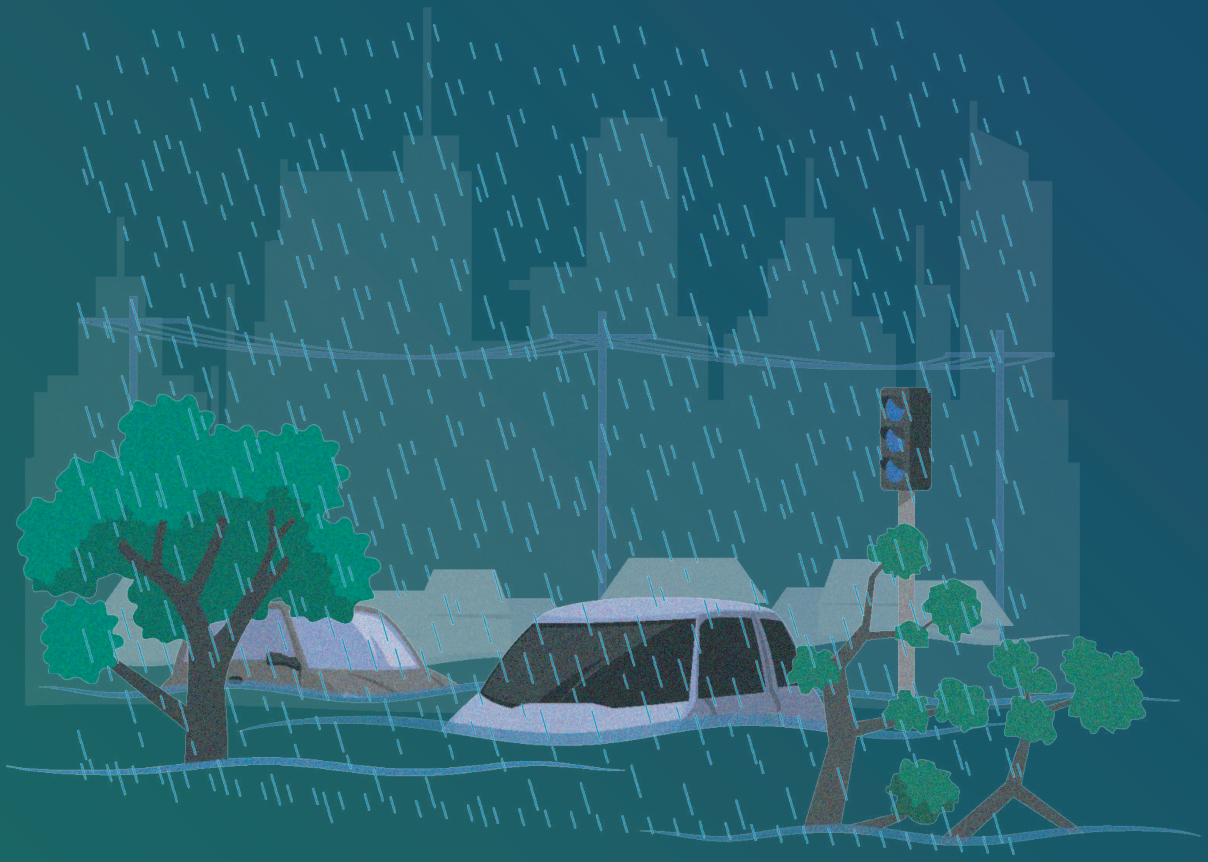
To overcome financing challenges, cross-border collaboration, private sector participation, and innovative financing models to support climate projects were needed.



06

Disaster Resilience

Early warning systems, AI and IoT integration, and community engagement in disaster preparedness are critical in the wake of the growing impacts of climate change.

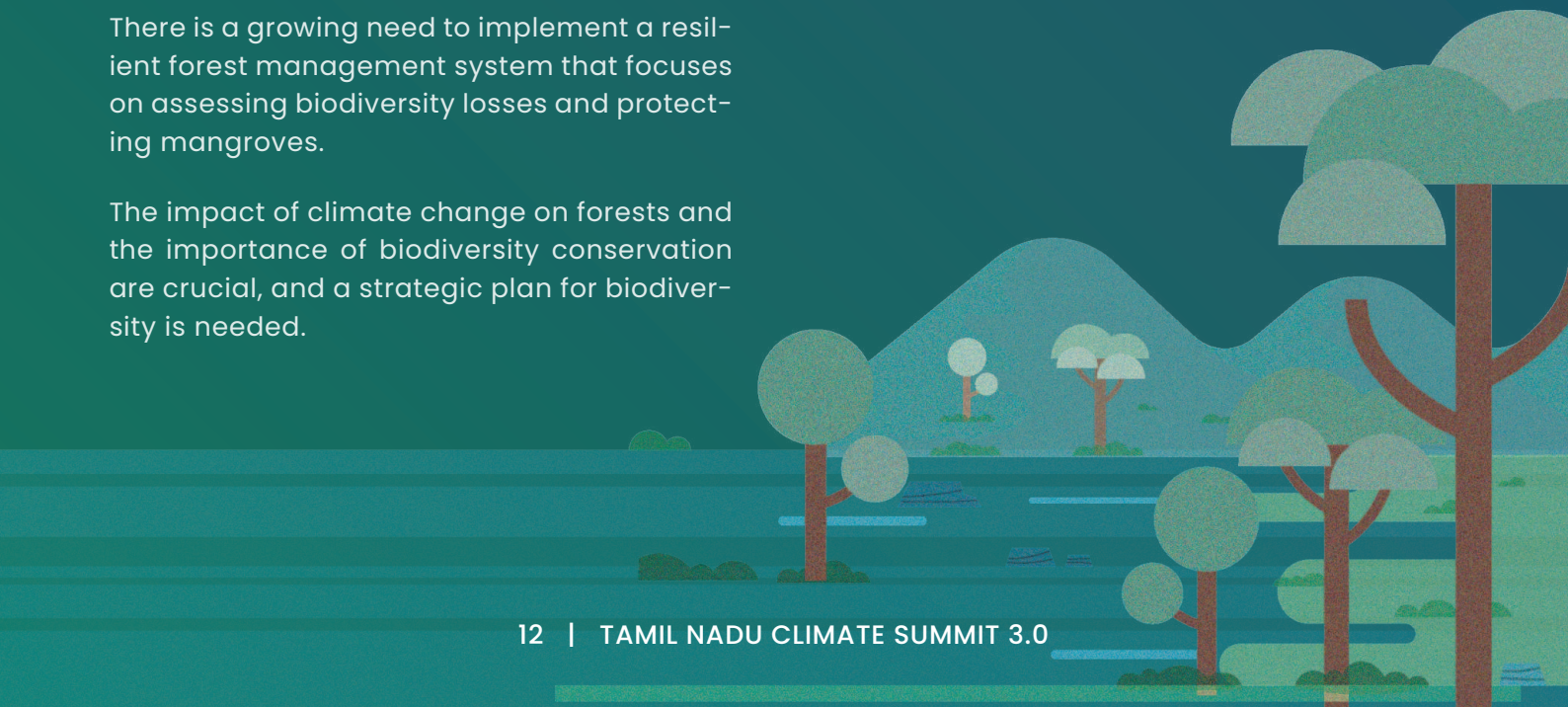


07

Forests Management

There is a growing need to implement a resilient forest management system that focuses on assessing biodiversity losses and protecting mangroves.

The impact of climate change on forests and the importance of biodiversity conservation are crucial, and a strategic plan for biodiversity is needed.



Tamil Nadu Climate Summit 3.0

The third edition of the Tamil Nadu Climate Summit (TNCS), a two-day event held at the Chennai Trade Centre, dedicated to fostering dialogue on climate change and sustainability, marked a significant milestone in the state's leadership on climate action. As a pioneering platform, TNCS brought together scientists, government officials, and non-governmental organisations to collaborate on strategies for mitigating climate risks and advancing sustainable development.

With a strong focus on actionable outcomes, the summit played a crucial role in shaping policies and initiatives that align Tamil Nadu's environmental goals with global sustainability targets. It underscored the state's commitment to adopting cleaner technologies, expanding renewable energy use, and promoting nature-based solutions—all while ensuring sustainable economic growth.

In his presidential address, **Hon'ble Chief Minister Thiru. M.K. Stalin** highlighted the urgent need to address climate change, emphasising the importance of public awareness and resilience-building. He outlined the Tamil Nadu government's efforts to integrate climate education into schools, establish eco-clubs, and train government officials in climate mitigation and adaptation. Special attention is being given to vulnerable sectors such as agriculture, water resources, energy, and urban development to ensure proactive climate action.

A key highlight of the summit was the launch of groundbreaking initiatives and crucial documents





Policy books

TNPCB & You - 7th Edition Launch

The TNPCB & You - 7th Edition was launched during the Tamil Nadu Climate Summit 3.0 on February 4, 2025.

Action Plan for Decarbonisation Pathways in Rajapalayam

A strategic roadmap has been released to guide Rajapalayam on its transition from an industrial town, to a low-carbon growth trajectory, ensuring a sustainable and environmentally responsible future.

Lifestyle for Climate Document

This initiative fosters climate responsibility by introducing a certification system for buildings, evaluating their climate responsiveness, and encouraging sustainable design and construction practices.

This publication serves as a ready reckoner for entrepreneurs, providing comprehensive information about the Tamil Nadu Pollution Control Board (TNPCB) and its functions, constitution, and environmental regulations.

Technical books

Voluntary Green Rating of Industries

This first-of-its-kind initiative promotes sustainable industrialisation by assessing and guiding industries toward greener practices. The program helps industries reduce their environmental footprint through an online, third-party evaluation system, ultimately earning them green certification for their sustainability efforts.



Compendium of 75 Prioritised Wetlands & Ecosystem Health Cards for 65 Wetlands in Tamil Nadu

The Compendium of 75 Prioritised Wetlands is part of the Tamil Nadu Wetlands Mission, which aims to conserve and manage wetlands in the state. This compendium highlights 75 wetlands that have been prioritised for conservation efforts, alongside an Ecosystem Health Card for 65 of these wetlands.

Brief Document on 65 Wetlands of Tamil Nadu

Tamil Nadu aims to notify 100 wetlands and secure funding under the National Plan for Conservation of Aquatic Ecosystems (NPCA) by submitting Integrated Management Plans (IMPs) to the Union Environment Ministry.



Community Engagement tools

Online Waste Exchange Bureau

The Tamil Nadu Pollution Control Board (TNPCB) has launched the Online Waste Exchange Bureau, a visionary initiative by the state government. This platform recognises waste materials as valuable resources and aims to achieve circularity by streamlining waste trading, promoting sustainability, and facilitating responsible waste management.

Tamil Nadu Fishing Net Initiative Booklet

The Tamil Nadu Fishing Net Initiative Booklet is part of a broader effort by the Tamil Nadu Pollution Control Board (TNPCB) to address marine pollution, particularly from discarded fishing nets.

Vaanmathi

The official mascot for the Tamil Nadu Climate Summit, an Emerald Dove, known as Maragatha Pura (மரகதப்புறா) in Tamil, which is also the state bird of Tamil Nadu.

