TELANGANA STATE ENERGY FINANCE CONFERENCE 2025

TELANGANA'S ENERGY LANDSCAPE: POLICY AND PRACTICAL CHALLENGES

SEPTEMBER 2025

VENUE: CENTRE FOR ECONOMIC AND SOCIAL STUDIES (CESS), NIZAMIAH OBSERVATORY CAMPUS, BEGUMPET, HYDERABAD, TELANGANA

RRDS

PEOPLE'S MONITORING GROUP ON ELECTRICITY REGULATION (PMGER)

FTCCI ESTD:1917

CFA Centre for Financial Accountability

Co-Organised by Rural Reconstruction & Development Society (RRDS), People's Monitoring Group on Electricity Regulation (PMGER), Federation of Telangana Chambers of Commerce and Industry (FTCCI), Centre for Economic and Social Studies (CESS), and Centre for Financial Accountability (CFA)

PROCEEDINGS REPORT OF THE TELANGANA STATE ENERGY FINANCE CONFERENCE 2025

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Federation of Telangana Chambers of Commerce and Industry (FTCCI)|
Centre for Economic and Social Studies (CESS)
Centre for Financial Accountability (CFA)

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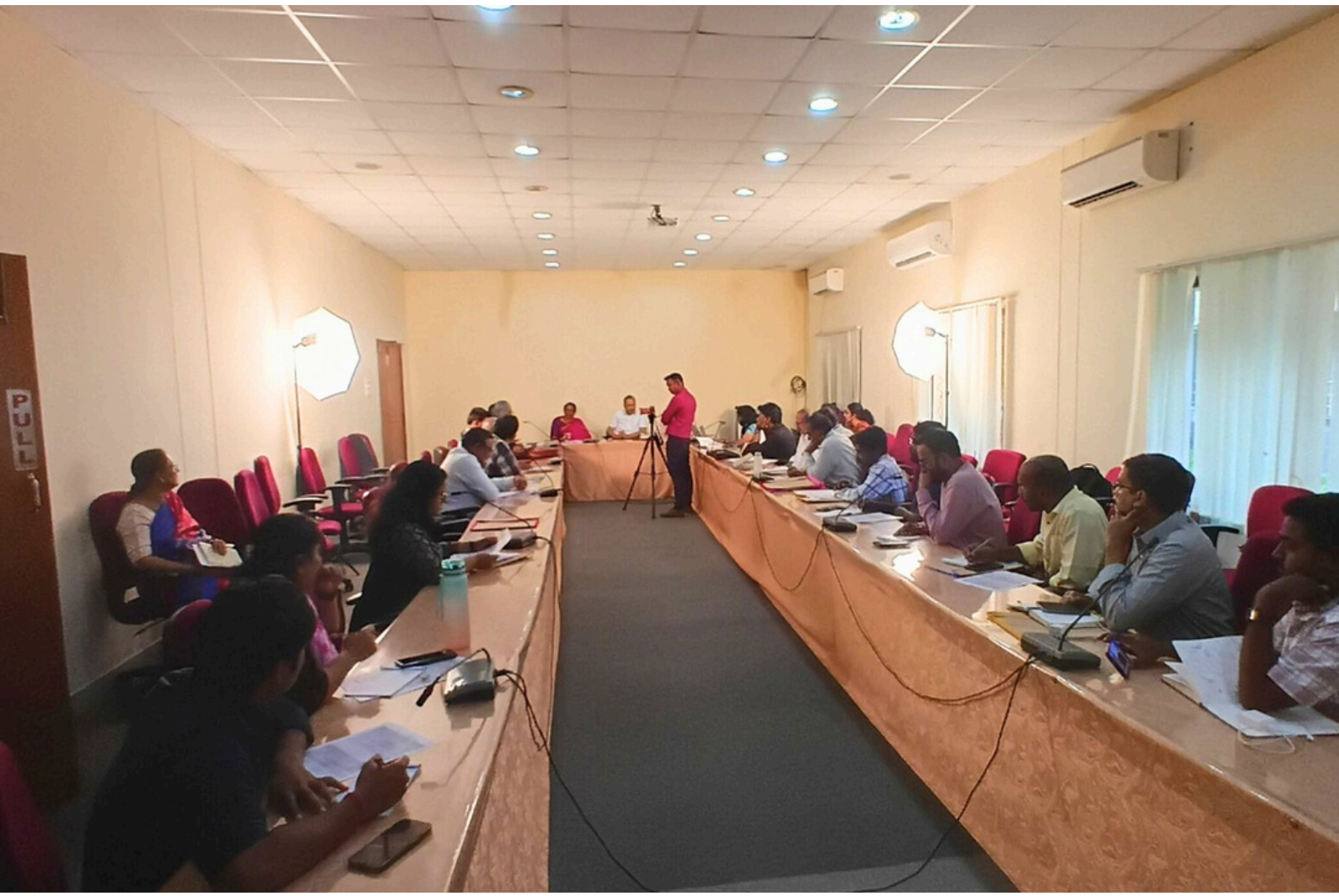
LIST OF ABBREVIATIONS

1. ADB – Asian Development Bank
2. BEE – Bureau of Energy Efficiency
3. CCS – Carbon Capture and Storage
4. CESS – Centre for Economic and Social Studies
5. CFA – Centre for Financial Accountability
6. COP – th Conference of Parties (UNFCCC)
7. CSR – Corporate Social Responsibility
8. DISCOM – Distribution Company
9. DSM – Demand Side Management
10. DT Metering – Distribution Transformer Metering
11. EIA – Environmental Impact Assessment
12. EV – Electric Vehicle
13. FTCCI – Federation of Telangana Chambers of Commerce and Industry
14. GHG – Greenhouse Gas
15. GHMC – Greater Hyderabad Municipal Corporation
16. KUSUM – Kisan Urja Suraksha evam Utthaan Mahabhiyan
17. KWH – Kilowatt Hour
18. NTPC – National Thermal Power Corporation
19. PAT – Perform, Achieve and Trade Scheme
20. PHWR – Pressurised Heavy Water Reactor (related to nuclear discussions)
21. PMGER – People's Monitoring Group on Electricity Regulation
22. PPA – Power Purchase Agreement
23. RE – Renewable Energy
24. REI – Renewable Energy Integration
25. RRDS – Rural Reconstruction and Development Society
26. SLDC – State Load Dispatch Centre
27. SWM – Solid Waste Management
28. TSDISCOMs – Telangana State Distribution Companies
29. ULB – Urban Local Body
30. WTE – Waste-to-Energy

OVERVIEW

The Telangana State Energy Finance Conference held on 25th September 2025 at the Centre for Economic and Social Studies (CESS), Hyderabad was co-organised by CESS, the People's Monitoring Group on Electricity Regulation (PMGER), Rural Reconstruction and Development Society (RRDS), Federation of Telangana Chambers of Commerce and Industry (FTCCI), and the Centre for Financial Accountability (CFA). This conference brought together stakeholders from diverse backgrounds including policymakers, academics, industry representatives, NGOs, activists, communities, and financial experts to discuss Telangana's evolving energy landscape.

