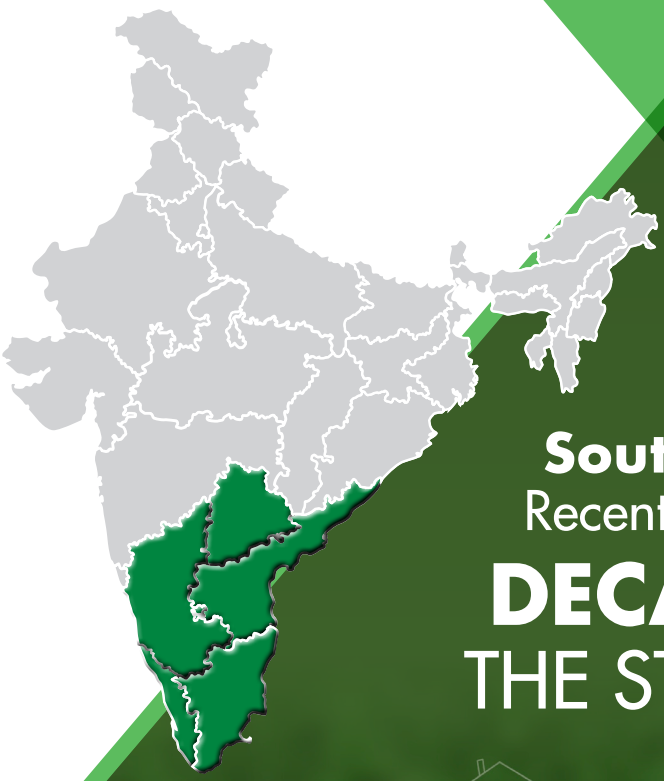
TNGCC
Tamil Nadu Green Climate Company

GOVERNMENT OF TAMILNADU
TRUTH ALONE TRIUMPHS

VASUDHA FOUNDATION
Green ways for a good earth!



An overview of
Southern States and their
Recent Policy Developments on

DECARBONISING THE STATE ECONOMY

AN OVERVIEW OF SOUTHERN STATES AND THEIR RECENT POLICY DEVELOPMENTS ON DECARBONISING THE STATE ECONOMY

I. THE SOUTHERN REGION AT A GLANCE - KEY STATISTICS

Economic and Demographic Parameters for the Year 2021-22

Parameter	Unit	Andhra Pradesh	Karnataka	Tamil Nadu	Telangana	Kerala
GDP (Base: 2011-12) Current Price	Crores	1,133,837	1,962,725	2,065,436	1,112,456	906,921
Population	Number	52,787,000	66,845,000	76,402,000	37,725,000	35,489,000
Per capita income (Base: 2011-12) Current Price	Rs/capita	207,771	278,786	241,131	275,443	230,601

Source: India Climate and Energy Dashboard (ICED)

Electricity Sector Parameters for the Year 2022-23

Parameter	Unit	Andhra Pradesh	Karnataka	Tamil Nadu	Telangana	Kerala
Installed Capacity (Geographical location-based)	MW	28,318.72	30,768.44	37,240.73	15,293.47	3,490.69
Peak Demand	MW	12,293	15,828	18,048	15,497	4,517
Peak Demand Date	-	08/04/2022	29/03/2023	16/03/2023	30/03/2023	28/03/2023
Electricity Sales	MU	65,829.56	61,699.35	86,167.00	69,237.14	24,876.32
AT&C Losses	%	12.05	11.19*	13.81#	13.11*	12.11
ACS-ARR (Electricity Sales) Gap	Rs/kWh	1.69	0.35	2.77	2.53	0.77

Source: India Climate and Energy Dashboard (ICED)