SCAN TO
KNOW MORE



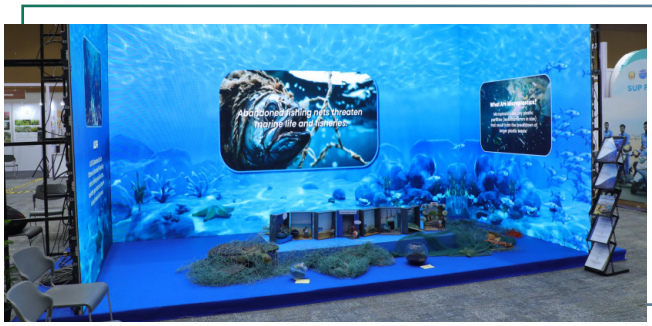
The TNCS 3.0 Stalls

The TNCS 3.0 also featured a total of 60 exhibition stalls, showcasing a diverse range of climate action initiatives, sustainability solutions, and environmental awareness programs. These stalls were set up by government agencies, educational institutions, startups, industries, NGOs, and self-help groups (SHGs), reflecting a broad spectrum of engagement in climate resilience and sustainable development.

Category-wise Distribution of Stalls

- Educational Institutions: 11 stalls
- Tamil Nadu Pollution Control Board (TNPCB): 10 stalls
- Government Departments: 9 stalls
- Startups: 7 stalls
- Non-Governmental Organisations (NGOs): 6 stalls
- Partners (Corporate and Institutional Collaborations): 4 stalls
- Publishers (Environmental Books & Research Reports): 3 stalls
- Industries (Sustainable Manufacturing & Green Tech): 3 stalls
- Self-Help Groups (SHGs): 3 stalls
- Department of Environment & Climate Change (DoE&CC) : 3 stalls





Key Highlights of the Stalls

- Educational Institutions presented research on climate change, sustainable practices, and youth engagement models.
- TNPCB hosted stalls focusing on plastic waste reduction, pollution control, and the Meendum Manjappai campaign.
- Government agencies highlighted policy initiatives and climate-resilient programs.
- Startups showcased innovative solutions in renewable energy, circular economy, and climate-tech.
- NGOs focused on community-driven environmental conservation efforts.
- Publishers exhibited climate-related books, journals, and educational materials.
- Industries displayed green manufacturing techniques & carbon neutrality initiatives.
- SHGs presented handmade sustainable products promoting eco-friendly alternatives.

Conclusion

The exhibition played a pivotal role in knowledge-sharing, networking, and inspiring climate action. The diverse representation of stakeholders reinforced Tamil Nadu's commitment to environmental sustainability, making the Tamil Nadu Climate Summit 3.0 a landmark event in climate education and advocacy.



Hon'ble Minister for Finance and Environment & Climate Change, Thiru. Thangam Thennarasu, detailed the Tamil Nadu Climate Change Mission's comprehensive approach, which includes district-level Climate Change Missions to implement adaptation and mitigation measures. Additionally, the Green Schools Program, which supports 197 schools with up to ₹20 lakh each for green infrastructure projects, fosters environmental consciousness among students.

The summit featured eight thematic sessions, each addressing critical aspects of climate action. Experts discussed themes like climate-resilient agriculture, climate finance focused on closing the investment gap, disaster preparedness, heat wave adaptation, early warning systems, resilient infrastructure, biodiversity, and more.

Adding to the engagement, Soozhal Arivom, one of Tamil Nadu's largest climate change quizzes, saw enthusiastic participation from young minds across the state. Six finalist teams showcased their knowledge by answering challenging questions on global polluters, innovative sustainable solutions, and climate action initiatives.

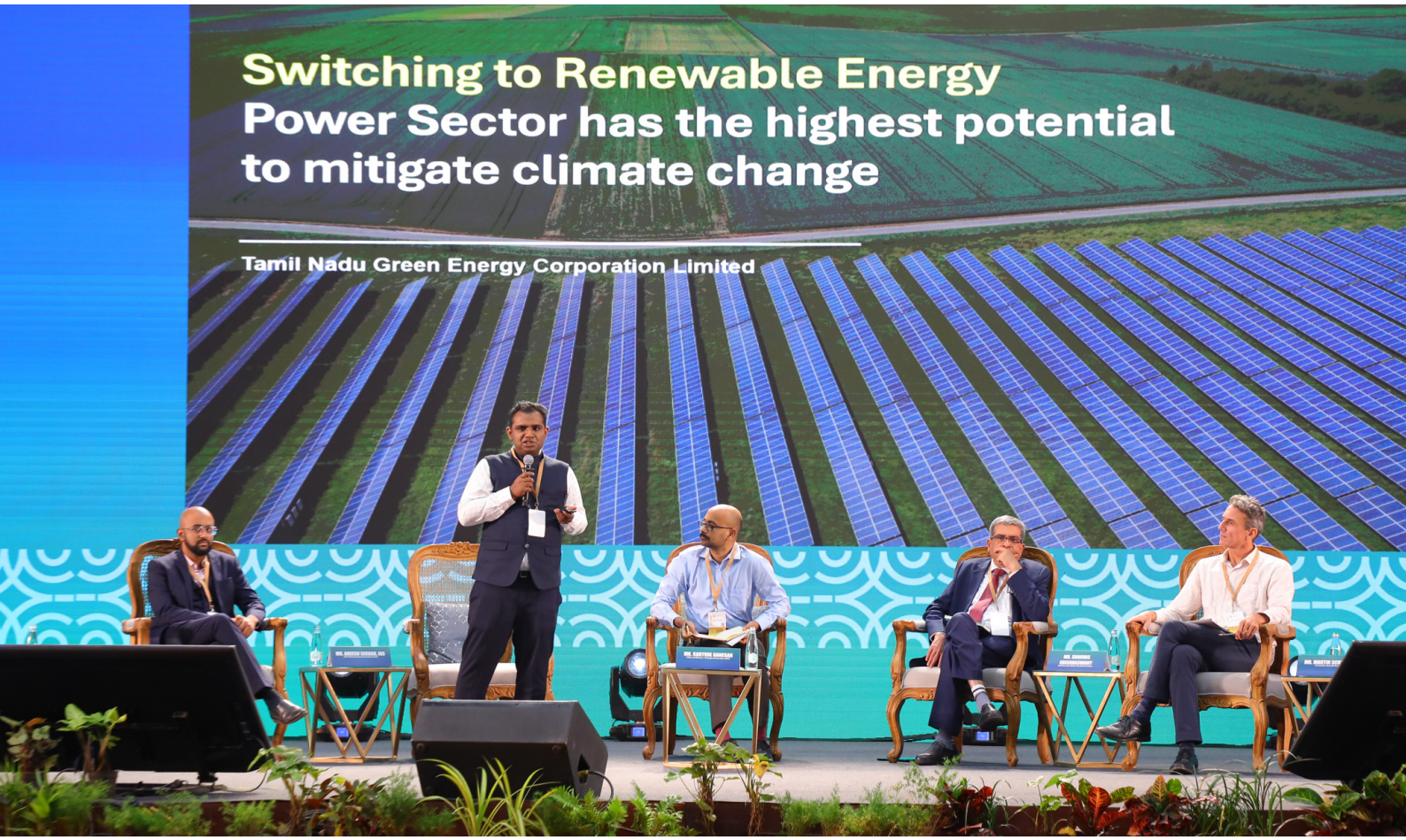


Through these discussions, competitions, and policy initiatives, Tamil Nadu reaffirmed its position as a national leader in climate action, setting an example for other states with its decentralised, innovative, proactive approach to sustainability and climate resilience.



Session 1

Exploring Energy Transition Pathways



Tamil Nadu, one of India's most industrialised and urbanised states, has long been a leader in renewable energy deployment. The state ranks third in India's renewable energy capacity. With a strong wind and solar resource base, the state has 24,000 MW of renewable energy capacity and needs to double this in the next five years. As India's energy demand grows due to urbanisation, data centres, and the adoption of electric vehicles (EVs), Tamil Nadu is focusing on a multi-faceted approach to ensure energy security and decarbonisation. Its strategy focuses on renewable energy expansion, energy storage, smart grids, demand-side management, and technological innovation to achieve its Net Zero ambitions.

During the session, experts highlighted the urgent need to transition to clean energy to reduce carbon emissions and ensure long-term sustainability. To achieve this, the focus should not only be on solar and wind, which will play a crucial role in this transition, but also on storage solutions such as battery energy storage systems and pumped hydro storage plants. Tamil Nadu was the first state to introduce a policy on pumped hydro storage, facilitating government-led initiatives and private investments. Leading this segment, the state has already identified 15 projects worth around 15,000 MW for six-hour storage.

Conversations also focused on the importance of AI-based dispatch and smart grid management for storage capacity. Bringing attention to securing raw materials, the session emphasized the need to explore new battery chemistries like sodium and aluminum. It stressed the importance of demand-side management, including tariff incentives to shift electricity consumption to solar hours.

The discussion also revolved around opportunities in low-carbon pathways, such as state-level climate actions, tailored interventions, realistic targets, and financial strategies for sustainability. The session highlighted the need for sector-specific goals, legislative actions, and implementation plans to reduce emissions and ensure long-term sustainability.

These discussions stressed the importance of strategic planning and collective action for achieving sustainable energy transitions.

Experts also emphasised the need for a geographically specific approach to enable very specific interventions with realistic target setting, while also highlighting the importance of leveraging the inherent strengths of each geography, such as location, topography, and landscape, to accelerate the transition. Experts also highlighted the need for Tamil Nadu's decarbonisation strategy to be rooted in contextualisation, compromise, and co-creation, ensuring a balanced and inclusive transition to clean energy.



Mr. Karthik Ganeshan

Fellow and Director, Strategic Partnerships, CEEW

He plays a key role in conceptualising and executing major initiatives, including the ACCESS and IRES surveys, the GHG Platform Initiative, and the establishment of CEEW's first regional office in Lucknow. As an internal advisor, he strengthens CEEW's foundation for world-class research while actively contributing to power sector and air pollution studies.

> "Communities, especially cities and districts, need to factor in their advantages and what is inherently possible within those geographies and attempt to do the best they can in the areas they can."

> "Our speakers have indicated that Tamil Nadu will do all that is needed to encourage renewables in the state because it makes economic sense. That is very positive to hear."





Mr. Aneesh Sekhar

IAS MD, TN Green Energy Corporation Limited

Over his career, he has held key administrative roles, including District Collector of Madurai and as Managing Director of ELCOT. Known for his leadership in governance and technology-driven initiatives, he currently leads efforts to promote renewable energy and sustainability in the state. His career reflects a commitment to public service and innovation.

"It is evident that going forward, it is not just the environmental benefit that will drive the energy transition but also the economic benefit, which presents a huge opportunity."

"Energy transition is not just about transitioning but also meeting increasing energy demands. Unlike many developed countries with stagnant demand, India's demand is increasing yearly due to new power requirements like data centres, EVs, and air conditioners."

"Tamil Nadu currently has around 24,000 MW of renewable energy in the grid, and another 24,000 MW needs to be added over the next five years. Solar and wind will play major roles, but storage solutions such as battery energy storage systems and pumped hydro storage plants are crucial."

"Another critical area is battery energy storage systems, where the levelised cost for a double cycle has come down to 2.15 rupees (with viability gap funding) or 2.5 rupees (without VGF), making solar plus storage cost to around 4.5 to 5 rupees. Battery energy storage has multiple benefits: better utilisation of transmission systems, grid stability, and managing power fluctuations."

"Two Government of India schemes —PM Surya Ghar: Muft Bijli Yojana and PM KUSUM (Kisan Urja Suraksha Evam Utthaan Mahaabhiyan)—are actively being promoted. Over 20,000 installations have been completed under PM Surya Ghar, and eight power purchase agreements (PPAs) have been signed under PM KUSUM."





Mr. Srinivas Krishnaswamy

Chief Executive Officer, Vasudha Foundation

An economist, he has over a decade of experience in economic reforms, sustainable development and environmental issues. He founded the Vasudha Foundation in 2010, a non-profit think tank promoting environmentally friendly and sustainable development models. Under his leadership, the foundation has driven key initiatives in renewable energy, energy efficiency, and policy advocacy, assisting Indian states in formulating State Climate Action Plans and district-level energy plans.