The conference aimed to foster meaningful discussions, share experiences, understand, reflect, critically evaluate and discuss policies and needs of communities, consumers, and producers. The conference touched upon Telangana's Clean and Green Energy Policty 2025, power infrastructure, clean energy, conventional regulations, coal expansion, pumped storage hydropower development in Telangana, waste-to-energy incineration, and the critical role of finance in shaping sustainable energy futures for Telangana .



Panel Theme: Energy Finance in Telangana: Context Setting

Rapporteur: G.Thiloth Rao (Research Scholar, CESS)

Dr. Vishvaja, CFA, welcomed the participants, and gave a brief context to the conference.

Key Speakers and Contributions

Opening remarks: Dr. E. Revathi, Professor and Director, CESS, chaired the session. Prof. set the context by emphasizing on the issues and challenges for sustainable energy transition. Highlighting Telangana's rapid energy needs and ambitions, Prof. emphasized the importance of transitioning from traditional to clean fuels. She further emphasized the importance of having a policy framework for clean energy (especially solar), and the critical need for decentralized and community-produced energy. She also stressed the unique challenges faced by Telangana as a key coal-based power producer and advocated for a just transition with strong policy support. Prof. Revathi said that the method to transition would involve a trade-off across energy mix. Further, among various factors which would play a role in the energy transition, finance and land would play an influential role.

First Speaker: Mr. Joe Athialy, Executive Director, Centre for Financial Accountability
Mr. Athialy spoke on past conferences on Energy Finance conducted by the CFA. He stressed on the importance of having state-level conferences. He said, such conferences were able to bring together multiple stakeholders together to discuss various aspects of the energy of energy sector. He further said, the conference was important in the context of Telangana's leadership in decentralized renewable projects. The conference was significant as it was able to bring together academics, policymakers, industry, and civil society.

Second Speaker: Dr. Narsimha Reddy Donthi, Public Policy Analyst, People's Monitoring Group on Electricity Regulation
Dr. Donthi's presentation was titled "Energy Transition and Development: Telangana's Priorities". He began his remarks on regulatory and the Centre-state issues concerning energy sector. He highlighted the severity of energy sector's contribution to GHG emissions, and then discussed COP29 in the context of climate finance.

He provided a comprehensive overview of the state's electricity scenario, discussing energy mix (71.8% coal, 14.9% solar, 5.1% hydro, 2% wind, and others), consumption patterns (with 28% agriculture, 24% industries, 19% residential, 10% commercial, 6% lift irrigation and 13% others). He stressed on the necessity to link energy growth with human development outcomes. He analyzed the expected rise in per capita income in Telangana from 1,930 Kwh/capita/year in 2024 to 7,100 kwh/capita/year in 2034 to reach 1 trillion economy. However, he said that there were pitfalls in achieving the consumption plan such as urbanization, equity, climate change and newer technologies. Importantly, he said that such transition is contingent upon the direction of the economy. Such direction should include long term planning regarding dechemicalization,

electrification and decarbonization. He further raised critical concerns regarding state and utility debt burdens, the hidden costs of externalized environmental impacts, and the vulnerability to extractive financing models. Of the economic sectors, he stressed on energy consumption in agriculture sector. For Telangana, he said, it is important to reduce energy use (across all inputs) in agriculture, improve efficiency in post-harvest processes and reduce foodgrain losses. He proposed creating natural energy cycles and agroecology-based natural farming. He also proposed innovative strategies such as turning every Telangana citizen into an energy investor to promote sustainable financial models.

Third Speaker: Mr. Vinod Kumar Agarwal, Chairman, Energy Committee, Federation of Telangana Chambers of Commerce and Industry

Mr. Agarwal gave an overview of FTCCI, and shared his experience of RE sector. He suggested that a blended finance model is required where the collaboration of banks, institutions, philanthropy, etc. becomes possible.

Keynote Speaker: Mr. Navin Mittal, Principal Secretary, Energy, Government of Telangana

Mr. Mittal opened with a statement, "It is my fundamental belief that, both, finance and energy back each other". Mittal provided insights into perspectives on policy innovation, regulatory challenges, and the importance of cross-sector dialogues that bring together NGOs, industry, and policymakers. Mittal said India is going through an energy transition phase for the last 4-5 years. The total renewable energy capacity has exceeded non-renewable capacity, and India is now capable of providing 100 GW of solar panels everywhere. Mittal further said that there is going to be a coupling of three energy exchanges in India, to reap maximum benefits and better price discovery. He said it was necessary to transition in terms of energy efficiency also. In terms of pure economics, he said energy efficiency of fuel is X/4 or X/5, whereas the same for EV was 85%. He further said, in terms of pure economics, coal production is inefficient because coal mining in Telangana costs more than the final price of coal.

"For Telangana, the energy production and mix have its own challenges. The state is going through a phase where pumped storage cost is going to go up whereas battery cost is going to go down. For Telangana, storage is the main problem."
— Navin Mittal

Main Themes and Discussion Points of the inaugural session

The seminar traced the evolution of these dialogues at national and state levels, emphasizing - the need for state-specific policy calibration rather than adopting generic national targets.

- ***Energy Transition and Policy Challenges:***
  - The transition from fossil-based power to renewables in Telangana is driven by rising energy demand but faces several hurdles, including resource constraints (land, water), technical challenges of grid integration, and the economic burden of both state and utility-level debt.
  - Panelists highlighted that energy policy must reflect state-specific needs and resource profiles, not just national averages or diktats.
- ***Climate Finance and Investment:***
  - A major concern was the dominance of "extractive finance or predative finance" where large external investors seek short-term gains, emphasizing instead the need for local ownership and sustainable investment models, such as citizen-investor schemes.
  - The issues of climate finance, whether for decarbonization, new technology adoption, or resilience against heat and resource depletion, were discussed as central, requiring public-private collaboration.
- ***Just Transition and Agriculture-Energy Nexus:***
  - The complex agriculture - energy linkage in Telangana was explored, especially as agriculture now accounts for nearly 28% of power consumption, with electrification (including solar pumps) shaping crop choices and sustainability.
  - The need for eco-friendly, agroecological models that reduce reliance on chemical fertilizers and promote efficient resource use was stressed as essential for aligning the energy sector with the broader goals of food security and environmental sustainability.

Recommendations and Outcomes

- ***State-Centric Policy Innovation:***
  - Develop and implement energy policies tailored to Telangana's resource endowments, demographic trends, and unique economic challenges, rather than imposing national average-based benchmarks.
- ***Inclusive Financing Solutions:***
  - Enact policies enabling every citizen to become an energy investor, fostering more sustainable, locally rooted models for financing the energy transition.
- ***Focus on Agro-Energy Synergies:***
  - Encourage natural farming and usage-oriented energy planning that links energy efficiency, electrification, and reduced chemical input in agriculture.
- ***Deeper Sectoral Integration and Cross-Sector Dialogue:***
  - Promote ongoing cross-sector engagement encompassing government, industry, NGOs, and academia to bridge policy and practical gaps and accelerate effective transition strategies.
- ***Policy Monitoring and Follow-Up:***
  - The seminar resolved to generate a summary policy report for submission to the state government, with suggestions on clean energy incentives, investment models, grid modernization, and careful monitoring of sectoral debt burdens and environmental impacts.