*Available for 2021-22
#Available for 2020-21

Comparison of Key Policies

State-wise Electric Vehicle (EV) Policies					
Particulars	**Andhra Pradesh**	**Karnataka**	**Tamil Nadu**	**Telangana**	**Kerala**
Name of Policy	Andhra Pradesh Electric Mobility Policy 2018-2023[i]	Karnataka Electric Vehicle and Energy Storage Policy 2017-2022[ii]	Tamil Nadu Electric Vehicles Policy 2023[iii]	Telangana Electric Vehicle and Energy Storage Policy 2020[iv]	Kerala Electric Vehicle Policy 2019[v]
Details	Provides for financial support to manufacturing firms; financial incentives for charging infrastructure providers, hydrogen generation and refuelling services; financial incentives towards private purchase and demand creation, R&D grants and other interventions.	Includes concession and incentives for EV component manufacturing enterprises, EV battery manufacturing/ assembly enterprises, EV charging/swapping infrastructure equipment manufacturing enterprises for EVs in non-transport and transport vehicles and service providers for e-mobility.	Provides for supply-side policy measures, demand-side measures, interventions for charging infrastructure, ecosystem development, and policy implementation mechanisms including Research and Development, Capacity Building amongst others.	Includes demand-side incentives, supply-side incentives, charging infrastructure, shared mobility and public transport, support for manufacturing and other initiatives such as EV cluster, Research and Development, and preferential market access, amongst others.	Includes incentives for addressing the viability gap, creating adequate charging infrastructure, promotion of local manufacturing, awareness creation and promotion and human capacity building and re-skilling.

Source: Respective State Policy Documents

State-wise Renewable Energy Policies					
Particulars	**Andhra Pradesh**	**Karnataka**	**Tamil Nadu**	**Telangana**	**Kerala**
Name of Policy	Andhra Pradesh Solar Power Policy (2018 - 2023)[vi]	Karnataka Renewable Energy Policy (2022-27)[vii]	Tamil Nadu Solar Energy Policy 2019[viii]	Telangana Solar Power Policy (2015-2020)[ix]	Kerala Solar Energy Policy 2013[x]
Details	With the objective to achieve a minimum total solar power capacity addition of 5,000 MW in the next five years in the state in order to meet the growing demand for power in an environmentally sustainable manner; to develop solar park(s) with the necessary utility infrastructure facilities to encourage developers to set up solar power projects in the state; to promote distributed generation of electricity that can help avoid upstream network cost and contribute towards loss reduction; to deploy solar powered agricultural pump sets and meet power requirements of farmers during day time; and to promote local manufacturing facilities which will generate employment in the State.	With the objectives to facilitate development of 10 GW of additional RE projects with or without energy storage systems in the state, including up to 1 GW of rooftop solar PV projects; to attract investment in the RE sector and development of State economy; to tap RE potential in the state and use of available resources for development of RE projects to meet the RE demand within the state and exporting power outside Karnataka; amongst others.	To achieve installed solar generation capacity of 9 GW by 2023, of which 40 percent to be earmarked for consumer category solar energy systems.	To encourage generation of solar power in the state by various means such as captive use, third party sale and sale to DISCOMs at average service & pooled purchase cost w.e.f. 1st June 2015. The policy offers the following incentives to promote solar power projects: • Exemption of wheeling and transmission charges, cross subsidy charges, electricity duty in case of captive use or third-party sale; • The Commercial Tax Department will refund VAT for all the inputs required for solar power projects; • Stamp duty and registration charges for the purchase of land for setting up solar power projects will be refunded.	To increase the installed capacity of the solar sector in the state to 500 MW by 2017 and 2500 MW by 2030.