"When you have a state or a national approach, you tend to be prescriptive in nature, whereas if you have a very geographic-specific approach, you can come up with very specific interventions with realistic target setting."

"If you are geography-specific, you identify the problems in the geography and come up with very many specific interventions with a very clear target setting. That's also possible because you know the problem, the area, and the landscape."

"There are challenges to undertaking localised planning. You do not have data that is easily available. That, again, is a very, very major challenge in robust planning. Varying priorities of the local administration also become an issue. Access to finance is a boon as well as the bain."

"Setting up a governing or a management committee is crucial for implementation, and it could be done under the chairmanship of the collector and preferably the principal secretariat at the state level."

"A project management unit is also absolutely essential for developing detailed project reports and potential assessment studies."



Mr. Venkat Jayagopi

Senior Program Manager (Cities), Shakti Sustainable Energy Foundation

He brings nearly a decade of experience in climate action, environmental conservation, urban planning, and design. His extensive background includes working on urban development and climate action projects with various State Governments.

"The challenge now is not to let this stop at the planning phase—not getting into planning paralysis—and move on to the implementation phase. How we are looking at this project, how we are looking at this problem, is through three main components: contextualisation, compromise, & co-creation."

"Contextualisation has much to do with understanding the local-level problems and what is achievable at a local scale."

> Climate cannot be looked at as an individual sector—you can integrate it into the economy, health, industry, MSMEs, and most departments run by the state government. And then, at a larger level, how do you integrate it with Tamil Nadu's goal of a one-trillion-dollar economy? How does that integration happen? Can we reimagine those narratives around climate projects?

> Bringing in vulnerable communities—people from marginalised sections of society, women, and landless rural agriculturalists—because these are the people we can use climate targets to help uplift, and they can become the early adopters. It's a win-win scenario.



Mr. Martin Scherfler

Co-founder of
Auroville Consulting

As Executive Director at Auroville Consulting, he has over a decade of experience in sustainable development and renewable energy advocacy. With a Master's in Sociology from Austria, he combines academic rigour with practical insights to drive decarbonisation and energy transition efforts. He actively contributes to the transformation of the energy landscape, particularly in Tamil Nadu, through long-term energy transition initiatives, capacity building, policy research, and data-driven implementation studies.

> By prioritising decarbonisation and leveraging renewable energy, Tamil Nadu can position itself as a leader in the green manufacturing hub. Access to clean energy is critical in driving economic growth & development.

> Tamil Nadu has a slightly more ambitious target to achieve Net Zero, possibly two decades earlier.

> When we look at greenhouse gas emissions, about 61% of the total greenhouse gas emissions currently come from the electricity sector. The good news is that today, solar and wind energy are the cheapest energy sources we have on the planet.



Session 2

Low Carbon Pathways for Urban Transport & Supply Chain



Public transport is vital to urban mobility, but in cities like Chennai, it remains a significant contributor to greenhouse gas emissions. The city's growing traffic congestion also poses a significant challenge to its sustainability goals, making the transition to green pathways even more urgent. Implementing smart traffic management and pedestrian-friendly urban planning can further reduce reliance on private vehicles, paving the way for a cleaner, more sustainable Chennai.



The pioneering session emphasised the need for long-lasting, innovative solutions to tackle urban commuting challenges, particularly in cities like Chennai. Experts highlighted using narrow roads, elevated structures and dense grids to create efficient transportation systems. Additionally, exploring alternative clean technologies like autonomous pods powered by green electricity was also stressed. The experts also talked about challenges faced in cities like Chennai, such as inadequate footpath connectivity, traffic congestion and last-mile connectivity. There was consensus that the Tamil Nadu government is addressing these issues by introducing premium buses, e-buses for cleaner mobility, digital solutions like common mobility cards & smart ticketing and working on multi-modal integration. These steps aim to enhance accessibility and create a sustainable, clean mobility future for the state.



Dr. Ashok Jhunjhunwala

Chairman Technology Advisory Group, SEBI and Professor, IIT-Madras

An Institute Professor at IIT Madras and Chairman of IIIT Hyderabad, ITEL, and College of Engineering, Trivandrum, Dr Jhunjunwala is a pioneer in Industry-Academia collaboration, having incubated over 350 startups and founded the IITM Research Park. He has led groundbreaking R&D in telecom, banking, energy, and electric vehicles through the TeNeT group and has received prestigious honours, including the Padma Shri and Shanti Swarup Bhatnagar Award.

"The target is to build something which will take us 15 km in 20 minutes. It should be green and highly energy efficient.

It should be buildable in existing cities, should be able to handle peak traffic and should also be affordable and comfortable."

"Something that a group of institutions and companies around the country are starting to build is HASHTIC City – High-Throughput, Autonomous, Sustainable, Human Transportation for India's Next Century. We are talking about autonomous PODS, air conditioned vehicles with a maximum capacity of two passengers, moving on rails as rolling resistance is 1/10th of moving on roads and power the PODS through green energy."

"We have simulated, we have a prototype, and we are starting to build bigger and bigger. Something like this is impossible. But I think the time has come for us to use technology to make it possible."



Mr. Alby John Varghese

IAS, Managing Director, Chennai Metropolitan Transport Corporation Limited

A 2013 batch IAS officer of the Tamil Nadu cadre and an MBBS graduate, he secured the 4th rank in the 2012 Civil Services Examination. He has led impactful initiatives, including Chennai's first Miyawaki forest and the rehabilitation of bonded labourers through the Siragugal Bricks project.

"Chennai has historically had a good public transport system, and we are now at the cusp of a major transition.

The Chennai Metro Rail (CMRL) is expanding, with Phase 2 adding 118 stations & covering 116 km. The Metropolitan Transport Corporation (MTC) is inducting 1,500 electric buses over the next two years."

"Accessibility is a key challenge in Chennai's public transport. While 70% of residents have a bus stop within a five-minute walk from their houses, the lack of continuous and accessible footpaths makes even that short distance difficult. We need well-lit transit points, proper footpath connectivity, ramps, and tactile pathways to accommodate everyone, including persons with disabilities."

"In Chennai, we are trying to come up with a concept called premium buses where we will be able to shift a considerable proportion of people who are currently using cars to take public transport where buses will have air conditioning, wi-fi & all the facilities."

"Multi-modal integration: we are actively working with CMRL to get this done, and in the next phase of Metro, all the points transit points will be integrated with the Metro and other informal transport agencies."



Mr. Shivasubramanian Jayaraman

Managing Director, Institute for Transportation and Development Policy

He is the National Lead of Transport Systems and Electric Mobility at ITDP, India. He is a mobility and climate action professional with over 15 years of experience in sustainable urban transport, electric mobility, and policy development.

"When it comes to urban mobility, we have the technology to send missions to Mars, yet solving traffic congestion remains an unsolved challenge."

"Despite having multiple mass transit options — buses, metro, suburban rail, and MRTS—our roads are still dominated by private vehicles and autos, which consume nearly 80% of road space while public transport gets just 9%."

"Electrification alone is not enough. A study we conducted with the University of California found that India can only meet its net-zero goal by 2070 through a combination of electrification & a model shift scenario. We need compact city planning and better infrastructure for walking & cycling."





Mr. Durganadh Balsavar

Senior Advisor, UNEP-India

He is a distinguished architect and academician with over three decades of experience in architecture and urban design. A CEPT University graduate, he studied at ETH Zurich and collaborated with B.V. Doshi early in his career. As founder of Artes, a Chennai-based research collaborative, he focuses on sustainable, contextually responsive design.

> What is very significant is that Tamil Nadu is one of the few states that has declared urban heat as a state-specific disaster.

> So relooking at low carbon transport in the context of urban heat is what we would endorse.

> Because we may talk about cycling, we may talk about walking, we may talk about low carbon, other non-motorised transportation. We do not see it possible unless we have looked at a holistic idea of energy and good neighbourhood design.

> So it means that the microclimate that we are working on is as important and part of a low carbon transport ecosystem.

> Most urban congestion isn't just a transport problem — it is a planning problem.



Mr. Vignesh Tamil Vannan

Data Architect, Chennai Unified Metropolitan Transport Authority (CUMTA)

Vignesh Tamil Vannan is a Data Scientist, urban planner,and GIS Specialist passionate about applying Spatial Computing, AI, and Data Science to sustainable urban development. As a Spatial Data Architect at CUMTA, he plays a key role in Digital Chennai, India's first Digital Twin platform for urban planning and infrastructure management. His expertise spans geospatial analytics, machine learning, and urban mobility, driving data-driven decision-making for resilient cities.

> The key issue is the traffic congestion. We are trying to solve it through data generation.

> We are looking to tap into a large number of CCTV cameras that are across multiple agencies and also from the public. We have developed deep learning models which can count vehicles, track speed and also various other characteristics.

> The second angle is traffic simulation and traffic analytics. We have enough capacity to simulate traffic across microscopic and macroscopic levels. We are also undertaking junction designs based on traffic simulation and to solve very case specific design challenges.

> The third aspect is to push the public towards public transport adoption. We are building a mobile application which integrates multiple modes Metro, MTC and suburban and also first and last belt connectivity.

Session 3

Circular Economy & Sustainable Development



A circular economy is a system designed to ensure that materials are continuously reused, preventing waste & promoting the regeneration of natural ecosystems.

It keeps products and materials in use for as long as possible through strategies such as repair, repurposing, refurbishment, remanufacturing, recycling, and composting. By reducing reliance on finite resources, the circular economy helps address global challenges like climate change, biodiversity loss, pollution, and excessive waste, ultimately creating a more sustainable and resilient economic model.

The session on Circular Economy & Sustainable Development highlighted the importance of integrating these circular economy principles into waste management, material efficiency, and climate resilience. A key takeaway was the need for states like Tamil Nadu to move beyond traditional waste disposal methods and embrace resource recovery, decentralised waste management, and material efficiency to build a sustainable future.



Discussions emphasised that waste is not just an environmental problem but also an economic opportunity, where repurposing materials, rethinking production processes, and integrating the informal waste sector can drive sustainability and job creation. The role of policy frameworks was underscored, stressing that effective state-level interventions can facilitate the transition to a low-carbon economy while empowering local communities.

The session also brought attention to material scarcity and dependency on imports, especially for critical resources like lithium, cobalt, and rare earth elements. This has direct implications for Tamil Nadu's ambitions in renewable energy and electric mobility.

A strong circular economy model can reduce reliance on virgin materials by prioritising remanufacturing, repurposing, and extended producer responsibility (EPR). Waste management in rural and peri-urban areas was another focus, with insights on segregation at source, plastic reuse in infrastructure projects, and community-driven waste collection models. Economic incentives, such as revenue-sharing models for sanitation workers and self-help groups, have proven effective in ensuring long-term participation in several states in the country. All speakers emphasised on how sustainability requires systemic change, where governments, industries & communities collaborate to close resource loops and reduce emissions.



Dr. Rachana Arora

Director,
Climate Change and
Circular Economy, GIZ

As the team leader of the Resource Efficiency project at GIZ and Circular Economy Solutions to Prevent Marine Litter project, Dr. Rachna Arora has over 15 years of experience at GIZ. She has collaborated with Indian government ministries on resource efficiency, circular economy, and recycling policies and played a key role in NITI Aayog's resource efficiency strategies. She has contributed to committees under the Ministry of New and Renewable Energy and the Ministry of Steel, focusing on sustainable waste management and recycling initiatives.