CHAPTER 1

Session 1

Panel Theme: Telangana's Clean and Green Energy Policy 2025 – Overview, Regulations, and its Implications

Rapporteurs: Bharath Naroju (Research Scholar, CESS) & Gantla Geetha (Research Scholar, CESS).

The session was **moderated by Dr. Jeena T. Srinivasan** (Professor, Centre for Economics and Social Studies)**.** Prof. Jeena Srinivasan introduced the session and the panelists.

Panelist 1: Sri. Chandrashekar Reddy, Media Advisor (Southern India), Bureau of Energy Efficiency.

The speaker's topic was titled, "Overview, Strengths and Limitations of Telangana's Clean and Green Energy Policy 2025. The panelist emphasized that energy conservation in India is both a technological and behavioural challenge. Despite major investments in generation and renewable energy, energy wastage remains widespread, reflecting a lack of consumer awareness and ethical responsibility. According to the panelist, habitual behavioural changes and awareness campaigns can reduce energy consumption by 5–30% without additional investment, highlighting the need for targeted education and responsible energy practices.

Sri. Chandrashekar Reddy, Media Advisor (Southern India), Bureau of Energy Efficiency.

"Significant energy savings, can be achieved without any investment, simply through awareness and habitual behaviour change. IED was revolutionary technology to save energy"
- Chandrasekar Reddy

- ***Energy Efficiency Schemes and Financial Incentives:*** The panelist highlighted several government programmes aimed at improving energy efficiency:
  - Perform, Achieve, Trade (PAT) Scheme: Encourages industrial energy efficiency and trading of energy consumption certificate ' (E-certificates). It has led to ₹45,000 crore in power bill savings and 25,000 million tons of oil saved.
  - Standards & Labelling Programme: Promotes adoption of energy-efficient appliances, saving ₹52,000 crore in electricity costs.
  - Ujjwala Scheme: Distribution of 9W LED bulbs, has saved ₹20,000 crore, reduced carbon emissions, and accelerated adoption of IED technologies.
  - Ujjwala Scheme: Provides clean cooking fuel, resulting in ₹28,000 crore savings nationally.
  - Overall, these programmes collectively achieved total savings of ₹2 lakh crore.

The panelist noted that the Bureau of Energy Efficiency (BEE) under the Ministry of Power also supports MSMEs through 3–5% interest subvention schemes, particularly via the recent ADITI scheme, facilitating adoption of energy-efficient technologies. Successful implementation requires multi-stakeholder coordination among industry, academia, bankers, and civil society.

Behavioural Change and Awareness:

The panelist emphasized that consumer awareness is as critical as technology. Significant energy savings can be realised without capital investment by promoting habitual energy-conscious behaviours. Public campaigns, educational initiatives, and continuous engagement are key to instilling a culture of energy responsibility.

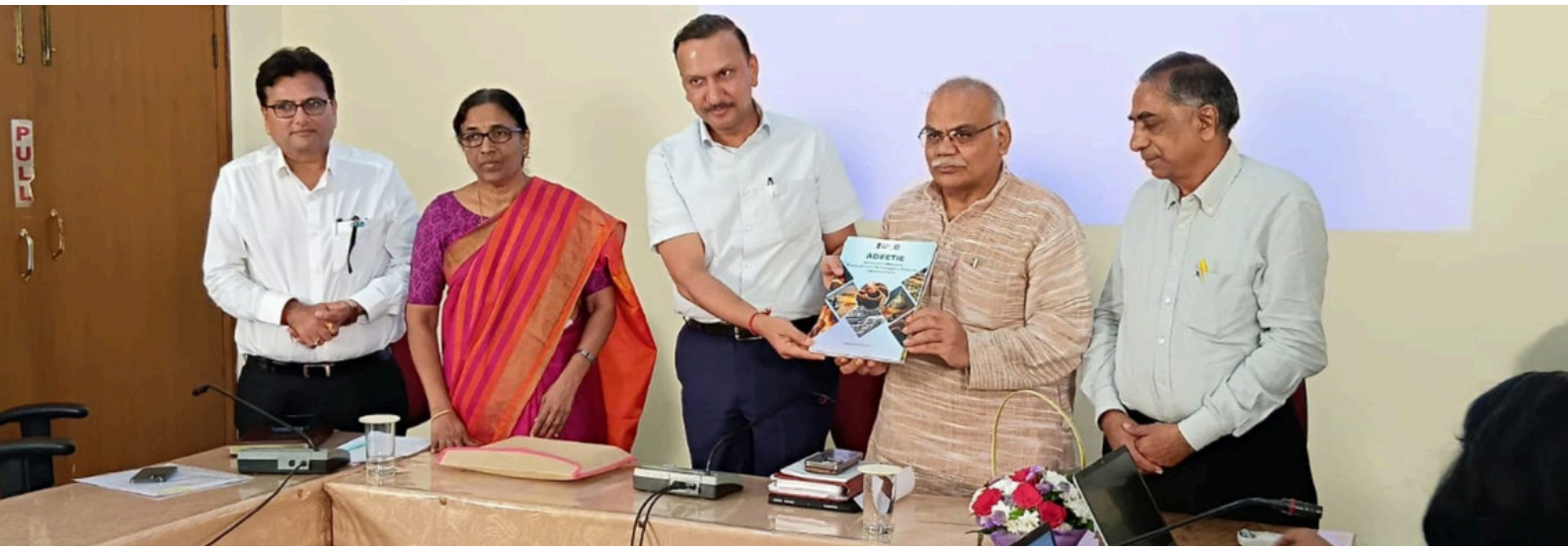
Policy and Strategic Initiatives:

The panelist highlighted Telangana's Green and Clean Policy, which aims for 20,000 MW by 2030 and 40,000 MW by 2035. While solar energy provides only 6–7 hours of electricity daily, integrating distributed generation, storage solutions, and hybrid systems can optimise supply. Government schemes under BEE and the National Mission on Energy Efficiency provide systematic monitoring, financial support, and incentive frameworks.

Recommendations:

- Strengthen state capacities and DISCOM implementation mechanisms.
- Promote behavioural change through awareness and education.
- Ensure cost-effective electricity services without compromising quality.
- Leverage carbon markets, green bonds, and energy efficiency certificates to incentivise low-carbon investments.
- Facilitate multi-stakeholder dialogue among industry, academia, financial institutions, and civil society for effective governance.

The panelist concluded that India's energy efficiency transition has significant potential to reduce costs, lower carbon emissions, and promote sustainable development. Programmes such as PAT, Ujjala, Ujjwala, and standards & labelling, combined with education and stakeholder engagement, can transform energy consumption patterns. A concerted, ethical, and multi-pronged approach is essential to achieve India's energy efficiency and climate goals while providing reliable and affordable electricity to all citizens.



Panelist 2: Mr. Sreekumar N, Energy Policy Analyst and Member – Prayas- Energy Group.