Source: Respective State Policy Documents

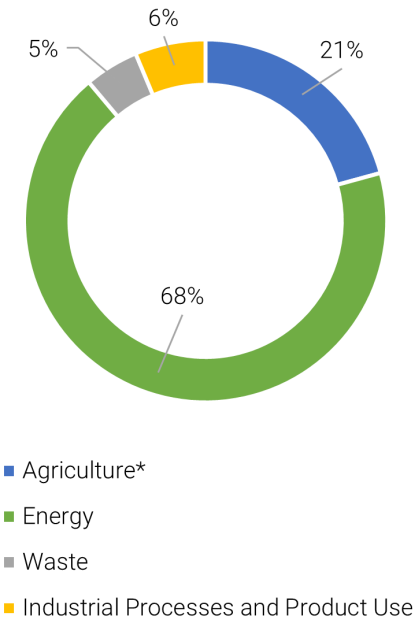
State-wise Green Hydrogen Policies					
Particulars	**Andhra Pradesh**	**Karnataka**	**Tamil Nadu**	**Telangana**	**Kerala**
Name of Policy	Andhra Pradesh Green Hydrogen and Green Ammonia Policy 2023[xi]	NA	NA	NA	NA
Details	To target Green Hydrogen production up to the capacity of 0.5 MTPA (Million Tonnes Per Annum) or Green Ammonia production up to the capacity of 2.0 MTPA in the next five years by harnessing the RE potential in the state.				

Source: Respective State Policy Documents

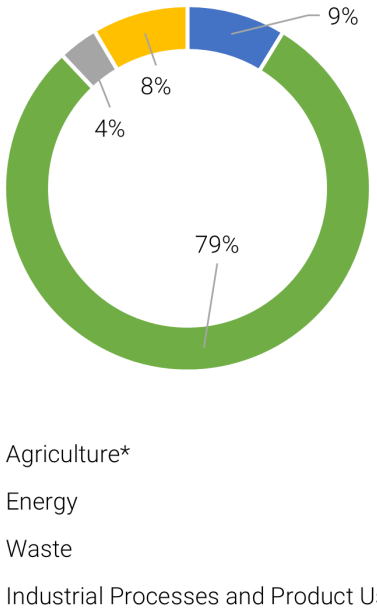
II. ANDHRA PRADESH

Emission Profile

Economy-wide GHG Emissions (2005) ~ 143 Mt



Economy-wide GHG Emissions (2018) ~ 169 Mt



*For the purpose of this comparison, agriculture emissions do not include removals from lands and forests.

Source: GHG Platform India

Green Initiatives

Andhra Pradesh was the first state in the country to launch the Green House Gas Inventory in 2019. The Vision Management Unit of the Planning Department of the State Government launched the inventory.

The Green Vision of the Andhra Pradesh Government mentions –

"The State strives to achieve the four pillars of Economic Transformation, i.e. Inclusive Growth, Sustained Double-Digit Growth, Technology in Governance and Green Economy. Towards achieving the target, the State has identified six building blocks for Green Economy, i.e. Clean Energy, Green Cover, Sustainable Water Use, Healthy Environment, Disaster Resilience and Climate Change Mitigation.

Andhra Pradesh aims to have by 2029, **30% share of renewable energy, 50% green cover, 100% drought proofing, 60% water use efficiency, 100% solid and liquid waste management, and infrastructure** *which is resilient to disasters and reduced greenhouse gas emissions. The state has put tremendous efforts on all the six building blocks of Green Economy.*

In November 2022, the state established an exclusive Climate Change Cell (CCC) in the Environment, Forest, Science and Technology Department (EFST) responsible for implementing a new state action plan on climate