> "A lot of discussion must be on looking through a systemic change, looking at our policies, looking at industry decarbonisation, about how do you actually reduce material intensity and how we look at the entire discourse by not just recycling."

> "Many times, when speaking about the circular economy, we just think about recycling. But that's not what circular economy is all about. It actually is about rethinking, it is about how do you actually reduce the consumption patterns and how do you actually make a transition which is where a lot of industry led models on remanufacturing, repurposing."



> "At different levels—national, state, district, and even city-level & panchayat levels—policies are being developed to encourage innovation, better resource efficiency, and community-driven sustainability initiatives. The shift isn't just about cutting carbon emissions but also about changing how industries function & set transition pathways at a fundamental level."



Mr. P. Ponniah

IAS, Director, Rural Development & Panchayat Raj, Tamil Nadu

Mr. P. Ponniah, a 2009 batch IAS officer, has played a key role in Tamil Nadu's public administration, particularly rural development. He began as a Divisional Development Officer and later served as a Project Officer for the District Rural Development Agency across multiple districts. Promoted to Additional Director of Rural Development in 2009, he continued until 2015, later serving as Sub Collector of Thondiarpet. He was appointed District Collector of Kancheepuram in 2017 and, in 2023, became Director of Rural Development and Panchayat Raj.

"The waste management model in Tamil Nadu follows a decentralised approach, focusing on solid and liquid waste management. Unlike urban areas, rural regions don't require underground sewage systems, but solid waste remains a major issue."

"Door-to-door collection, segregation, and safe disposal have been implemented in all 12,525 village panchayats, with an investment of ₹1,266 crores. Every village panchayat has street garbage bins, tricycles, e-carts for collection, compost pits, and vermi-compost units."

"Plastic collected is used for road construction. In 2023-24 alone, 1,850 km of roads were built using plastic waste, under the plastic buyback policy. Self-help groups & sanitation workers collect plastic at ₹10 per kg, which is later sold to contractors for ₹35 per kg to mix with bitumen for road laying."





Mr. U.V. Jose

IAS (Retd.), Executive Director, Suchitwa Mission, Kerala

A retired IAS officer, Mr Jose has significantly contributed to Kerala's public administration, particularly sanitation and waste management. As the Executive Director of Suchitwa Mission, Kerala's agency for comprehensive solid waste management, he hauled statewide initiatives to improve waste - management, promote recycling, and enhance public health. His leadership has played a key role in strengthening Kerala's reputation as a national leader in sustainable sanitation and waste management practices.

"Kerala has been successfully implementing a decentralised waste management model for over 10 years, covering both urban and rural areas. With a population of 3.5 Cr, Kerala generates about 10,000 tons of waste per day, managed by 1,134 local bodies, including six corporations, 87 municipalities, and 941 gram panchayats."

> A user fee is now mandatory, encouraging residents to segregate and responsibly dispose of waste. Biodegradable waste is primarily processed at source level, with about 20% handled at community-level facilities. Non-biodegradable waste is collected, further segregated, and sent for recycling or safe disposal.

> The Clean Kerala Company plays a crucial role in handling e-waste, linking waste management with industries, and ensuring safe disposal. The company manages 65% of local bodies, with the remaining waste handled by private partners.



Ms. Jyotsna Sitling

Former IFS, Member, Advisory Committee to SEBI on Social Stock Exchange

Ms Jyotsna Sitling, a retired Indian Forest Service (IFS) officer, has contributed significantly to India's environmental and financial sectors. As Principal Chief Conservator of Forests in Uttarakhand, she led key conservation initiatives and promoted sustainable development. In 2021, she was appointed to SEBI's Advisory Committee for the Social Stock Exchange (SSE), guiding its regulatory framework. Beyond SEBI, she engages in initiatives supporting sustainable livelihoods and environmental conservation, reflecting her commitment to integrating environmental stewardship with social and economic progress for a more sustainable and equitable society.

> The Valley of Flowers National Park has seen a transformation in how circular economy principles are applied at a micro level. While most discussions focus on state-level policies, this case highlights grassroots implementation.

> One of the biggest challenges was the 13 km access route between Valley of Flowers and Hemkund Sahib, which was heavily used by 5-6 lakh pilgrims in just five months. At 14,000 ft, this led to severe bio-resource depletion and waste accumulation, with no structured waste management.

> Through voluntary labour, they collected 50 tons of waste within two years (2002-2004), removing 15 truckloads of plastic waste. This led to the introduction of an eco-fee for tourists, ensuring funding for solid and liquid waste management.



The Valley of Flowers National Park





Mr. Siddharth Hande

Founder & CEO,
Kabadiwalla Connect

Siddharth Hande is the founder and CEO of Kabadiwalla Connect, a Chennai-based social enterprise dedicated to enhancing waste management through circular economy principles. With a background as a spatial data analyst, Hande is deeply interested in social entrepreneurship, urban planning, and informality in developing regions. Before founding Kabadiwalla Connect, he consulted for prominent think tanks like the Indo-German Centre for Sustainability, IIHS, and IFMR. At Kabadiwalla Connect, he focuses on integrating informal waste ecosystems into formal systems, promoting scalable and sustainable waste management solutions across the Global South.

"The informal sector plays a crucial role in the circular economy, not just in India, but across the Global South. They are on the front lines of waste collection, handling dry waste and recyclables, yet they are often ignored in mainstream discussions."

"One of the biggest issues we see in waste management in the Global South is that municipal waste collection is in crisis. There's a World Bank study that says for effective waste management, municipalities need to spend 20-50% of their budget on collection alone, which is a massive burden. And even with this spending, most of the collected waste ends up in landfills."

"When we mapped these scrap shops, they were everywhere. It was like looking at a map of ATMs or vegetable shops—they are part of the city's fabric. The larger aggregators formed clusters — paper clusters, metal clusters, plastic clusters— and from there, materials moved to processing facilities, either formal or informal."

Session 4

Low Carbon Pathways for Industrial Sector

As global climate commitments reshape industries, there is an urgent need for all industries to align with these global decarbonisation efforts while maintaining their competitiveness. The session Low Carbon Pathways for the Industrial Sector was hence critical as it discussed challenges, opportunities and the needs of the stakeholders. The discussion highlighted that with industry contributing nearly 30% of India's emissions, Tamil Nadu—one of the country's most industrialised states—must accelerate the transition to renewable energy, industrial electrification, and energy-efficient technologies. Policy frameworks such as the EU's Carbon Border Adjustment Mechanism (CBAM) and evolving sustainability standards are compelling industries, including MSMEs, to integrate low-carbon practices or risk losing market access. Tamil Nadu, with its strong manufacturing base, must leverage policy support, green finance, and technological innovation to remain a leader in sustainable industrialisation.

A key focus was the role of MSMEs in the low-carbon transition, given their contribution to employment and exports. Speakers emphasised that while large corporations are setting ambitious decarbonization goals, MSMEs face barriers such as high capital costs, limited access to green finance, and technical knowledge gaps. Expanding access to renewable energy, biofuels, and green hydrogen, along with stronger incentives and financing mechanisms, will be critical for their transition. District cooling systems were also presented as a scalable solution to mitigate heat stress and improve energy efficiency in urban centers. The session also explored green hydrogen's role in decarbonising industries like steel, cement, and fertiliser but acknowledged the need to lower costs and align with global certification standards.



The discussions underscored the importance of public-private partnerships in financing and implementing the low-carbon transition. Tamil Nadu's progressive policies on renewable energy, electric mobility, and green hydrogen have positioned it as a leader, but continued collaboration between industries, academia, and the government will be necessary to accelerate innovation and adoption of clean technologies.

A multi-stakeholder approach that includes regulatory support, workforce training, and incentives for industrial clusters will be key to ensuring that Tamil Nadu's industries remain competitive in the evolving global economy. Scaling up green financing mechanisms, streamlining approvals for clean energy projects, and developing infrastructure for emerging technologies will enable Tamil Nadu to not just meet its sustainability targets but also set a benchmark for industrial decarbonisation across India.



Ms. Ashwini Hingne

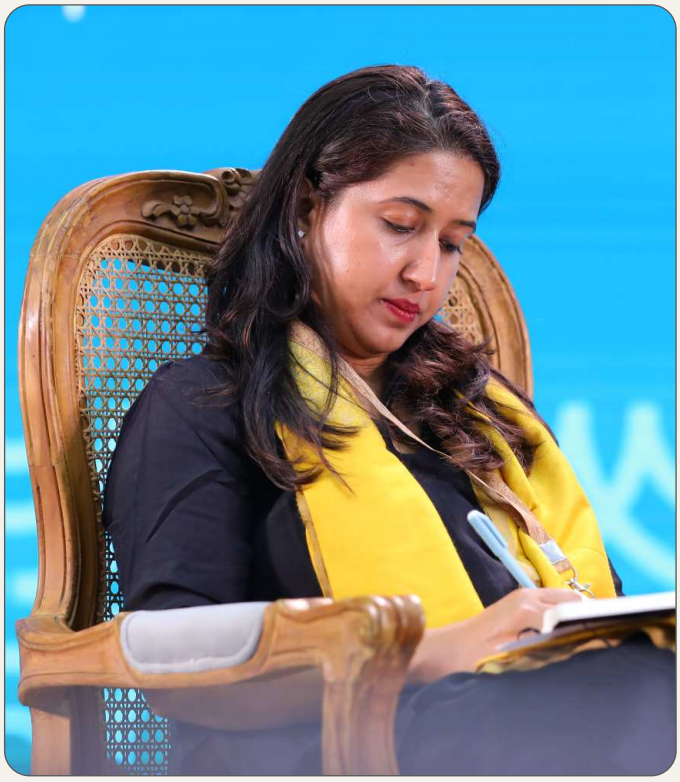
Associate Program Director, World Resources Institute

Ashwini Hingne is the Associate Program Director for Climate, Economics, and Finance at WRI India. With over 14 years of experience in climate change mitigation, she focuses on just transitions, energy-economy modelling, and policy analysis to support India's climate goals. Her work includes carbon pricing and helping Indian businesses take strong climate action. Previously, she worked as an ESG researcher at Sustainalytics in Singapore and a climate consultant at EY. She holds a Master's in Public and Economic Policy from LSE and a Bachelor's in Chemical Engineering from Mumbai University.

"Tamil Nadu today has a unique opportunity to position itself as a leader in sustainable industrialisation, and discussions like these will be critical in shaping Tamil Nadu's roadmap to an inclusive, competitive, and resilient industrial economy."

"Policies like the European Union's carbon border adjustment mechanism, the upcoming carbon markets, and evolving sustainability standards mean that industries in India must decarbonise or they risk losing business in key markets."

"There are clear pathways to decarbonisation—expanding renewables, industrial electrification, transformation of processes, energy efficiency—but we also need stronger incentives, regulatory frameworks, and green financing to make this transition a reality."





Ms. Sigy Thomas Vaidhyan

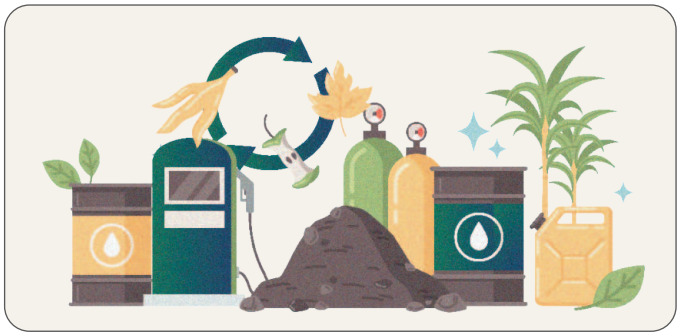
Commissioner, Disaster Management, Tamil Nadu Government

Sigy Thomas Vaidhyan is the Commissioner of Disaster Management for the Tamil Nadu Government. She plays a key role in disaster preparedness, response, and recovery efforts across the state. Her leadership focuses on effective coordination between government agencies, communities, and stakeholders to ensure swift and efficient disaster response.