The topic was titled, "Telangana electricity sector policy and regulatory challenges". India's energy sector is at a critical juncture, balancing rising demand, coal dependence, and the imperative of sustainability. The panelist emphasized that with 72% of electricity still coal-based, reliance on coal is expected for the next 10–15 years, underscoring the need for cleaner technologies, flexible operations, and standardisation of coal quality. At the same time, renewable energy (RE) and storage technologies offer economically viable, low-carbon solutions, particularly distributed solar and wind.

Mr. Sreekumar N , Energy Policy Analyst and Member – Prayas- Energy Group.

"We cannot afford to miss the green transition train. There is a lot to be done for equitable distribution of power."

- Sreekumar N

Demand Forecast and Management:

The panelist noted that accurate forecasting across domestic, agriculture (~30% of demand), commercial, and industrial sectors is essential. Transitioning from feeder-based to Distribution Transformer (DT) metering, combined with smart metering and Demand Side Management (DSM), can optimise consumption. The panelist highlighted the importance of adapting infrastructure for electric vehicles and electrified cooking, while Time-of-Day (ToD) tariffs and DSM committees can incentivize off-peak usage.

Power Purchase and Coal Capacity:

According to the panelist, effective planning requires capacity addition, dispatch modelling, and management of annual surpluses and shortages. Flexibility in coal thermal operations, including reduced technical minimums, is crucial. The panelist emphasized prioritising coal quality and phased retirement of older units, while leveraging low-cost regions such as Chhattisgarh to optimise supply.

Renewable Energy and Storage:

The panelist stressed the need for phased deployment of 4,000 MW distributed psolar under KUSUM-A, improved RE forecasting, retrofitted pumped hydro, and decentralised battery storage. Modelling confirms that solar and wind remain the least-cost supply options. Retrofitting coal plants to a 40% technical minimum reduces dependency on central generators, mitigating the need for expanded inter-state transmission.

Regulatory and Financial Measures:

The panelist highlighted the importance of a strong regulatory commission with full staffing,

hybrid hearings, consumer representation, and capacity-building. With utilities facing cumulative losses growing at 13% CAGR, tariff freezes, partial subsidies, and arrears projected to exceed ₹30,000 crore by 2024, the panelist recommended a multi-departmental reform study to address financial challenges.

Policy, Quality, and Consumer Needs:
The panelist stated that policies must integrate interim reviews, harmonisation of state-level clean energy plans, and resource adequacy guidelines. Public hearings on Quality of Service (QoS) and safety interventions are vital, given that fatality rates in the distribution sector remain above the national average. Consumers expect financially robust, technologically advanced, environmentally sustainable, and socially sensitive energy services.

Smooth and Fair Transition*:*
The panelist concluded that a just transition should follow the principles of Decarbonisation, Decentralisation, Digitalisation, and Democratisation, ensuring equitable benefits for all stakeholders.

Conclusion*:*
The panelist emphasized that by strengthening demand forecasting, modernising coal capacity, scaling renewables with storage, improving financial discipline, and empowering regulatory frameworks, India can achieve a resilient, inclusive, and low-carbon energy future, balancing economic growth, social equity, and environmental responsibility.

Panelist 3: Ajay Mishra, IAS (Retd), Former Special Chief Secretary, Govt of Telangana
The topic was titled on "Renewable Energy Landscape in Telangana". The panelist emphasized that while renewable energy is gaining prominence in global and Indian energy markets, coal continues to dominate India's energy landscape, with production rising by 12–13% annually. Given that coal is unlikely to disappear in the next 7–10 years, investment in pollution-reducing and efficiency-enhancing technologies was highlighted as a crucial interim strategy to make the coal sector less polluting.

Ajay Mishra, IAS (Retd),
Former Special Chief Secretary,
Govt of Telangana

"Mega projects look good when announced but has hidden costs in it. The future of energy lies not in mega-projects alone, but in decentralised mini-projects, rooftops solar panels, and just transitions. Coal may not vanish tomorrow, but the path to sustainability begins with making it cleaner today".
- Ajay Mishra

It was observed that while the coal industry in India is often criticized for its contribution to pollution, insufficient attention is given to the top 10 global corporations that are responsible for a disproportionately large share of emissions.

It was observed that while the coal industry in India is often criticized for its contribution to pollution, insufficient attention is given to the top 10 global corporations that are responsible for a disproportionately large share of emissions. The discussion underscored the vast untapped potential of the rooftop solar ecosystem in India. The successful pilot project in Indore—where poor households were provided with EV two-wheelers, 3KW solar panels, and electric induction stoves, leading to savings of nearly ₹2,000 per family—was cited as an innovative model that should be scaled nationwide. Similarly, coal companies using their surplus revenues to install solar plants on wastelands was welcomed as a positive step.

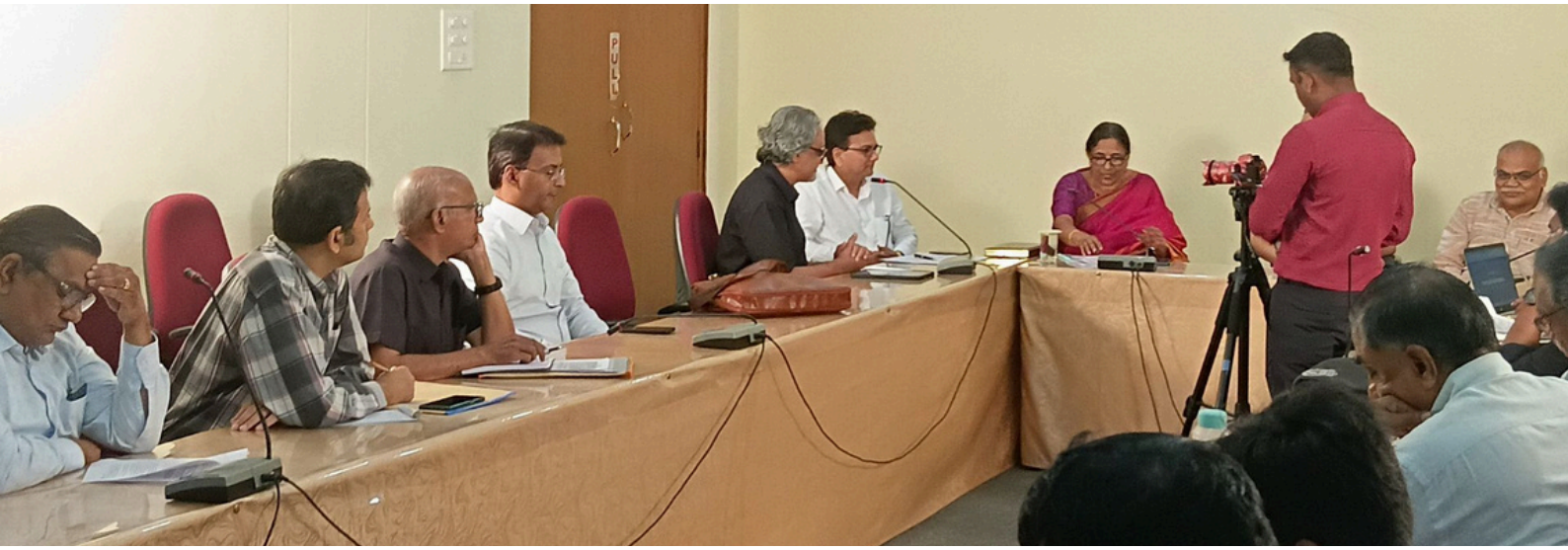
Concerns were raised over India's reliance on large-scale transmission projects, such as the recently announced ₹6,700 crore project in Telangana. Instead, panelists advocated for decentralized rooftop solar systems and mini-projects, which would reduce hidden costs associated with transmission and distribution while promoting local resilience.