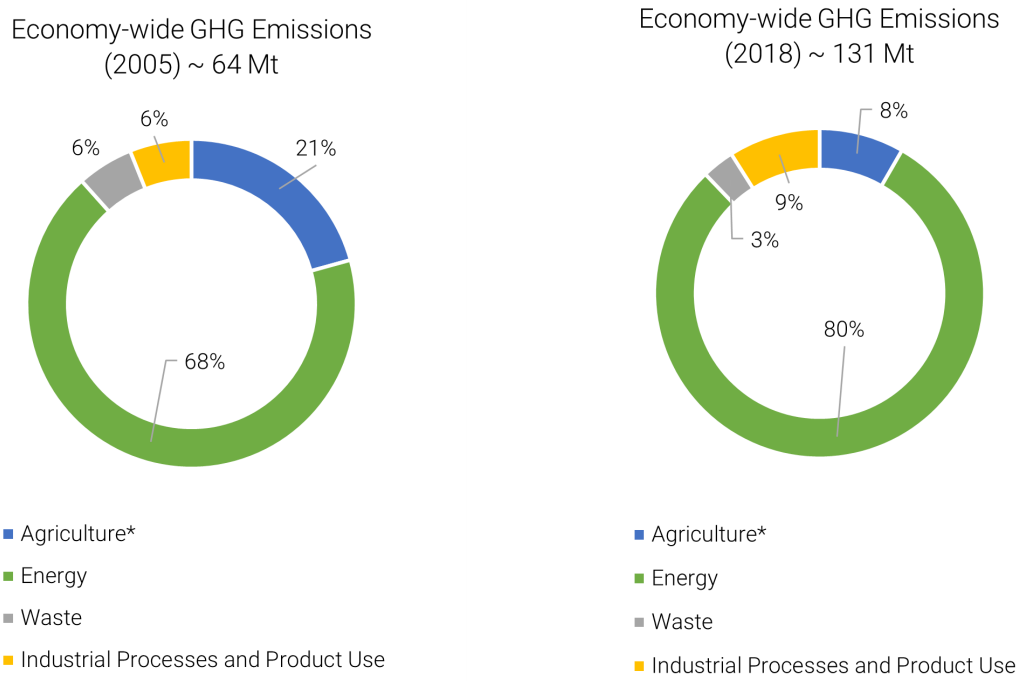
change, which is in the draft stage.

In 2022, the Andhra Pradesh Government launched the 'Trees Outside Forests in India' program in the state, with the support of the U.S. Agency for International Development (USAID). This program aims to enhance carbon sequestration, support local communities, and strengthen climate resilience of agriculture, thereby supporting global climate change mitigation and adaptation goals.

The State Government has also launched its Heatwave Action Plan in 2020 which defines roles and responsibilities of various authorities during all the phases of heatwave. This was led by the State Disaster Management Authority.

III. KARNATAKA

Emission Profile



*For the purpose of this comparison, agriculture emissions do not include removals from lands and forests.

Source: GHG Platform India

Green Initiatives

Chapter 23 of the Economic Survey of the State provides a detailed description of initiatives pertaining to greening the state's economy. It mentions the State Action Plan on Climate Change (SAPCC), green bonds, green sectors for investing, amongst other key highlights of the state.

The Karnataka Renewable Energy Development Corporation Limited unveiled its Renewable Energy Policy for the period of 2022-27 which outlines interventions aimed at making the state a hub of renewable energy

equipment manufacturing. The policy envisions a target of achieving 10 GW of RE capacity by the year 2027, with solar rooftop having an installed capacity of 1 GW alone.

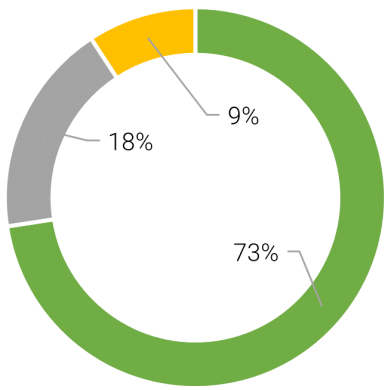
Further, the state's Energy Conservation and Energy Efficiency Policy for the period of 2022-27 was released by the Karnataka Renewable Energy Development Corporation Limited. The policy aims to achieve better energy efficiency and energy conservation in the state through several interventions and incentives across various economic sectors.

In 2021, the state-run Karnataka Power Corporation Limited (KPCL) announced to limit thermal power production in the state and no longer invest in thermal power plants. According to the state energy department, the decision is part of a new energy blueprint which includes plans to phase out thermal power completely in three to five years.

