

# Transition Chronicles

Uncovering people-centric approach



## What defines the next wave of India's Energy Transition

India's energy transition is unfolding against the everyday realities of increasing heat stress and rising electricity demand to deliver reliable and affordable power to households, small businesses, and industry. As incomes rise, cities expand, and cooling becomes essential, the power system is undergoing pressure to balance demand and resilience to climate variability.

2025, renewable energy met more than half of India's national electricity demand for the first time. Capacity additions also remained strong, with 48 GW of renewables alone added in 2025. This progress sharpens the central challenge: integrating a rapidly shifting, renewables-heavy generation mix into a power system built for predictable, centralised supply without compromising reliability, affordability or service quality.

will test India's national ambition whether complex energy transitions can be governed effectively under real institutional and social diversity.

India's decentralised governance structure will shape how the energy transition unfolds on the ground. Across states, transition pathways reflect differing resource endowments, political economies, development priorities and social conditions.

## People-Centric Energy Transition: Tracking State-Level Progress

Increasingly, State-level policy is shaping India's energy transition and translating it into real outcomes for households, workers and industries.

As of February 2026, nearly 30 lakh households have adopted rooftop solar under the PM Surya Ghar scheme, led by **Uttar Pradesh, Maharashtra and Gujarat**. While national programmes set direction, States are driving uptake through local regulation and delivery.

Several States, including Gujarat, Tamil Nadu, Maharashtra, Madhya Pradesh, etc. are increasingly creating climate and energy trackers that bring together climate and energy data across sectors and districts, enabling informed decision-making.

The transition is equally about jobs. Tamil Nadu is setting up Solar Skill Centres of Excellence with Tata Power and the Directorate of Employment & Training, while Andhra Pradesh has launched a green skilling initiative targeting 3 lakh jobs in the green energy sector over the next five years. Madhya Pradesh's Electric Vehicles Policy links EV growth with employment and training, and the upcoming Gujarat Industrial Policy will require large new industries to invest 2% of project costs in skilling.

Together, these actions underline a clear message: India's energy transition will progress at the State level, depending on how well energy goals are aligned with data, skills and on-ground implementation.

## Empowering a Sustainable Future



Sources: India's Power Outlook Series – Volume 11 | India Energy Transition Story

For millions of households, this transition is experienced through the availability, reliability, and cost of electricity in daily life. Extreme heat events and weather disruptions are testing grid resilience; exposing the social and economic costs of outages, particularly for the vulnerable communities.

In our latest [Power Outlook Series](#), we highlight how Maharashtra, Madhya Pradesh and Rajasthan recorded the highest number of 1,256 hailstorm events between 1975 and 2020. Together these states host nearly 55.9 GW of solar PV capacity underscoring growing exposure of renewable assets to extreme weather without proactive mitigation.

At the same time, the pace of clean energy growth is accelerating. In July

Navigating the energy transition requires shifting from grid upgrades to a systemic reform. Institutional resilience, informed and empowered consumers and transparent markets must become the foundation pillars. Ultimately, the success of the power sector will depend on 'human' linchpins: workforce skilling, digital inclusion and a fundamental shift in consumer behavior.

Institutional coordination across levels of government is the need of the hour. India's power sector operates within a shared governance framework, where responsibilities for electricity, land, labour, and public service delivery are divided between the Centre and the states. So, system performance depends on alignment across institutions. The coming years

While this federal structure adds coordination complexity, it also enables locally responsive solutions. The diversity allows multiple policy instruments and delivery models to be tested simultaneously across urban and rural contexts, industrial and agrarian economies and high and low-income regions. Some approaches may stall, others will evolve and a few will demonstrate pathways that align system performance with social outcomes such as employment, affordability, and access. Over time, this iterative process strengthens the transition by allowing learning, adaptation, and selective scaling.

## DO YOU KNOW?

**Tamil Nadu** has the highest number of factories (31,000) and industrial workers (2.3 million – 16% of India) in India.

76% of **Chhattisgarh's** farmer households fall under the small and marginal category.

As of 2024, **Maharashtra** has the highest outstanding credit under Priority Sector Lending (PSL) for the Weaker Sections, amounting to INR 4.4 lakh crore.