The panel also stressed the importance of diversifying into green bonds and carbon credit markets. While the global green bond market stands at nearly $7 trillion—80% dominated by Western economies—China has tapped $1 trillion, whereas India's participation remains marginal at just $1 billion. Scaling up green finance was seen as imperative.

Other key themes included:

- Behavioural change: To address the rebound effect of clean energy (increased consumption due to cheaper electricity), panelists emphasized awareness and responsible usage of appliances such as air conditioners, which are often overused in India.
- Agricultural metering: Introducing metering in agriculture was suggested as a means to regulate excessive energy use.
- Solar waste management: While concerns about solar panel waste were acknowledged, it was noted that recycling technologies are advancing, with potential to recover up to 90% of materials.
- Nuclear energy: The role of nuclear power through mini-reactors, with private sector involvement, was proposed as another avenue for clean energy transition.
- Just transition: The human cost of renewable transition, particularly job losses in the coal sector, was acknowledged. The need for a just and humane transition ensuring alternative livelihoods was emphasized.

In conclusion, the discussion highlighted that India has a rooftop solar potential of nearly 100 GW, of which only a small fraction has been utilized. Effective implementation of existing policies, supported by decentralized renewable projects, behavioural change, financial innovation, and a just transition framework, will be critical to achieving a sustainable and equitable energy future.



CHAPTER 2

Session-2

Panel Theme: Conventional Energy Growth & Regulation and Hydro Energy Landscape in Telangana

Rapporteurs: Ediga Ravindra Goud (Research Scholar, CESS); Kuruba Kumar (Research Scholar, CESS); Ch. Sreevidya (Research Scholar, CESS); Dharam Soth Praveen (Research Scholar, CESS).

The session was **moderated by Ms. Meera Sanghamitra** (Member, National Working Group, National Alliance of People's Movements). Ms. Sanghamitra introduced the panel, and discussed previous sessions' deliberations before beginning the current session.

Dr. Venugopal Rao, Senior journalist and Convenor, Centre for Power Studies

Panelist 1: Dr. Venugopal Rao, Senior journalist and Convenor, Centre for Power Studies.

The speaker's topic was titled "Conventional Energy Regulation in Telangana". Dr. Rao highlighted that previous speakers mentioned conventional energy regulation in Telangana. The regulatory commission regulates all aspects. At the same time, the policies and directives of GoI are regulating indirectly, and the impact is on thermal power also. Therefore, it is important to take holistic view.

Demand Curve and Power Mix

All forms of power, conventional or non-conventional, are required in tune with the fluctuating demand (seasonal). Therefore, the power purchase agreements of DISCOMs must align with demand as far as technically practical. Entering into power purchase agreement unrelated requirements would lead to surplus power, and avoidable burdens on the consumer. The current financial year 2025-26, Telangana DISCOMs have projected availability of 1,23,631 million units against the requirement of 95,127 million units, a surplus of 28.84%. That is where the successive governments have been in maintaining a harmonious balance between demand curve and power mix. However, regarding power purchase agreements, the regulatory commission is in an unfortunate position, wherein it simply relies what the DISCOMs submit or government say, without understanding the ground reality, or studying past trends, present conditions and future requirements. "A lack of sincere evaluation has led to the current situation". As far as Telangana is concerned, there is not a single instance of rejecting any power purchase agreement in the last 11 years.

Fundamentally, power purchase agreements have to be looked from three angles:

- Whether that power is required?
- Whether the tariff of that project is realised through real competitive bidding?
- Are there any alternate avenues from where the state can get at relatively cheaper prices?
- These aspects are not being concerned by the commission, and this is the reality of both the Telugu states. The situation is getting precipitated further. Yadadri, Bhadari, 4000 MW solar under PM KUSUM, 800 MW of NTPC and 20000 MW under clean and green energy policy under solar power are going to be added further to the current capacity. When they do come up, what will be the consequences and have to be evaluated further.

Renewable Energy and Thermal Energy

However, the real problem arises when it comes replacing thermal power with renewable power. Because, surplus power is of high price by virtue of "the principle of merit order dispatch" (where the power with highest variable cost is regarded as surplus power). In such cases, surplus power can only be sold at a lower price in the market. Another problem is the penetration of renewable energy. The first commission in Telangana was very cautious in determining the percentage of renewable energy.

The problem with renewable energy and thermal is renewable energy is muster up, it had to be purchased regardless of whether DISCOMs require it or not, despite of availability of cheaper source. In order to purchase, Telangana has to slow down on thermal power purchase. In Andhra Pradesh, 92-95% of backdown was on purchase on renewable energy, despite of availability of thermal due to indiscriminate entry into power purchase obligations under the direction of union government. As a result, Andhra Pradesh was losing more than ₹5,000 crores per annum.

Centralisation

The very approach adopted by the Prime Minister to not discuss with the cabinet or discuss in the parliament, or consult with the states, is wrong. As implementing agencies, states were to follow the targets blindly. Such unilateral decisions question the competency of state government and state regulatory commissions acting in the interest of its people– "Super serious arrogance with which the government of India is acting, exercising authority without any responsibility and accountability for the adverse consequences".

Costs and Losses

Further, renewable energy cannot meet peak demand. Despite having surplus energy, the DISCOMs are constrained to purchase additional power in the exchanges and open market at higher cost. These exchanges have become platform for legalising black market. Furthermore, apart from the faulty decisions of the governments, regulatory failure and regulatory capture also have come into play. These developments, apart from tariff hikes and subsidies in the name of fuel charge adjustment, thousands of crores of additional burden are being poured onto consumers. Despite this, the DISCOMs debts are in 1 lakh crores and substantial pending dues of the consumers and government.

Concluding Remarks

The very purpose of regulatory commission, to oversee development of power sector in an orderly manner, protecting the interests of the consumers within the confines of the law, has failed in Telangana.

Panelist 2: Sri. Sagar Dhara, Senior Environmental Analyst and Author

Sri. Sagar Dhara, Senior Environmental Analyst and Author

"Energy is the life of all processes. If you don't have an energy flow all processes, come to an end. Energy controls not just our lives, it controls politics. What do you want, development or good life"?

- Sagar Dhara

The speaker's topic was titled, "Coal Energy Sector in Telangana".