> The MSME ecosystem also starts moving along when the larger policy environment is supportive. When the government builds an ecosystem for green fuels, sustainable business practices, and renewable energy, industries—big and small—begin transitioning naturally.

> Most MSMEs do not have the documentation which is necessary to get finance from formal financing. So, the stringent eligibility criteria and the high collateral requirements make it very tough for them to access this finance. About 80% of MSMEs in Tamil Nadu are dependent on their own savings for growth, for transitioning into new energy models.

> Over the next one and a half decades, India would require about $12.3 billion in investment to transition MSMEs to green fuels, but the cost reductions in energy & operational efficiencies will make this shift both viable and necessary.





Ms. Nirmala Raja

Member, Tamil Nadu Governing Council on Climate Change

Ms. Nirmala Raja is a member of the Tamil Nadu Governing Council on Climate Change, where she plays a key role in shaping the state's climate action strategies. She also serves as the Chairperson of RAMCO Community Services, an organisation dedicated to social and environmental causes. Through her leadership, she actively promotes sustainability, climate resilience, and inclusive development. Her contributions focus on addressing climate challenges, advocating for green initiatives, and fostering community-driven environmental solutions, reinforcing her commitment to a more sustainable and resilient Tamil Nadu.

> While we have achieved a gazetted master plan by the Tamil Nadu government—the first in 20 years—there is still a long way to go. The challenge now is implementation. Building partnerships, mobilising resources, and inspiring collaboration will be critical to turning these plans into real, on-the-ground transformation.

"Public-private partnerships are essential in making low-carbon transitions successful. The government alone cannot drive these changes; industries and communities must actively participate in designing and implementing solutions."

"Tamil Nadu's industrial transition must be inclusive, addressing not just large businesses but also the towns, small industries, and communities that are key stakeholders in this shift toward sustainability."



Mr. Dushyant Ahuja

Country Manager – India, Tabreed

Dushyant Ahuja is the Country Manager for Tabreed India, overseeing operations, financial performance, and stakeholder relationships while optimising business processes. With nearly 20 years of experience in operations, project management, cost management, and financial analysis, he has worked across India, the US, UK, and Hong Kong. He has managed multi-million-dollar projects, led digital transformation for a major investment bank & developed renewable energy projects in India. He holds an MBA from ISB, a Master's in Building Engineering from SPA Delhi, and a Bachelor's in Architecture from Chandigarh College of Architecture.

"We are at a disaster stage when it comes to heat stress—just in 2024, we had almost 60 deaths in India due to heat strokes and over 25,000 cases requiring hospitalisation. Efficient cooling systems must be part of our climate adaptation strategy."

"Tamil Nadu is at the forefront of climate change action, creating a district cooling steering committee that can serve as a model for other states. By treating cooling as an essential utility, we can integrate it into city planning for greater efficiency."

"Almost 100% of the renewable energy that's been generated went to cool buildings. With district cooling, we can reduce power usage by 50%, cut infrastructure costs, and integrate new technologies like geothermal cooling. This is a solution Tamil Nadu should actively pursue to mitigate heat stress and improve energy efficiency."



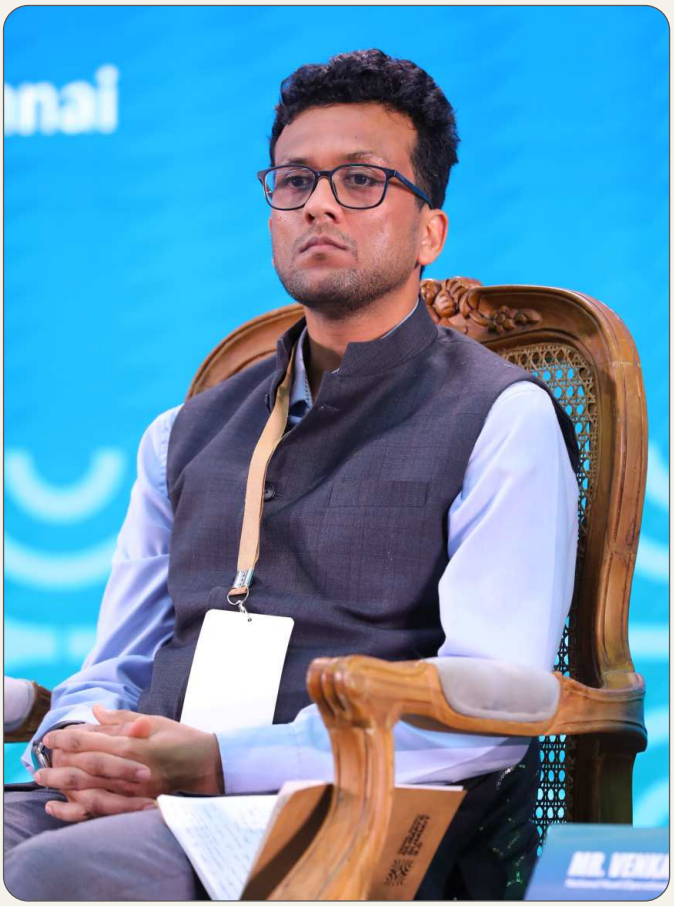




Mr. Utkarsh Patel

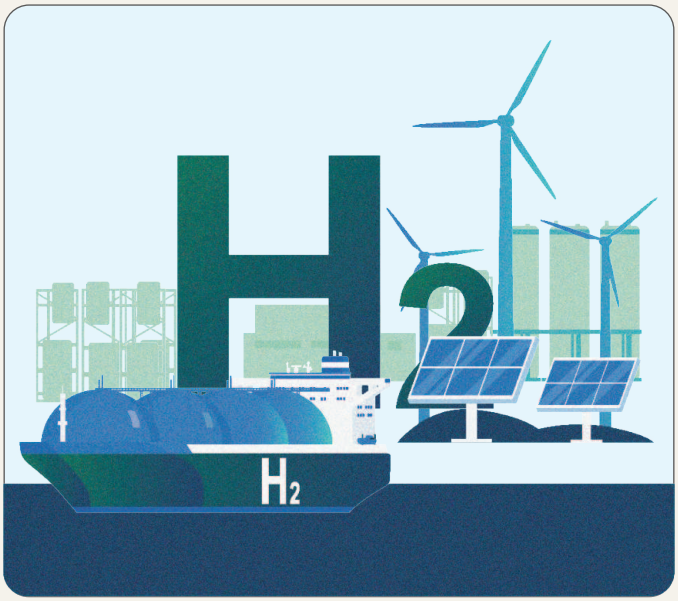
Associate Fellow,
Centre for Social and Economic Progress

Mr. Utkarsh Patel is an Associate Fellow at the Centre for Social and Economic Progress (CSEP) in New Delhi, focusing on climate change and energy transition in developing countries. He holds master's degrees in economics from Madras School of Economics and energy regulation from Technical University Berlin. He has collaborated with Mr. Montek S. Ahluwalia on India's climate policy and financing strategies. Currently, he is researching integrated assessment models to project India's decarbonisation pathways, their economic impact, and the investment needed for a sustainable transition.



"To produce green hydrogen, the largest cost component is electricity, and the second is the capital cost of electrolysers. By optimizing the balance between wind and solar energy, we can lower electricity costs and improve the viability of hydrogen production."

"Green hydrogen adoption must prioritise sectors already using grey hydrogen, such as oil refining and fertiliser production, before expanding to steel & transport, ensuring that the transition is both cost-effective and impactful in reducing emissions."



"If India wants to export green hydrogen or its derivatives, we must ensure that our standards align with international benchmarks. Markets in the EU and US demand proof that the renewable energy used is truly additional, physically delivered & time-matched. Currently, India allows renewable energy producers to bank electricity for up to 30 days, while in the US, the limit is 1 hour, and in Europe, it is 15 minutes."



Mr. Venkat Murugan

National Head – Operations, Saint Gobain India Pvt. Ltd.

Mr. Venkat Murugan, a Chemical Engineer from NIT Trichy (1990), holds postgraduate qualifications in Environmental Studies and certifications in Industrial Safety, Cost Accounting, General Law, and Management. He has completed executive programs at IIM Bangalore and IIM Calcutta. With 8 years at Madras Fertilizers in Ammonia manufacturing and 26 years at Saint-Gobain, he has held leadership roles in Production, Operational Excellence, and Plant Management across India, China, and South Africa. Currently, as National Head of Operations for Saint-Gobain's Glass Business in India, he leads sustainability initiatives, driving the company's net-zero goals.

"If you look at the Government of India's objective to be net carbon neutral by 2070, it carries very difficult targets. Tamil Nadu's Vision $1 Trillion economy explicitly prioritises sustainability, integrating environmental considerations into economic planning—not just as a necessity, but as a competitive advantage."

"We are moving towards zero solid waste disposal, proving that regulatory collaboration and innovation can drive real change. The Tamil Nadu Pollution Control Board's green rating for energy efficiency is another great initiative, and industries are keen to adopt these new standards. The push from the government, combined with industry commitment and startup innovation, is making energy efficiency and sustainability more achievable than ever."



"Collaboration is key—industries, MSMEs, government, and research institutions must work together to scale up R&D, improve energy efficiency, and adopt cleaner technologies. For example, in our own industry, 25 years ago we relied on heavy furnace oil with high sulphur content, but through collaboration with regulators, we transitioned first to low-sulphur fuel, then to LNG, and now increasingly to electrification using renewable energy. Tamil Nadu already hosts the world's only float glass plant operating with 25% renewable electricity, proving that sustainable industrial transformation is possible with the right policies, investments, and industry commitment."



Session 5

Climate-Resilient Agriculture & Livestock Practices



Agriculture is at the center of climate action, as it is a significant contributor to greenhouse gas (GHG) emissions and is highly susceptible to climate-induced disruptions. Climate change poses dual challenges to agricultural productivity and livestock health, necessitating innovative strategies to ensure food security. The session on Climate-Resilient Agriculture & Livestock Practices underscored the growing vulnerabilities in Tamil Nadu's agricultural sector due to climate change and highlighted the urgent need for climate-smart interventions, sustainable livestock management, and innovative technologies.

Experts highlighted the need for a dramatic increase in crop yields—35% by 2030 and 77% by 2035—to feed our growing global population. Meeting these targets requires intensifying cropping, expanding cultivated land, and transforming wastelands through agroforestry and sustainable practices. However, climate change undermines these efforts through both biotic stresses (pests, diseases, weeds) and abiotic stresses (extreme weather, rising temperatures, unpredictable rainfall). Water scarcity from increased evaporation and rising sea levels further compounds these challenges.

While Tamil Nadu demonstrates better emission efficiency than the national average—with lower CO_2 emissions per ton of food grain—significant yield gaps remain. Discussions emphasised that rice cultivation and livestock farming are the two largest sources of emissions in Tamil Nadu's agricultural sector, with methane and nitrous oxide emissions playing a major role. Solutions such as alternate wetting and drying (AWD) in rice fields, biochar application for soil carbon sequestration, and microbial interventions like Harit Dhara, which reduces methane emissions from livestock, were proposed as effective pathways to lower the sector's carbon footprint. Additionally, integrating artificial intelligence (AI) in agriculture, smart irrigation systems, and biofortified crops could enhance productivity while making farming more sustainable. These strategies can help achieve net-zero emissions while maintaining food production.