This group includes borrowers who are small and marginal farmers, Self-Help Groups (SHGs), SC/STs and distressed farmers or persons.

Basic Metals industry contributes the highest to the total output (15%) in the national economy. In some states, it single-handedly dominates the economy.



# Signals and Stories Beneath the Headline

## The Human Side of Energy Transition in India

The past few months have shown that India is steadily building the foundations for a people-centred and future-ready transition. A notable development is that policy conversations are no longer limited to technology and emissions. We are now asking: who benefits from this shift? Can traditional workers find new jobs? Will communities have a say in what happens to their land? Can women lead this change?

In India, the discourse is diving deeper and evolving with a focus on aspects of finance, gender, community, skills, and the role of industry as critical levers in putting a people-first approach to energy transition.



Photo Credit: Vasudha Foundation

### Policy And Industry Signals Shaping a Future-Ready Workforce

Skills and workforce development continue to be a central theme. The new Labour Codes, enacted in November 2025, created a reskilling fund where employers must contribute the equivalent of 15 days' wages when workers are laid off, helping them learn new skills and find new jobs.

Industry is emerging as a torchbearer for upskilling the workforce for green futures. Companies are partnering with skilling centres to advance industry-led training in the automobile and energy sectors. BluPine Energy, for instance, has expanded rural skilling by establishing local training centres that specifically link women participants to employment opportunities in the clean energy sector. Also, partnerships between NSDC and organisations like Tata Power and WRI India highlight growing momentum for green skills development.

### Amplifying Community and Local Level Actions

Community-centred approaches are gaining formal space. In January 2025, the Ministry of Coal released new Guidelines for Preparation of Mining Plan and Mine Closure Plan for Coal and Lignite Blocks, which mandate that a minimum of 25% of the five-yearly escrow amount be utilised for community development and livelihood-related activities. Additionally, the Ministry released the RECLAIM framework (Revitalising Ecosystems and Communities through Local Actions for Inclusive Mine-closure) in July 2025, which emphasises community participation, inclusion, and local leadership in mine closure decisions.

The District Mineral Foundation (DMF), established under the 2015 MMDR Act, is a keystone for people-centric and community and community welfare interventions in mining regions. 2025 marked a decade of its operations, with over **INR 1 trillion** accrued to the DMF so far. In the next 10 years, these accruals are expected to rise to INR 2.5-3 lakh crores. Reports on DMF highlight the need for bottom-up planning and beneficiary identification to maximise targeted welfare.

At the ground level, the Ministry of Panchayati Raj is incentivising local climate action and self reliance through the establishment of special national awards which recognise select Panchayats' efforts towards the cause. Nonetheless, community participation and transparency continue to be aspects we must strive to strengthen, particularly in emerging segments like the critical minerals sector, where public hearing for mining projects are currently exempt.

### Building a Transition Resilient Industry Ecosystem

Industry, especially MSMEs, are also a key focus, given their vital contribution to both the economy and employment opportunities. Increasing attention is being given towards building a supportive ecosystem. In July 2025, the government launched the ADEETIE scheme (Assistance in Deploying Energy Efficient Technologies in Industries & Establishments), implemented by the Bureau of Energy Efficiency under the Ministry of Power, with a budgetary outlay of ₹1,000 crore. It is helping MSMEs upgrade to energy-efficient technologies through financial aid and technical support, boosting their competitiveness and sustainability. With the finance, knowledge, and skills ecosystems coming together, MSMEs can turn transition-related challenges into newer possibilities.

### Reorienting Finance for Transition Strategies

The draft Climate Finance Taxonomy, released by the Department of Economic Affairs, Ministry of Finance, in May 2025, recognises transition activities and brings hard-to-abate sectors such as steel and cement into the fold. Also, RBI's revised Priority Sector Lending (PSL) guidelines, effective from April 2025, amended loan limits, expanded what counts as renewable energy and social infrastructure, and sharpened focus on weaker sections (particularly women) to boost lending for key transition-vulnerable sectors like agriculture, MSMEs, and renewable energy.

Additionally, the Ministry of Coal's ARTHA green financing framework for mine repurposing, alongside the LIVES framework, a practitioner's guide for responsible and sustainable mine closures, signals a shift towards coordinated efforts to enable implementation of repurposing strategies and creation of a resilient ecosystem post mining.