Bane of coal

- The risk analysis showed that the estimated excess deaths was around 1500. Fly ash contains heavy metals which cause cancer, COPD, among other health hazards.
  - In a study done 30 years ago, in Vizag, the study found elevated risks of cancer, mercury in cattle milk.
  - The acidic gases thermal plants throw out affect crops. Immediate impact is witnessed in mango, etc. whereas the impact is witnessed much later in paddy. Impact on crop loss extends to up to 70 kms.
  - The water bodies die as PH does down.
  - In many temples in south India, old monuments are erased off.
  - Pollutants from thermal plants travel upto 2000kms. When such pollutants are deposited in acidic soils, such as western and eastern ghats, the result is a forest dieback. Deccan plateau is in a very risky situation.

Growth & Development

What do you want, growth or development? Without energy, no development is possible.

- Coal is still providing 80% of the energy in Telangana. Essentially, India is still going to be dependent on coal for the next 2 decades despite of the rise in renewable energy.
- In Telangana, the thermal plants in present capacity, it is giving around 37000 GWh.
- That is emitting approximately 37 MT of CO2.
- The total forest area or cropland in Telangana sequesters only 10-15% of CO2.
- Based on emitter pay principle, the externality cost is:
  - $100/TCO2 = ₹32,200 crores
  - $160/TCO2 = ₹51,520 crores
- Pump storage in Telangana leads to biodiversity losses, and possibility of landslides
- Who benefits from coal use?
  - Consumption expenditure of bottom 10% is decreasing, whereas consumption of top 10% is increasing.

Limits to Growth: 3 Tipping points

1. ***Peak oil, no alternative, exhaustion of non-renewable minerals.*** Energy Return on Energy Return: As long as the energy invested to get one joule of energy is low, say 20-30%. It is viable to extract the energy and use it. However, when one uses one joule and gets less than 10

joules, then it is unviable. When the return is only 5 joules, then the society is close to collapse. Some studies say we are at 15, and latest studies show we are probably closer to 12-13. That is, we are nearing a possibility where it is difficult to get energy. Localised civilizational collapses such as Mayan, Polynesian and Indus are energy collapses. The current crisis is global.

2. ***Climate change****:* Global north (16% of global population) has consumed 70% of the total fossil fuels. South Asia is most vulnerable. Factors which impact health are heat stress, floods and landslides, heat-related chronic kidney disease, dengue, malaria, water stress and drought, and malnutrition.

3. ***Inequality****:* between people and nations. Economics is based on war against nature and theft from working people. Free market capitalism is based on the need to maximise gain. Anthropocentrism and class society are the issues which needs to be tackled.

Solution*:* powering down, and equity.

Implications

- Technological shifts from high energy to low energy systems and non-renewable (abiotic) to renewable materials (biotic).
- The problem in Telangana cannot be solved by Telangana alone; a rainbow coalition is necessary to bring radical changes.

Panelist 3: Dr. Pradeep Kumar Yemula, Associate Professor, Electrical Engg. Dept IIT-H, and Mr. Raja Shekar Nalluri, AE, TG-SLDC, TGTRANSCO; PhD Scholar, IIT Hyderabad.

Dr. Pradeep Kumar Yemula, Associate Professor, Dept of Electrical Engg., IIT-H

"Pumped storage is not just engineering – its financial insurance, policy compliance, and energy security all in one. It is the quiet backbone of tomorrow's grid. For Telangana pumped storage is not just a project – it's the promise of a brighter, reliable future".

– Pradeep Kumar Yemula

The speakers' topic was titled, "Pumped Storage Hydro Power Development in Telangana".

Overview

- Telangana's total installed capacity is approximately 496 GW (as on 23rd September, 2025).
- Energy Mix: Fossil Fuels-49.3%, Renewable Energy – 50% & Nuclear Power-1.8%.
    - Telangana's hydro capacity is 2442 MW. Telangana has two hydro plants: Srisailam Left Bank and Nagarjuna Sagar. Both have the capability in operating generation and pumping.
- Challenges: Grid Integration and Storage.

Energy Storage

Given the problems in generating RE as discussed by Dr. Venugopal, storage is essential for reliable operation

Pumped Hydro

- Advantages: Flexible/long duration storage, long lifespan, low operating cost, and stable grid. Pumped storage acts as a giant natural battery. Pumped hydro can be coupled with solar, wherein excess solar can be used for pumping.
- Limitations: High capex, site specific, and environmental and land issues.
- Telangana has a success rate in balancing the energy demand, because variability in power generation exists for all modes of energy generation which requires balancing variability. Variability drives the need for flexible storage. For instance, Nagarjuna Sagar uses solar during peak hours.

Key takeaways

Hydro offers flexible resource, frequency, peaking reserves, large grid storage and enables renewable integration and reliable operation.

Q&A: Key Points

1.Question by Vishvaja: In the context of growth and development, natural statistics show that India is an energy surplus country. In this context, is it necessary to expand?

- Venugopal: It is necessary to back down. The overweighing purpose of government of India has been to provide more and more business opportunities to private capital or commercial at the cost of environment, consumers and social interests.

- Sagar Dhara: It is agreed upon that the question is about sustainability and equity. The question is about how much nature can be used or how much injury can be caused. Studies by scientists suggest that it is necessary to reduce energy by 50% or 90%.