The session also focused on the need for financial and policy support to scale up adaptation efforts, particularly for small and marginal farmers who face the highest risks. Agroforestry, regenerative agriculture & ecosystem-based carbon markets were identified as key approaches for improving soil health increasing-carbon sequestration, and creating new revenue streams for farmers. Tamil Nadu, with its strong research institutions and progressive climate policies, has the potential to lead India in developing climate-resilient food systems and ensuring agricultural sustainability in the face of intensifying climate risks.



Dr. Indu K. Murthy

Sector Head, Climate Environment and Sustainability, C-STEP

She leads the Climate, Environment, and Sustainability sector at C-STEP, Bengaluru, specialising in climate resilience, policy research, and sustainable development. With extensive experience in environmental impact assessments, she plays a crucial role in integrating sustainability into India's development policies.

> Climate change is no longer a distant challenge but it's today's reality that we are grappling with. Unpredictable monsoons, heatwaves, shifting weather and disease patterns are testing the resilience of the agricultural system and the livestock-dependent communities.

> There is increased demand for food as the population is growing, there are yield gaps that exist, and the productivity levels are likely to decline because of climate change. So there are multiple challenges which demand integrated and innovative ways of looking at the problem & coming up with solutions.



Dr. V. Geethalakshmi

Vice Chancellor, Tamil Nadu Agricultural University

She is a distinguished expert in agricultural sciences with extensive contributions to research, education, and extension services. She focuses on sustainable farming practices, crop improvement, and climate-resilient agriculture. Her leadership drives innovation, enhances productivity, and supports farmers in adapting to environmental challenges. She plays a crucial role in promoting food security, sustainability, and advancing agricultural research and development in India.

> Crop Yield Growth is essential to meet the needs of the growing population. Three crucial things are a yield increase of 35% by 2030 and 77% by 2025. There must be a 14% increase in cropping intensity (currently at 220%, needs to reach 250%) and a 9% increase in cultivated land area. But the impact of climate change is slowing down the growth.

> Climate change is no longer a myth. It is real and affecting every sector—food security, water availability, human health, and overall societal progress. We are losing fertile soil, loss of biodiversity, increased extreme weather events, altered growing season and increased threat from pests are some of the direct impacts of climate change on agriculture.

"Artificial Intelligence (AI) in agriculture can improve crop yield prediction, pest and disease forewarning, market intelligence & blockchain-based traceability. AI-driven robotics will help with weeding, pest control, disease diagnosis, and crop monitoring. AI applications in agriculture include crop health monitoring, automated irrigation, and precision harvesting."





Dr. N. Pazhanivel

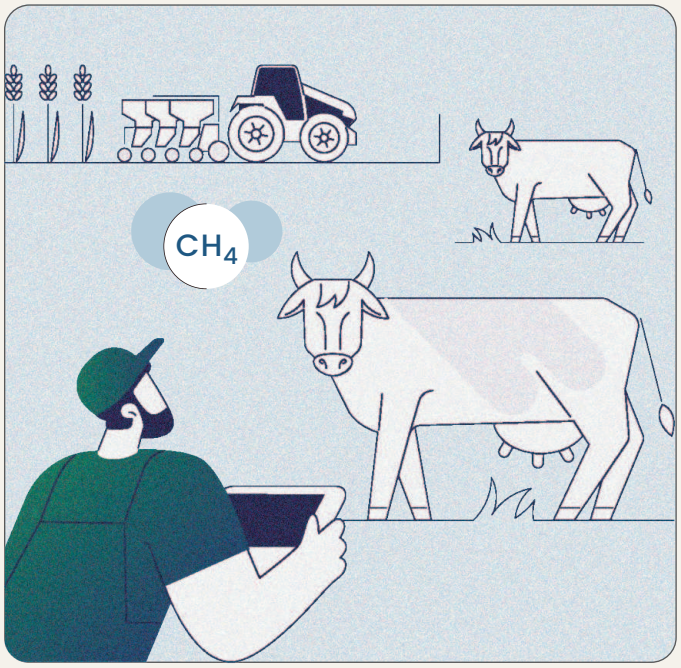
Director, Centre for Animal Health Studies, TANUVAS

An expert in animal health, zoonotic diseases, and veterinary research, his contributions have significantly enhanced animal welfare, disease management, and livestock productivity in India. Through his research, he has helped develop sustainable strategies for disease control in animals, improving food security, and ensuring public health safety.

"Climate change increases heat stress in livestock, reducing feed intake, hormonal disruptions and reproductive issues. This not only causes reduced milk production, egg production & expands the prevalence of vector-borne diseases among other things."



"Under a changing climate scenario, there is an increased probability of many zoonotic and parasitic diseases. It could change how disease travels and cause outbreaks of serious illnesses or even the introduction of new diseases to which the livestock isn't typically exposed. Similarly, it could have an adverse effect on human diseases too."



"Emphasis must be placed on adopting climate-smart livestock practices, improving disease surveillance, sustainable mitigation strategies to reduce methane emissions from livestocks and leveraging resilient native breeds to safeguard animal health, ensure food security, and reduce economic losses."



Dr. Jauhar Ali

Principal Scientist & Head, Hybrid Rice Development Consortium (HRDC), International Rice Research Institute, Philippines

A leading expert in rice breeding and genetics, he focuses on enhancing hybrid rice production to improve yield, resilience, and sustainability. His research has played a crucial role in developing high-yielding, climate-resilient rice varieties that contribute to global food security.

"Food security is at a critical juncture due to climate change impacts like droughts and floods. Our Green Super Rice project has developed over 73 rice varieties. We are now incorporating iron and zinc into these varieties. That means it requires lesser fertilisers, lesser inputs while giving higher outputs on yields, and it can resist drought, salinity, and flooding. These are ready for direct deployment in high-impact regions such as Asia and Africa."

"We need to breed more resilient rice inbreds and hybrids that adapt to heat, cold, rising CO_2 levels, and water scarcity. A five-year collaborative project has been proposed with Tamil Nadu Agricultural University, the Swaminathan Foundation, and the Indian Institute of Rice Research, targeting the development of market-preferred, climate-resilient rice varieties & capacity building for farmers & researchers."



Dr. S. Naresh Kumar

Principal Scientist & Head, Division of Environment Science, ICAR - IARI, New Delhi

His research focuses on environmental impact assessments, climate change, and sustainable agricultural practices. He works on improving soil health, water management, and eco-friendly farming techniques to enhance agricultural resilience. His contributions promote environmental conservation, helping farmers adapt to climate challenges while ensuring food security.

"Indian agriculture produces approximately 421 million tons of CO_2 equivalent GHGs, with Tamil Nadu contributing around 13.2 million tons, higher than the national average. This indicates room for further emission reductions, mainly from the rice and livestock sectors, to achieve Net Zero Agriculture in Tamil Nadu."

"Climate change impacts crops such as wheat, rice, maize, and potato through extreme weather and shifting rainfall patterns, Without adaptation measures, it might result in a yield loss. There is an urgent need for cost-effective technologies that can boost production by 1.3 to 1.6 times, particularly to support small and marginal farmers in adaptation."

"Climate change impacts crops such as The three pillars of mitigation include: Prevent: Reducing emissions from agricultural machinery using biofuels and renewable energy. Reduce: Increasing input use efficiency across crops and livestock. Sequester: Enhancing soil carbon sequestration through biochar and agroforestry."

Session 6

Climate Financing - Challenges and Opportunities

Decarbonisation across all sectors is critical for achieving net-zero emissions, with carbon markets, carbon credits, and regulatory mechanisms playing a central role in offsetting emissions from hard-to-abate industries. The session on climate finance at the Tamil Nadu Climate Summit 3.0 highlighted the urgent need for an integrated approach to decarbonisation, nature-based solutions, and innovative financing to drive a resilient and sustainable economy. Expanding nature-based solutions, such as afforestation, reforestation, and ecosystem restoration, were identified as a key tool in mitigating emissions, addressing biodiversity loss, and strengthening climate resilience. However, investment in these solutions remains disproportionately low compared to the financing of nature-destructive activities, necessitating stronger policy support, financial incentives, and public-private partnerships.

Speakers also emphasised the evolution of carbon trading mechanisms, both globally and in India, noting the increasing role of bilateral carbon credit transactions, domestic carbon markets, and emerging compliance frameworks under international agreements. With the recent finalisation of Article 6 rules at COP29, Tamil Nadu has the opportunity to leverage high-integrity carbon credits and low-cost trading models to enhance its decarbonisation efforts. The transition from existing energy trading mechanisms to a more comprehensive carbon market will be key in ensuring a sustainable, market-driven approach to emissions reductions.

The session highlighted the persistent gap between available funding and actual investment needs, particularly for adaptation measures. Multilateral development banks, concessional finance instruments, and blended finance models were identified as essential for mobilising private capital into low-carbon projects.

Strengthening green bonds, carbon funds, and risk-mitigation mechanisms can help de-risk investments and accelerate the transition to cleaner energy systems. Ultimately, achieving a 1.5°C-aligned pathway will require bold economic transformations, including shifting investments toward renewable energy, green hydrogen, industrial decarbonisation, and carbon pricing frameworks, positioning Tamil Nadu as a leader in the global low-carbon transition.





Mr. Brajendra Navnit

IAS, Principal Secretary, Commercial Taxes and Registration, Tamil Nadu

He has previously served as India's Ambassador to the World Trade Organisation (WTO) in Geneva, representing the country in global trade negotiations. With extensive experience in governance, trade policy, and economic administration, he has played a key role in shaping taxation frameworks and international trade policies, contributing significantly to both state and national economic development.

"During COVID, a phrase was very popular—No one is safe till everyone is safe. At the WTO, India took inspiration from that and said, no one is green till everyone is green."

"In climate finance, we must try to achieve AAA—availability, accessibility, affordability -rating. It is not enough that some finance exists. It has to be accessible; it has to be affordable. Without all three, we don't achieve the goal."

"Only when Finance, Trade & technology come together, we can hope for a better world."



Mr. Deepak Srivastava

IFS, PCCF / Chief Mission Director, Green Tamil Nadu & Wetland Mission

He has been instrumental in expanding green cover and conserving wetlands, leading initiatives focused on reforestation, biodiversity conservation and ecological restoration. His efforts play a crucial role in enhancing environmental sustainability, mitigating climate change impacts, and promoting long-term forest and wetland conservation in Tamil Nadu.

"The way forward for Tamil Nadu's carbon credits, particularly from ARR (Afforestation, Reforestation and Revegetation), is through ex-ante credits and pre-purchase agreements. Ex-ante means we are planting trees now, and this planting will offset future emissions. The challenge is that ex-ante credits and pre-purchase agreements come with high risk and low price."

"The carbon credit projects must have a strong focus on integrity. With more regulations, the voluntary carbon market is starting to resemble the compliance carbon market. This means we must be extremely careful in project design, ensuring real, measurable, and permanent climate benefits."





Ms. Ishrat Jahan

South Asia Head, 1T.Org, World Economic Forum

She is a development sector professional with over 15 years of experience in policy, governance, and administrative reforms across diverse sectors. As South Asia Lead for 1t.org at the World Economic Forum, she drives efforts to mobilise finance for natural climate solutions, focusing on multi-stakeholder collaborations, sustainable forest management, and indigenous-led ecosystem restoration.

"If we invest in nature, which is one of the most sophisticated technologies available, we can mitigate up to one-third of total greenhouse gas emissions. This makes it one of the most cost-effective solutions for climate change."

"Currently, $7 trillion is being invested in activities that harm nature, and out of that, $5 trillion comes from the private sector. In contrast, only $35 billion from the private sector is being directed toward natural climate solutions—a stark imbalance."