The ARTHA green financing framework aims at channeling investment towards mine closure projects by leveraging different green finance instruments (eg. debt financing, equity financing, risk mitigation instruments, and grant-based funding instruments) and suggests financial as well as non-financial parameters for funding projects.

### Gender Considerations in Advancing Energy Transition

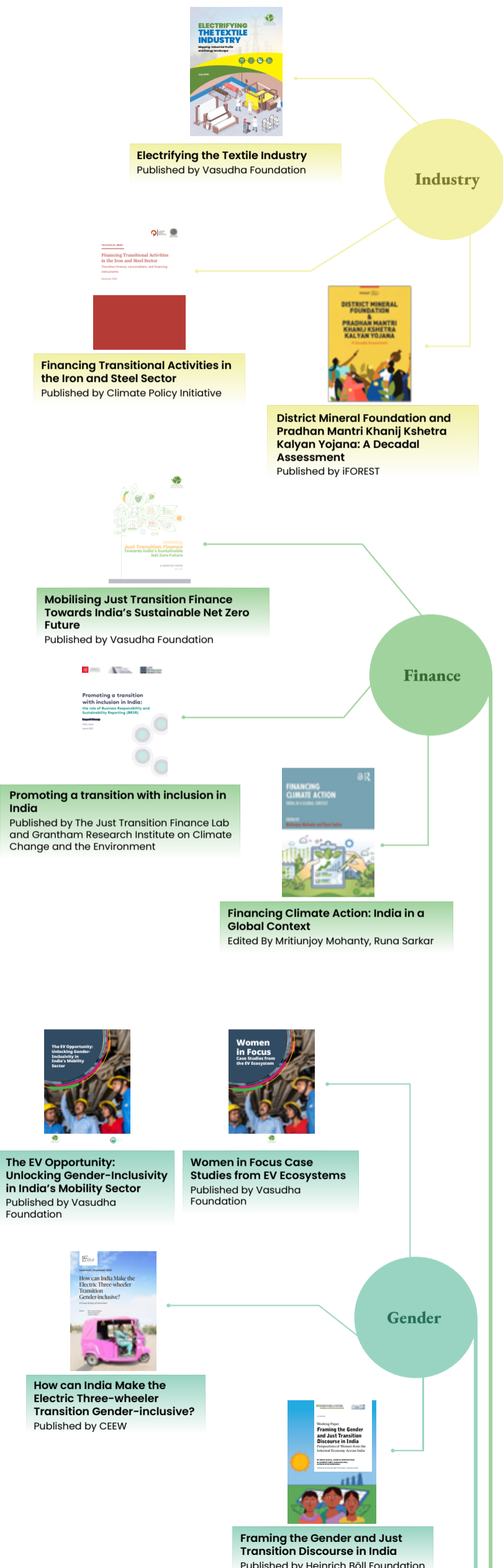
India has seen encouraging progress in female labour force participation rate (FLFPR), rising from 23.3% in 2017-18 to **41.7%** in 2023-24, though there remains considerable room for improvement.

Attention to gender is slowly strengthening. The Heinrich Böll Foundation India's report on gender and just transition shows that women experience both risks and opportunities differently, facing compounded challenges such as loss of household income, increased unpaid care work, exposure to social vulnerabilities, and limited access to new green jobs. Sectoral deep-dives, including studies by Vasudha Foundation and OMI, have shown that the historically male-dominated transport and automobile sectors continue to reflect broader gender disparities. For instance, out of the total registered **8.4 million** unorganised workers in the Automobile and Transportation industry, **0.2 million** are females, i.e., only 2.6%.

The growing focus on women in credit guidelines, skilling ecosystems, and livelihood-related schemes points to a positive shift. With more deliberate design, these trends can help ensure that women are not left behind as sectors evolve.

Together, these developments signal an ecosystem-driven approach that sees transition as both a social and economic opportunity. The task ahead is immense, but the direction is clearer than before. India is steadily building an ecosystem where individuals, communities and small enterprises can participate in and benefit from the transition. This is a hopeful sign of a future that is both green and equitable.