CHAPTER 3

Session -3

Panel Theme: The Waste-to-Energy (WTE) incineration infrastructure in Telangana

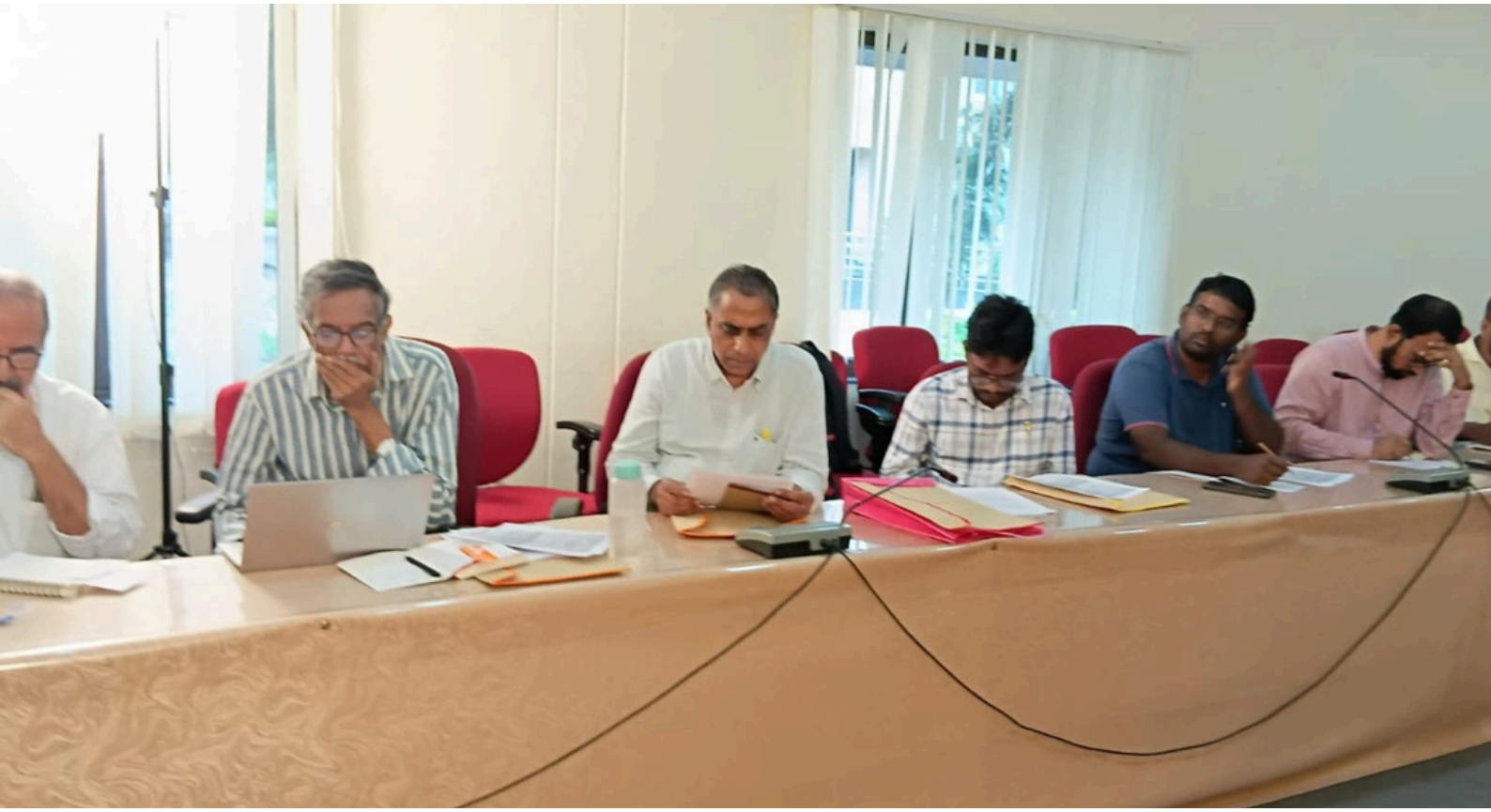
Rapporteurs: Ediga Ravindra Goud (Research Scholar, CESS); Kuruba Kumar (Research Scholar, CESS); Ch.Sreevidya(ResearchScholar,CESS); Dharam Soth Praveen (Research Scholar, CESS)

The session was **moderated by Sri. Vamsi Shankar Kapilavai** (Programme Lead – Environment and Climate Action, Citizen consumer and civic Action Group)

Mr. Kapilavai begins with a question, "Does anyone have a ballpark figure of how much waste Hyderabad generates?" The answer was 8000 metric tonnes. He said, if one lines up the garbage trucks filled with 8000 metric tonnes, the chain would stretch from Hyderabad to Vijayawada. He said the solution seems to be waste energy, but at what cost? Does the cost take into account emissions?

Sri. Kapilavai said from this session, main objectives are:

1. What lessons does India experience from its WTE?
2. How does Hyderabad's push for WTE intersect with its climate, air and quality challenges?



Panelist 1: Mr. Chythenyen DK, Senior Research Associate, Centre for Financial Accountability.

Overview

The speakers' topic was titled, "Waste-to-Energy (WTE) Incineration in India". The speaker begins with three questions: What? Why? What else?

- The waste generation in the present is different from centuries past. The waste in the past was composted, and used for agriculture. The current waste is different. The current waste is predominantly plastics.
- Several factors go into production of electricity in a WTE plant:
  - Calorific value of the waste: is it food, plastic, paper or something else?
  - Air-fuel ratio for proper combustion.
  - Speed of combustion: should not burn to fast or too slow.
  - Temperature of the furnace: if it burns less 850 degrees Celsius, it releases a lot of harmful chemicals.
  - Minimum retention/residence time.
- WTE is essentially a thermal power plant which works on garbage. The only difference is that garbage has low calorific value.
  - Major Outputs of a WTE incinerator are hazardous chemicals and emissions, and poorer urban local body.
  - Minor Output: Electricity. A 2000 tonnes per day WTE would approx. produce 15-20 MW of power which is very less compared to thermal plant.

Economic Cost

- High capex. ₹33 crore per MW. ULBs pay 2000 per tonne just to burn the garbage (excluding transportation, collection cost, transportation of bottom and fly cash cost).
- Further, in Delhi, WTE plants get subsidies in the form viability cost funding to the tune of 75% from state and central governments. They get plastic credits, that is the incinerators get money to burn garbage. On the contrary, in EU, WTE plants pay carbon tax.
- Costliest form of electricity at ₹7+ per unit.

Health Cost

One plant in OKHLA (New Delhi), impacted the health of one million people. There are documented cases of cancers, respiratory and kidney issues.

"Waste is not a management problem. It is a production problem."

– Chythenyen DK

Mr Chythenyen DK, Senior Research Associate, CFA

Compliance

India has 21 WTE plants, and none are compliant with SWM rules 2016.

WTE in EU and the US (Global North)

- EU has stopped subsidies to WTE plants. The global north is moving away from WTE. Last WTE in the US was built in1996. Many have closed down WTE plants because they are costly.
- However, after 2016, 89% of WTE plants by CNIM Martin, a leading WTE company, were built in the global south. In countries such as India, Indonesia, Philippines, etc.
- WTE projects account for 94% of the climate finance for methane abatement in solid waste from 2021 to 2022.

What else?

- Zero waste cities as a concept is a way forward for waste management in our country. It is about redesigning systems, where waste is not generated in the first place. Prevention is at the heart of zero-waste programme.
- Benefits of zero-waste for a metropolitan city such as Chennai range from CO2 offset, generating organic manure, waste reduction improvements in health and financial savings.

Panelist 2: Mr Ruchit Asha Kamal, Ecological & Social Justice Activist, Climate Front Hyderabad

"WTE plants, across India, have a history of killing workers' lives".

– Ruchith Asha Kamal

Mr Ruchit Asha Kamal, Ecological & Social Justice Activist, Climate Front Hyderabad

Overview

The speakers' topic was titled, "WTE in Hyderabad and Climate Context". Speaker highlighted that there is not much discussion on climate crisis. In the last three years, Telangana witnessed number of floods. Recently in Kamareddy district. 76 mandals, 6-8 districts are highly vulnerable due to heatwaves. The climate highlight is that the state witnessed a tornado in Mulugu district, a consequence of climate change.

Waste to Energy in Telangana – Jawahar Nagar WTE plant

- Solar power cost ₹2.40 per unit, thermal power cost ₹4.00 per unit, whereas WTE power cost ₹6.87 per unit. WTE electricity is the most expensive.
- Jawahar Nagar has turned into a toxic town. The plant is in violation of EIA guidelines as the plant is located within 500 meter of residential area. Jawahar Nagar WTE and waste management plant is spread across 351 acres.
- The establishment of the plant was supposed to decrease the waste by converting into energy. However, the size of the garbage has increased year by year. The people have developed various health issues.
- Further, the ground water testing near the plant concluded that the water was polluted. Worker's safety is completely neglected in Jawahar Nagar plant. WTE plants, across India, have a history of killing workers' lives.