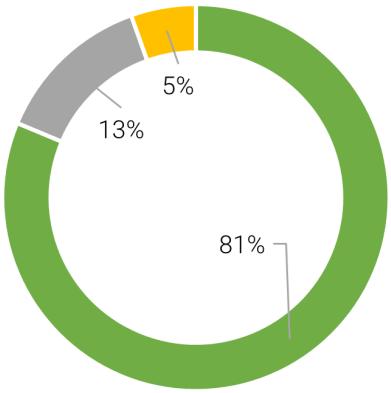
IV. KERALA

Emission Profile

Economy-wide GHG Emissions (2005) ~ 0.58 Mt



Economy-wide GHG Emissions (2018) ~ 1.21 Mt



- Energy
- Waste
- Industrial Processes and Product Use

- Energy
- Waste
- Industrial Processes and Product Use

Source: GHG Platform India

Green Initiatives

In the recently revised State Action Plan on Climate Change (2023-27), the state has committed to achieve 100 percent electricity demand being met through renewable energy sources by 2040 and subsequently, achieve carbon-neutrality by 2050, much before the national target of 2070.

The Kerala Government has embarked on the Haritha Keralam Mission, or the Green Protocol, which envisions to reduce the use of disposable materials and to opt for reusable materials as a part of mitigating waste generation so that the degradable residues can be converted either into compost manure or biogas. It also ensures eliminating health hazards caused by burning plastic and other non-degradable solid waste and also by throwing of garbage in public places. The adoption of Green Protocol in festival grounds, meetings and public conferences, wedding ceremonies, where people assemble in large number, will ensure the reduction of waste generation to a large extent. The management and implementation of activities under this mission is entrusted with the local governance bodies in the state.

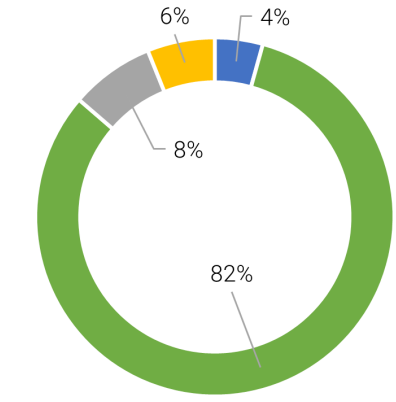
The state also released the Kerala Industrial Policy 2023, with the objective of accelerating its industrial growth and create more employment opportunities. The policy is a revised version of the 2018 policy, incorporating changes that align with the current times. It further focusses on high-priority industries in the 'sunrise' category which aims to provide financial incentives and support to foster their development. Among the sunrise sectors, the green industry includes electric vehicles, renewable energy and recycling & waste management.

The Kerala Solar Energy Policy of 2013 aims at achieving the installed solar capacity of 2500 MW by 2030. The state has recently released its Draft Small Hydro Power Policy in 2022. The objective of this policy is to enhance the contribution of Small Hydro Power Projects from the existing 260 MW to 500 MW in the total installed capacity of the state within eight years of implementation. This will be achieved through participation of Independent Power Producers (IPP), Captive Power Producers (CPP), Local Self Governments (LSG), Cooperative Sector, Public Sector Undertakings and Merchant Power Producers (MPP)

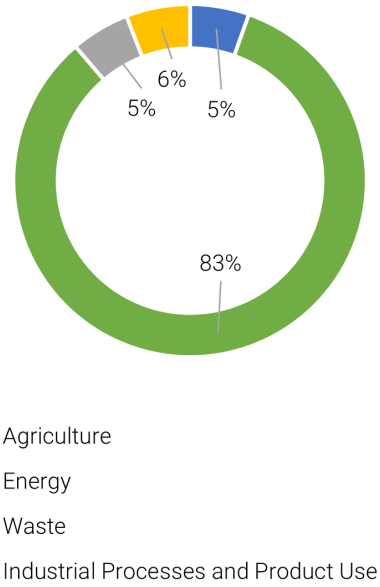
V. TAMIL NADU

Emission Profile

Economy-wide GHG Emissions (2005) ~ 100 Mt



Economy-wide GHG Emissions (2018) ~ 173 Mt



Source: GHG Platform India

Green Initiatives

On the first working day of the newly appointed State Government, the Tamil Nadu Green Climate Fund (TNGCF), worth Rs 1000 crore, was launched with the objective of supporting mitigation and adaptation activities in the state. The list of investments includes climate-friendly products; pollution control technologies; renewable or green energy, carbon or greenhouse gas reduction technologies and projects; forest development; electric or hybrid vehicle and associated infrastructure; and waste management. The fund is to be set up as Category I (Social Venture Funder) under the SEBI Alternative Investment Fund Regulations, 2012.