## Reports and Papers Released in the Domain



## From States to Citizens

### A Grounded Pathway to Viksit Bharat and Net Zero



**Srinivas Krishnaswamy**

CEO, Vasudha Foundation

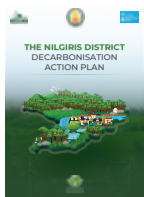
India is steadily progressing towards both its vision of Viksit Bharat by 2047 as well as Net Zero 2070 with ambitious targets set with clear milestones. In line with India's vision, a number of states have also either fully developed pathways and roadmaps for becoming Net Zero and fully developed by 2047 or in various stages of developing these roadmaps.

Some of the key pillars of the roadmap to 2047 include, economic growth and transformation with a focus on manufacturing and strengthening of the Micro, Small and Medium Enterprises sector, infrastructure and digital transformation, social development and inclusion, sustainable development and governance and technology.

The implicit message that comes across from all the key pillars of the 2047 roadmap is a "People/Communities First Approach" which would act as a guiding principle in our march towards both Viksit Bharat 2047 and Net Zero Bharat 2070.

As is the case with any paradigm transformation or transition, there would be complexities and issues that need to be addressed such as potential livelihood losses, income losses to business and economies, newer skills to be honed and so on. Therefore, the people/communities first approach would ensure that the transformation will address these issues and realise the overarching mission of Viksit Bharat which is characterised by economic prosperity, social advancement, environmental sustainability amongst others.

#### State and District Focused



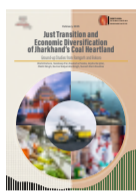
**District Decarbonisation Plans - Virudhunagar, Rameswaram, Ramanathapuram, and Nilgiris**  
Published by Vasudha Foundation



**The Varanasi Solar Story - A Socio-Economic Analysis of PM Surya Ghar: Muft Bijli Yojana**  
Published by Vasudha Foundation



**Regional Just Transition Investment Plan - Chandrapur, Nagpur, Yavatmal**  
Published by iForest



**Just Transition and Economic Diversification of Jharkhand's Coal Heartland**  
Published by Swaniti Initiative and DEF India



**Insights and Recommendations - India's Truck Fleet Operator Survey**  
Published by Vasudha Foundation



**Bridging Digital Gap Must Have Features for ZET Aligned Fleet Management System**  
Published by Vasudha Foundation



**Pathways for a Just and Inclusive Transition in E-Freight Report**  
Published by iForest



**People-Centric Approach - Key to Rapid and Effective Clean Energy Transition**  
Published by Vasudha Foundation



**Looking into the Next Decade: Emerging Energy Technologies and Workforce Transformation in India**  
Published by TERI

#### Mobility

#### People-centric and Green Growth

## A Letter from 2047: From those who inherited the choices you made

We speak to you from 2047, from a country that embedded sustainability within its development strategy, recognising it as essential to long-term growth and national resilience.

For us, the energy transition is no longer a policy phrase. It is embedded in the functioning of cities, the strengthening of rural economies, and the planning of growth with long-term resilience in mind. Reliable power, affordable energy access, community resilience, system stability are recognised as outcomes of sound development choices, not trade-offs.

There was a phase when energy decisions were framed as binaries; fossil fuels versus renewables, growth versus climate priorities, affordability versus ambition. Those debates reflected their time. What gradually changed was not just technology or markets, but alignment of intent.

You realised that the vision of Viksit Bharat required systems that strengthened public health, protected natural capital, and build resilience. Development pathways that undermined these foundations were recognised as inefficient and costly in the long run.

The transition itself was phased and pragmatic. Conventional fuels continued where necessary, even as cleaner technologies scaled rapidly. Electric mobility, distributed renewable energy, and grid modernisation moved from pilot stages to mainstream planning. Energy shifted from being a source of uncertainty to a domain of coordinated, forward-looking governance.

The grid learnt to listen to the demands from homes, industries, vehicles. Cities learned to match demand with daylight and wind. Power cuts, once woven into everyday life, became stories elders told, not experiences children carried.

The strength of India's transition was not without challenges. It was not linear, and it was not flawless. But it was guided by direction and intent.

Policy frameworks, market responses, and citizen participation increasingly reinforced one another. Over time, development and climate action

ceased to be positioned as competing priorities; each strengthened the case for the other. One became the proof of the other.