Current Position

WTE is categorised as blue category industry. However, WTE is an ecology destruction model, and it is in no way environmental essential service system. It is necessary to deny the categorisation

Future Plans

Telangana plans to further extend scope of the current WTE plants and build new ones.

Discussion

P. Shelesh Sandeep Raj (President, Navodaya Welfare Society), resident of Jawahar Nagar shared his experience. Translation from Telugu to English is as follows:

We have many senior citizens here. So, I want to ask few questions. Sir, in year 1991, what was the Hyderabad's population? Or 2001, 2011?

In 1991, the Hyderabad's population was 43,59,262. In 2001, it was 56,38483. In 2011, it was 76,74,689. The growth rate of population was 20%. So, in 2021, census did not happen due to Covid-19. Nonetheless, we can assume that Hyderabad's population would be around 1crore, given 20% growth.
We will now come to garbage generation. In 2011, garbage generation in Hyderabad it was 2800 MT. If garbage had to grow with population, the growth should have been 20%. That is, in 2025, garbage generation per day should be around 4000 or may be 5000 MT. However, right now, 8000 MT of garbage is generated every day in Hyderabad.

When we observe what kind of garbage it is. For instance, garbage in hotels and vegetable markets goes to animal feeding. Slaughter house waste goes to fish feeding. Hospital waste, e-waste and industrial waste go to Dundigal plant. So, what is left? Clothes and papers? How many clothes are there, how many papers are there? If you closely, how many of us subscribe to physical copies of newspaper? We subscribe to e-copies only nowadays! So, where is this 8000 MT garbage being generated? If you observe closely into the garbage bins in your own homes, you will observe that 70% of the garbage is plastic!

In 2023, central government gave us a strict law. Plastic below 40microns or single use plastic is completely banned in this country! Where is the implementation? How many have you seen Britannia biscuit packet? Is it 40 microns? No! Why isn't government tying up with MNCs? Why aren't they under scrutiny. Kurkure packets are there, Lays packets are there. Even cigarettes packets, which collect 200+% tax, have a plastic wrapping? How many microns is that plastic wrap? Where do they end up? They end up in the dumping yard.

The waste to energy plant was set up in my area in the year 2023. It was said to us then that WTE plant was being installed to reduce the mountain of garbage (dumping yard in Jawahar Nagar). They said the garbage would go away. There was a sense of happiness in our hearts. Because, we struggled all these years, we hoped good days were coming.

However, , in practice reality was something else. I am the real example of this. Look at my eyes (blood-shot eyes). They are red! Because of whatever smoke is emitted in the air, we got variety of diseases. I am the standing proof! My eyes are always red. Many of the families have got respiratory and skin problems. Brother (Ruchit) has shown a picture. I would like to show you some pictures (pulls a photo out of a large folder). I have taken pictures of skin diseases, of back,

waist. We must have solutions, right? Where do you we go? We should visit a good hospital, or a noted doctor, to find solutions.

In Begumpet, near CM's camp office, every Tuesday and Friday, we have a Mulaqaat (meeting). There are doctors there, highly educated and big leaders will be there. We went there. We presented our case and said that we are developing certain condition, and we want a solution. Thereto, we could not find solutions. Why are we having these problems!?

Wherever leachate is formed. In such dangerous waters, in colonies, during rains, when we step foot into the muddy waters, we developed these skin diseases. Moreover, till 2023, we did not have access to clean drinking water. Earlier, people drank ground (borewell) water. People developed health issues due to this too.

Jawahar Nagar was green till 2022 (shows a photo taken during 2022, Covid-19 period). Meaning, there was distance between garbage and residential areas. What is this distance? We must refer to the guidelines. According to the guidelines released on 14th April 2019, dumping yards or landfilling areas must be located at least 500 meters or half a kilometre distance from residential areas. Do we see this situation in Jawahar Nagar?

In Jawahar Nagar, 97% of the people belong to BPL. They are far away from education. They cannot even understand, the atrocities committed upon them. These practices occur always in areas where there is substantial BPL population, the voiceless. In case, when we question the government or Ramky (waste management company) authorities? There is a specific answer they give, "dumping yard came first, or houses came first? This is all government land; you people have encroached the government lands".

If we put aside, whether the poor have encroached the government lands or bought it. Government itself has allocated Rajiv Gruha Kalpa houses to the poor, which was 100 metres from the boundary line, and 2BHK housing for the poor people, which were constructed 250 metres from the dumping yard by the government. But what do the guidelines say? Didn't the government build these houses?

As per central pollution control board 2016 guidelines for waste management companies. There are four boundaries:

a. *Core activity area: The area where garbage that is being dumped*
b. *Utility area: where the garbage trucks move around*
c. *Green belt*
d. *Interface land usage: dedicated for the workers.*

Further, after crossing interface land usage, the WTE plants should raise specific species of plants to control the pollution from the plant. Are they following these guidelines? Who is there

to raise these questions? Who is talking about these issues? I have come late for this meeting. I could not attend the meeting from the start. The reason for my late attendance is that, a woman died in front of my eyes in my colony (Jawahar Nagar). I called 108 and waited till the ambulance arrived.

Anyways, that was the reason why I was late. When I arrived, I heard few things. On reducing energy usage, AC consumption should be reduced and so on. Correct! We should reduce our power consumption. How many people use AC in our country? How many people are in below poverty line? How many people are able to afford AC? How many people are able to purchase consumer goods? As per central government data, 78 crores people have ration cards. So many poor people are there in this country.

More importantly, has dumping yard ever been set up in colonies resided by educated people. How does one have a heart to set up a dumping yard in poor colonies? As many intellectuals are here, let me ask a question? Why do they set up industries in such colonies? Why do they find the poor only, the voiceless poor? Jawahar Nagar did not come just now. It has over hundred years of history. Poor and backward sections have resided there for many years. Dumping yard was set up in 1998. An MoU was signed with Ramky. 2019 MoU was signed with GHMC.

The moderator interrupts. Sorry, sorry, for taking up your time. Anyways, I have said what is there in my heart. I hope you understand my feelings. Thank you all.

Q&A: Key Points

1. **1.Question by Sreevidhya to Chythenyen: As you discussed waste should be addressed as a production problem, so will India will be able to embrace the circular economy? If so, how long will it take?**
    a. **Chythenyen**: The science of waste is very clear. The politics of waste is not clear. Currently, Global Plastics Treaty is being negotiated under UN. But petrochemical and fossil fuel lobby is very strong. Unless, there is a strong uprising from the people, the government wont heed to the demands and go for circular economy. It is important that there is more awareness and uprising from the people.
    b. **Donthi**: Circular economy as promoted by the western countries is not possible. There and here also. Because we need a lot of changes in materials and economic structure, among many things. Independent cycles of consumption need to be dovetailed into the larger living styles to achieve a balance between usage and reuse of materials.

On behalf of the organizers, Dr. Vishvaja thanked the panelists, participants, venue staff, notetakers and everyone who made this conference possible.

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