Ms. Ulka Kelkar

Executive Program Director – Climate, Economics and Finance, WRI

With 25 years of experience in climate change research, outreach, and capacity building, she specialises in low-carbon development, sub-national climate action, and just transitions in small industries. She co-chaired the Think20 task force on clean energy for India's G20 presidency and contributed to the UN-backed Race to Zero.

"The governance structure of the proposed carbon market is complicated with many layers of scrutiny. But this is important because, without that kind of scrutiny, we don't want to generate carbon credits that are not genuine. The rules have to be strong, there has to be integrity in the system and it has to make sure that there is monitoring and verification at every stage."

"As the voluntary carbon markets develop, Tamil Nadu can prepare by identifying the opportunities for carbon trading, preparing the institutions that would be monitoring projects, developing partnerships with potential buyers, and finally monitoring it at every stage."





Mr. Brij Mohan

Senior Climate Change Officer, Asian Development Bank

He specialises in climate adaptation and mitigation projects across Asia. His work focuses on enhancing resilience, promoting low-carbon development, and integrating sustainable solutions into regional policies.

"If we look at studies, climate finance has grown significantly over the last 5 years. In 2018, investment in climate finance was around $70 billion, and looking at the current landscape, it has reached $1.5 trillion globally. The study also reveals that we still have huge investment gaps. It is estimated that climate finance must increase by 500% if we truly want to achieve the 1.5-degree Celsius scenario."

"ADB has already committed $100 billion in climate finance from its own resources from 2019 to 2030. We are progressing well and have already achieved 50% of this target. As a trusted partner of India, ADB is committed to supporting the Government of Tamil Nadu in achieving its ambitious net-zero target before 2070."



Dr. P. Ram Babu

Co-chair, Federation of Indian Chambers of Commerce & Industry

He is associated with the Federation of Indian Chambers of Commerce and Industry (FICCI), where he plays a key role in policy advocacy and business development initiatives. His work focuses on enhancing the growth and competitiveness of Indian industries across national and international platforms.

"If we want to stay within the budget to limit warming to 1.5 degrees, we need to change how we do things completely. We need to rethink how we produce our cement, construct our buildings, or make our steel. Replacing the existing processes with alternative materials requires a lot of money."

"Tamil Nadu has been a leader in renewable energy—it has excellent wind and solar energy resources. Recently, Tamil Nadu has announced its pumped storage policy and green hydrogen policy. Most of these will require new financing mechanisms and many of these projects can be funded by first movers in Europe or other international markets."



Session 7

Climate Change and Disaster Resilience



As global temperature continues to rise, communities worldwide are facing unprecedented environmental, economic, and social challenges. This discussion highlighted the urgent need for comprehensive strategies to mitigate the devastating effects of extreme weather events, safeguard vulnerable populations, and strengthen infrastructure resilience. Panelists underscored the importance of policy reforms, early warning systems, and collaborative efforts to build a more sustainable and adaptive future.

The session first explored the profound impact of extreme heat, which has intensified due to rising global temperatures. Experts have raised the alarm about record-breaking heat waves leading to severe health crises and significant loss of life. They highlighted how the increasing frequency and intensity of these heat events contribute to rising mortality rates while also causing immense physical and psychological stress on affected communities.

Beyond the immediate health risks, the discussion delved into the broader economic and social consequences of climate-induced disasters. Panelists examined how extreme events—ranging from floods and tsunamis to prolonged droughts— impose heavy financial burdens on governments and local communities. These disasters disrupt essential infrastructures, including transportation networks, power supplies, and water systems, triggering far-reaching effects on urban planning and national economies. The discussion underscored the urgency of implementing effective early warning systems and disaster risk reduction strategies to mitigate these cascading impacts.

A key focus of the discussion was the increased vulnerability of specific demographic groups, particularly children. Panelists stressed that children are disproportionately affected by climate-related health hazards such as air pollution, extreme heat, and malnutrition.

Additionally, rapid-onset disasters increase the risk of child separation from caregivers, exposing them to potential exploitation. Given these unique vulnerabilities, the panelists emphasised the need for national climate policies that incorporate child-focused considerations to ensure a more comprehensive approach to adaptation.

The discussion also addressed the concept of critical infrastructure resilience, emphasising that resilience extends beyond physical structures to include the interdependence of essential systems such as energy, transportation, and tourism.

Experts advocated for integrated planning, the use of advanced monitoring technologies, and innovative financing mechanisms to enhance cities' preparedness and response capabilities. Ultimately, the panelists called for a coordinated, multi-dimensional approach to building long-term resilience, stressing the importance of policy reform, community engagement, and proactive disaster management in transforming vulnerable regions into sustainable, adaptive environments.



Mr. G. Sundarrajan

Co-ordinator, Poovulagin nanbargal,
Member, TN Governing Council for Climate Change

He actively contributes to state-level policies on climate resilience, waste management, and natural resource conservation. A dedicated environmental advocate, he emphasises grassroot level engagement and community-led solutions to address ecological challenges.

> In Tamil Nadu, we are prone to cyclones, floods, and heatwaves, and our Western Ghats are prone to forest fires, drought conditions, and more. So, the most critical thing is for Tamil Nadu to become a climate-resilient state. I think the Dravidian model of governance that state government advocates includes not only social justice but also environmental justice because disasters are going to bring havoc to marginalised communities.





Dr. V. Thiruppugazh

IAS (Retd.) Chairman, Advisory Panel on Mitigation & Management of Flood Risk in Chennai

He is a disaster management expert with over 30 years of experience in administration, resource management, and disaster response. A former Additional Secretary at NDMA, Government of India, he currently chairs the Advisory Committee on Mitigation and Management of Flood Risk in Chennai, focusing on urban flood resilience. He has played a key role in policy formulation and disaster risk reduction, emphasising proactive, risk-informed development and community engagement to enhance disaster preparedness and resilience in urban areas.

"Experts are telling us that before old age and diseases will kill us, we will be killed by extreme heat. That is the condition of our Earth now. We are talking about an uninhabitable Earth, and if urgent action is not taken, heatwaves will become deadlier and more frequent."

"Recent studies tell us that psychological impacts of heat stress are higher than physical impacts. It could lead to increased irritability and aggression, violent behaviour, cognitive impairment to name a few. Another area we haven't focussed on yet is our infrastructure damage - from roads, trains, flights, coal supply chain affecting power generation."

"Plans work. Inter-agency coordination is required and we must focus on long term mitigation measures. We should change the way we plan our cities, houses and commercial buildings. We have to mainstream disaster risk reduction as part of normal development activities. We must build institutional capacity - we must create a post of a heat officer at the district and state levels."



Dr. J. Radhakrishnan

IAS Additional Chief Secretary, Co-operation, Food and Consumer Protection, Tamil Nadu

A 1992-batch IAS officer, he has held key roles, including Health Secretary and Commissioner of Greater Chennai Corporation, leading Tamil Nadu's COVID-19 response. His leadership during the 2004 tsunami earned international recognition. He is known for crisis management expertise, and played a pivotal role in disaster response, public health, and governance, contributing significantly to Tamil Nadu's administrative efficiency.

"Earlier we would dismiss floods and droughts as extreme weather events but now this is happening fairly regularly and we must understand that climate change has begun showing its true impact."

"Cascading effects of disasters—climate change-induced disasters, extreme weather events, and infrastructure failures—are pushing fiscal deficits and increasing economic losses year after year. We must prioritise climate-resistant infrastructure financing."



Ms. Karina Malczewska

WASH Specialist, UNICEF India

Her work focuses on water, sanitation, and hygiene initiatives to improve public health. She collaborates with government agencies, NGOs, and local stakeholders to develop sustainable solutions for water scarcity and sanitation challenges, particularly in deprived communities. Her expertise plays a vital role in advancing UNICEF India's mission of promoting child rights and well-being through improved access to clean water and sanitation services.

"Children breathe faster than adults, so when exposed to air pollution, they are affected much more severely. Climate change is not just an environmental issue but also has socio-economic risks which the children are exposed to differently than adults."

"Learning disruptions due to heatwaves, floods, and cyclones are affecting children, damaging school infrastructure & increasing dropout rates. If we do not act now, future generations will be unprepared for worsening climate conditions."

"Children are not just victims of climate change but are also very important stakeholders in the discussion and planning of climate solutions. Empowering youth through education and community initiatives can make a difference."



Mr. Binu Mathew

Chief Operating Officer, Taru Leading Edge

Specialising in climate change adaptation, he has managed sustainability, agriculture, and commodity trade projects. His expertise in coordinating multidisciplinary teams and delivering impactful solutions has strengthened the firm's success in climate resilience and environmental sustainability.

"Critical infrastructure is not just physical infrastructure, it includes non-physical infrastructure.

Human behaviour plays a crucial role because it's not just about individual critical infrastructure but about their interdependencies."

"Instead of creating contingent liabilities, we must build infrastructure that is climate-resilient, sustainable, and capable of adapting to future risks. Our focus should be on long-term resilience, not just short-term fixes."

Session 8

Resilient Forest Management to Combat Climate Change

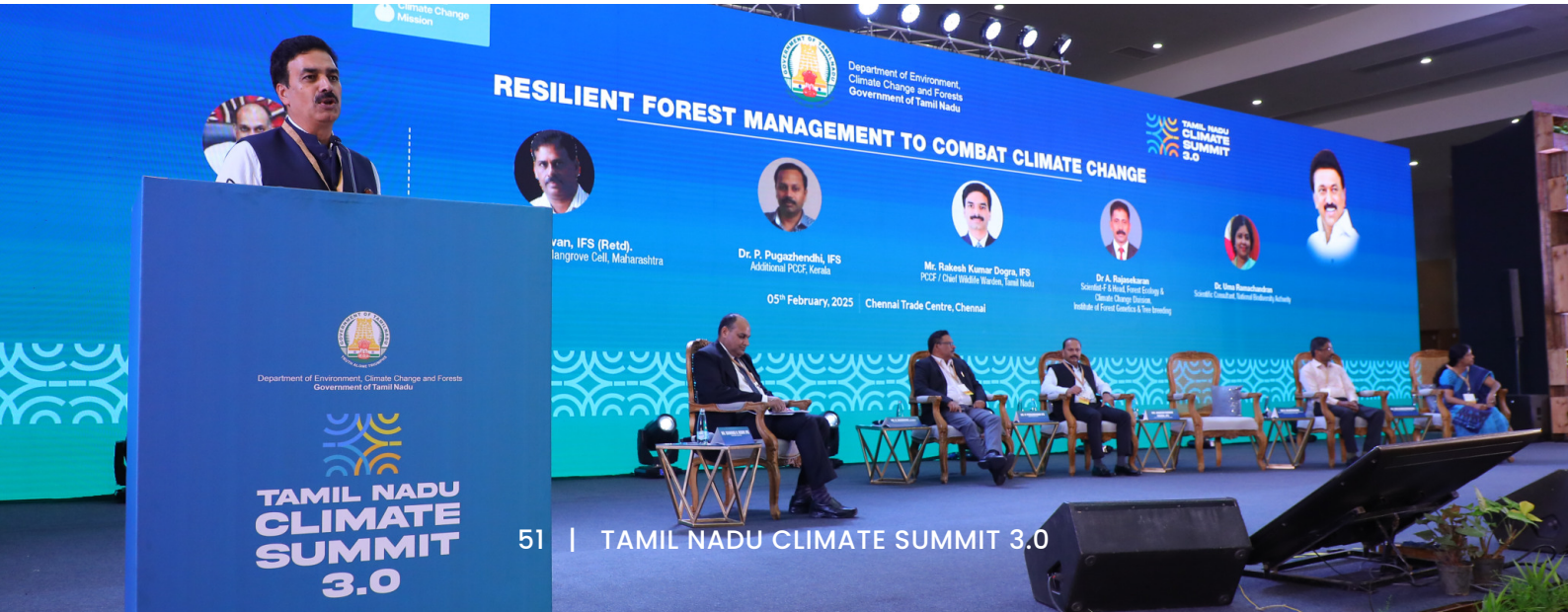
Forests play a critical role in mitigating climate change, preserving biodiversity, and supporting local communities. The session on Resilient Forest Management to Combat Climate Change highlighted exactly this. As climate change accelerates, forests face mounting threats, including rising temperatures, habitat degradation, invasive species, and increasing human-wildlife conflicts. The discussions emphasised that forests are both victims of climate change and essential solutions to it, serving as carbon sinks, protecting watersheds, and sustaining ecological balance.