In 2022, the Chief Minister also announced to achieve carbon neutrality in the state much before the nation accomplishes its target of 2070. It further announced that no new coal-based power plants will be established in the state, barring the pipeline capacity of 5 GW.

In 2023, the State Government unveiled a new Electric Vehicle Policy which intends to raise Rs 50,000 crore and generate employment for 1.5 lakh people during the policy period of five years.

The Department of Environment and Climate Change, Government of Tamil Nadu has also undertaken the 'Green Skill Development Programme' which endeavours to develop green skilled workers having technical knowledge and commitment to sustainable development. The programme is designed to help in the attainment of the Nationally Determined Contributions (NDCs), Sustainable Development Goals (SDGs) and National Biodiversity Targets (NBTs).

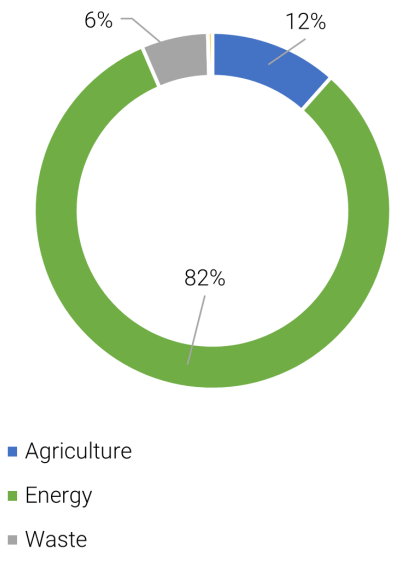
The State Government has also set up the Tamil Nadu Green Climate Company (TNGCC) to implement the three key missions of the Government of Tamil Nadu, viz., the Tamil Nadu Climate Change Mission, the Green Tamil Nadu Mission and the Tamil Nadu Wetlands Mission. TNGCC has setup a specialized Project Management Unit (PMU) for coordinating and monitoring project activities under all the three missions in partnership with the Tamil Nadu Infrastructure Fund Management Corporation Limited (TNIFMC). While these Missions shall be implemented through the Department of Environment, Climate Change and Forests, TNGCC will facilitate the involvement of the academia, private sectors and societies for transitioning the state to climate friendly platforms, championing renewable energy, sustainable and resilient infrastructure, agriculture, management and protection of forests, resilience and adaptation to climate impacts.

The Tamil Nadu Government, in March 2023 announced to release scientific data on carbon emissions by each of its departments in the next few months, and is aspiring to realise the 'net zero' goal much before the national target of 2070. The Chief Minister has also stated to launch a 'climate literacy' programme and use palmyra trees to prevent coastal erosion and protect biodiversity.

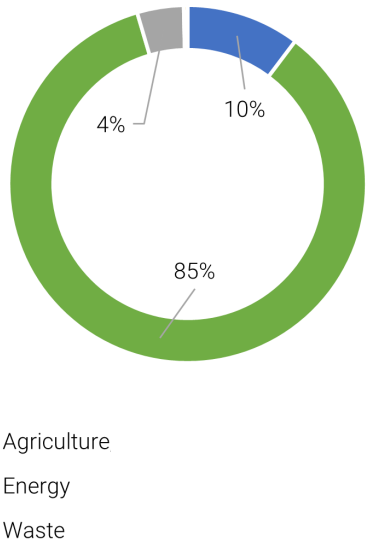
VI. TELANGANA

Emission Profile

Economy-wide GHG Emissions
(2014) ~ 45 Mt



Economy-wide GHG Emissions
(2018) ~ 67 Mt



Source: GHG Platform India

Emission Profile

On 3rd July 2015, the Telangana Government had launched the Harita Haram Program in the mission mode with the aim of increasing 33 percent of green cover in the state. The program is considered the third major human effort to increase the greening of the Earth, after China and Brazil. The state has also become the first in setting up the 'Green Budget (Harita Nidhi)'. It is an innovative approach, unlike anywhere else in the world, that involves participation of all sections.

At the city-level, Hyderabad has also been at the centre of various greening initiatives including development of forest zones around the city, establishment of forests, which includes setting up two medicinal forests, in empty spaces within the city and achieving an industrial pollution-free Hyderabad.

Within the industrial development, the Telangana Government has started the following initiatives to tackle the different aspects of sustainable development and environmental conservation which are aimed at reducing the carbon footprint and promoting sustainable living:

- *Hara Bahara:* The Telangana State Information Technology, Electronics and Communication Department (ITE&C) along with the State Forest Department had launched the Hara Bahara initiative in 2021 with a goal to promote rapid afforestation in the state's inaccessible forest regions by utilizing drone-based technology. As part of the initiative, 75 lakh seed balls were successfully dropped in various forests across 33 districts in the state, including 25 lakh seed balls in 2022.
- Monitoring Wildlife in Forests: The State Government in collaboration with Think Evolve Consulting, a startup selected for T-AIM Grand Challenge developed an AI based solution which provides a spatiotemporal density mapping of species, both herbivores & carnivores. It also provides the number, location and movement behaviour of animals across the forest sanctuary. Further, the tool will be used to map potential eco-enthusiasts and wildlife spotting across the Jannaram and Amrabad Wildlife Sanctuaries.
- Carbon Credits on Blockchain: The ITE&C Department signed a Memorandum of Understanding (MoU) with Algorand to develop blockchain solutions that support sustainable production, product traceability and transparency, and financing and development of carbon offsetting projects.

The Centre of Excellence (CoE) on e-waste has been established at the Centre for Materials for Electronics Technology (C-MET), Hyderabad as a joint initiative of Ministry of Electronics & Information Technology (MeitY), Government of India and Government of Telangana to establish a self–sustainable ecosystem capable of managing India's e–waste and to support Indian industries through environmentally benign e-waste recycling technologies.

- Printed Circuit Board (PCB) Recycling facility @1000 kg per day: Under CoE, C-MET has established a pilot plant-scale PCB recycling facility for a 1000 kg per day capacity.
- E-waste dismantling facility: CoE also houses an e-waste dismantling facility for providing training on e-waste dismantling and segregation to students, start-ups, MSMEs and the unorganized sector

The Telangana Government has also released the Electric Vehicle (EV) and Energy Storage Policy for the period of 2020 to 2030 with the objective to make Telangana a major base for EV & energy storage system (ESS) sectors. The policy aims to attract investments worth $4.0 billion and create employment for 120,000 individuals by 2030 through various activities such as shared mobility in EVs, charging infrastructure development and EV & ESS manufacturing.

The Government has announced the 'Solar Power Policy – 2015' vide Lr.No.642/Budget.A2/2015-1 Dated 10.06.2015 of Energy (Budget-A2) Department to encourage generation of solar power in the state by various means such as captive use, third party sale and sale to DISCOMs at average service & pooled purchase cost beginning 1st June, 2015. The policy offers following incentives to promote solar power projects:

- Exemption of wheeling and transmission charges, cross subsidy charges, electricity duty in case of captive use or third party sale;
- The Commercial Tax Department will refund VAT for all the inputs required for solar power projects;
- Stamp duty and registration charges for purchase of land for setting up solar power projects will be refunded.

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NOTES

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TNGCC
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GOVERNMENT OF TAMILNADU
TRUTH ALONE TRIUMPHS


VASUDHA
FOUNDATION
Green ways for a good earth!