One of the key areas explored was mangrove conservation, which plays a crucial role in coastal protection, carbon sequestration, and biodiversity conservation. Experts stressed the importance of institutional frameworks, legal protections, and community involvement in expanding and restoring mangrove ecosystems. Lessons from successful models in Maharashtra demonstrated how dedicated conservation cells, financial independence, and participatory management strategies can drive large-scale forest restoration.

Another major concern addressed was biodiversity loss, which is being accelerated by climate change and anthropogenic pressures. The session underscored that species extinction rates are at alarming levels, necessitating urgent conservation measures. Climate-resilient forest management strategies, such as invasive species control, mixed-species forestry, and agroforestry expansion, were discussed as key solutions for enhancing ecosystem resilience.

The issue of human-wildlife conflict was also examined, particularly in Tamil Nadu, where increasing incidents of crop damage, property destruction, and human fatalities pose challenges for both communities and conservationists. Technological interventions, including AI-based monitoring, habitat restoration, and strategic wildlife corridors, were proposed as potential solutions.

The session also explored the integration of biodiversity into climate policy, emphasising that sustainable forest management must be aligned with global biodiversity goals, national action plans & cross-sectoral governance frameworks. Tamil Nadu's progressive forest policies, technological innovations, and community-driven conservation models position the state as a leader in climate-resilient forestry.





Mr. Srinivas R. Reddy

IFS, PCCF (HoFF), Tamil Nadu

With a distinguished career, he has held key roles, including Additional Principal Chief Conservator of Forests and Managing Director of Tamil Nadu Tea Plantation Corporation Ltd. His leadership has been pivotal in implementing conservation strategies, sustainable forest management, and biodiversity enhancement in Tamil Nadu, ensuring ecological balance and promoting responsible resource management for long-term environmental sustainability.

"The global temperatures are rising and they are leading to multiple issues—high sea temperatures affecting coral ecosystems, melting polar ice caps leading to sea-level rise, extreme weather events increasing, impacting coastal and terrestrial ecosystems."

"Another major issue is the disruption of hydrological balance. Increased temperatures and over-extraction of water are leading to acute depletion of both surface and deep aquifers; this is causing changes in hydrology, which will impact forest ecosystems and biodiversity. Reduced water availability beneath the forests may lead to unknown consequences for existing biodiversity, which we are yet to understand fully."



Mr. N. Vasudevan

IFS (Retd.), Former PCCF & Head of Mangrove Cell, Maharashtra

A retired Forest Service officer of the Maharashtra cadre, he has served as Principal Chief Conservator of Forests and later as National Project Coordinator for UNDP's Green Climate Fund Project. Known for his work in mangrove conservation, he led Maharashtra's Mangrove Cell for eight years, increasing mangrove cover by 72%. He played a key role in establishing the Thane Creek Flamingo Sanctuary and the Mangrove Foundation, securing a ₹600 crore corpus for conservation efforts.

"Mangroves are very crucial for disaster mitigation. We have seen how in cyclones & tsunamis, they have acted as a bio-shield and helped in stabilising coastlines, apart from being a rich habitat for marine biodiversity."

"Since 2012, Maharashtra has increased its mangrove cover by 72 percent, and this was made possible due to a significant order of the Bombay High Court, financial independence & active participation of local communities in conservation efforts."

"Mangrove ecosystems are an integral part of the blue carbon framework, which includes seagrasses and salt marshes. These ecosystems store more carbon than terrestrial forests and play a vital role in climate mitigation."



Dr. P. Pugazhendhi

IFS, Additional PCCF, Kerala

A 1996 batch Indian Forest Service (IFS) officer, he has held key positions in Kerala's Forest Department. His leadership has been pivotal in conservation strategies and sustainable forest management, ensuring ecological balance and resource sustainability. Through his expertise, he continues to contribute to Kerala's environmental protection and forest governance initiatives.

"Scientists are saying that we are in the middle of a mass extinction, and this time, it is not due to natural causes but entirely human-driven, with climate change being one of the major reasons."

"Extreme weather events, altered precipitation patterns, and invasive species are rapidly increasing, causing large-scale disruptions to biodiversity and ecosystem stability."

"The 2018 Kerala floods were an eye-opener. In a span of just a few days, 1.4 million people were displaced, there were 342 landslides & damages were estimated at ₹30,000 crores."



Mr. Rakesh Kumar Dogra

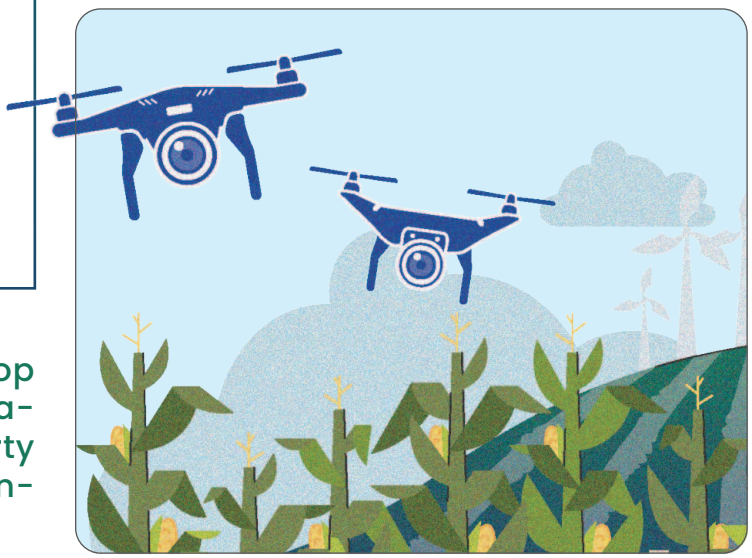
IFS, PCCF / Chief Wildlife Warden, Tamil Nadu

A 1991 batch Indian Forest Service (IFS) officer, he has held key roles, including Conservator of Forests in the Tirunelveli Circle, overseeing forest conservation and wildlife protection. His leadership has been crucial in implementing conservation strategies, sustainable forest management, and biodiversity enhancement. Recognised for his dedication to environmental preservation, he continues to play a vital role in strengthening Tamil Nadu's forest governance and wildlife protection.

"Tamil Nadu records over 4,000 crop damage cases, around 80 human deaths, and about 150 cases of property destruction annually due to human-wildlife conflict."

"Tamil Nadu has initiated AI-based monitoring systems, drone surveillance, and GPS collar tracking to monitor and mitigate human-wildlife conflicts, and these measures have started to show promising results."

"Habitat fragmentation caused by infrastructure development is a major reason for rising human-wildlife conflicts. Restoring wildlife corridors is crucial to ensuring coexistence."





Dr. A. Rajasekaran

Scientist-F & Head, Forest Ecology & Climate Change Division, Institute of Forest Genetics & Tree breeding

A distinguished scientist in forest ecology and climate change, his research focuses on non-wood forest products, invasive alien species, and remote sensing applications in forestry. He has significantly contributed to understanding forest ecosystems and climate change impacts, authoring numerous publications in these fields. His work supports sustainable forest management and conservation efforts in India.

"Climate change is impacting forest ecosystems in multiple ways—from changing the flowering & fruiting cycles of trees to increasing the frequency of forest fires and the spread of invasive species."

"Agroforestry is one of the most effective carbon sequestration strategies. A 30 percent increase in agroforestry coverage could lead to significant reductions in greenhouse gas emissions."

"Tamil Nadu is the only state in India that has a dedicated invasive species policy, focusing on large-scale removal efforts and habitat restoration to enhance forest resilience."



Dr. Uma Ramachandran

Senior Scientist, National Biodiversity Authority

She has done Extensive Field Research, Teaching, Training, Impact Assessments, Monitoring & Evaluation for policy making and also has strong networks and collaboration with Central and State Government Institutions, Bilateral and International, as well as Educational Institutions. The major sectors covered by her are - Water, agriculture, forest and biodiversity with cross-cutting themes such as gender, livelihoods, waste management etc.

"Biodiversity loss is occurring at an alarming rate, and climate change is amplifying it—deforestation, habitat destruction, and the decline in genetic diversity are pushing many species towards extinction."



"India has aligned its biodiversity conservation goals with the Sustainable Development Goals (SDGs), and estimates suggest that implementing the Global Biodiversity Framework (GBF) will require ₹82,000 crores."

"Mainstreaming biodiversity into national and state-level policies is essential. Conservation should not be a standalone effort but integrated into broader climate and economic policies."

Highlights from the Grande Finale of Soozhal Arivom, the State Level Quiz

Soozhal Arivom 2025: The World's Largest Quiz on Environment, Climate Change, and Sustainability

Soozhal Arivom 2025 - State Level Quiz Competition for School Students , organised by the Tamil Nadu Climate Change Mission under the Department of Environment and Climate Change, marked a historic milestone as the world's largest quiz on Environment, Climate Change, and Sustainability. This state-wide competition was designed to educate and engage students on climate action, biodiversity conservation, and sustainable practices, making it a pioneering initiative in environmental education. Notably, the grand finale was held as part of the Tamil Nadu Climate Summit 3.0, further underscoring its significance in the state's climate action efforts.

Structure and Participation

The quiz was conducted in hybrid mode, ensuring maximum inclusivity across Tamil Nadu. The preliminary round, held online on January 29, 2025, featured multiple-choice questions in English and Tamil. The grand finale was hosted at the Tamil Nadu Climate Summit 3.0 on February 4–5, 2025, under the chairmanship of the Honourable Chief Minister, reinforcing the importance of climate literacy in policy discussions.

- The competition was zoned into six regions, covering 38 districts, ensuring equal representation from government and government-aided schools.



- Participation Highlights:

Total Entries:
30,000 students

Government Schools:
16,256 students

Private Schools:
13,744 students

The top-performing students from each zone competed in the grand finale.





Grand Finale and Winners

The final round, held at the Tamil Nadu Climate Summit 3.0, featured four interactive rounds focusing on climate literacy, pollution, renewable energy, and biodiversity. The event was led by quiz master Berty Ashley, ensuring an engaging and knowledge-driven experience.

- Winners: GHSS Old Perungalathur, Chengalpattu (Zone 3)
- 1st Runners-up: PUMS Varatharajapuram, Theni (Zone 4)
- 2nd Runners-up: GHSS Vemboor, Tuticorin (Zone 5)

Winners received cash prizes, trophies, and certificates, inspiring them to become future climate leaders.



Impact and Way Forward

As the largest-ever quiz in the world on Environment, Climate Change, and Sustainability, Soozhal Arivom 2025 set a new benchmark in climate education and youth engagement. Its inclusion in the Tamil Nadu Climate Summit 3.0 emphasised the state's commitment to environmental awareness and action. The overwhelming participation highlighted the need for more interactive and accessible learning initiatives to empower the next generation as champions of sustainability.



On the sidelines of the summit













TAMIL NADU
CLIMATE
SUMMIT
3.0