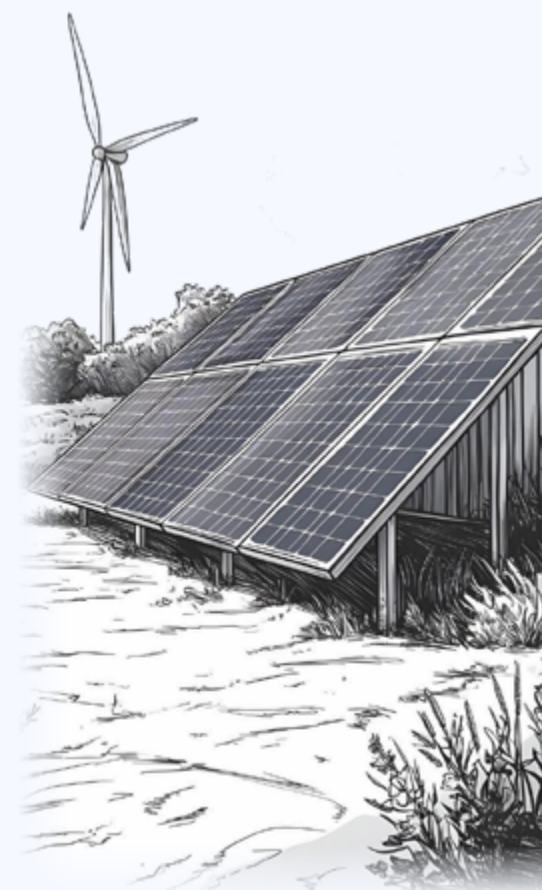
We did not solve the climate crisis. Floods still come. Heat still tests us. But we are less fragile now, because we chose resilience over reaction.

From 2047, what stands out is not individual targets or timelines, but a shift in approach. The central question evolved from short-term comparisons to whether decisions were scalable, practical, and aligned with long-term national interest but rooted in local contexts.

That shift made the difference.

The future did not require extraordinary interventions. It targeted finance and the confidence to act before constraints became crises.

*From,  
A generation that lives with the outcomes of your decisions, and thanks you for choosing foresight over delay.*



## Reports and Papers Released in the Domain



Photo Credit: Vasudha Foundation

Waste Discarded in Seelampur Drain

## What is E-waste?

E-Waste means electrical and electronic equipment, including solar photo-voltaic modules or panels or cells, whole or in part discarded as waste, as well as rejects from manufacturing, refurbishment and repair processes.

Sources: E-waste (Management) Rules, 2022

## Chip by Chip: Exploring Delhi's Seelampur E-waste Market

*"Seelampur mein toh sirf wire market hai, purane electronics ke liye aap ko Goutampuri jana padega."*

In November 2025, we set out to explore the suburban heart of East Delhi, a place synonymous with motherboards, discarded cellphones and the relentless hum of informal recycling. Our destination was Seelampur, a market known globally as a hub for e-waste dismantling. As we entered the New Seelampur market, no one seemed to be able to tell us of the e-waste dismantling operations, something Seelampur is known for. Walking through the market, we did see many wire shops. Slightly away, but still in plain sight, in the alleyways connected to the main road, scrap workers were stripping down wires and separating the thick aluminium coils from them, as thin copper sheets lay across the floor. An elderly man seated nearby explained that the metal was to be used solely for utensils. On further questioning, he told us to go to Galli No. 4 in Old Seelampur, home to the e-waste market, where old phones, computers, and electronic scrap are bought and sold.

We first stopped by Goutampuri's kabbadi market. While some shops/godowns seemed to be littered with old

home appliances, motherboards and electric wires, the market was more or less a wholesale market for all kinds of electronic items, both old and new. Here again, a receptive store owner mentioned Galli No. 4 in Old Seelampur, as well as a Galli No.2 in Mustaffabad, for what we were looking for.

In the auto to Old Seelampur market, our driver warned us that the e-waste market we were going to check out did not have much business during the day, rather it operated at odd hours of the night. As we reached the

narrow lanes of Old Seelampur market's Galli No.4, we did indeed notice that most of the shops or shacks had their shutters down. In the few open units, old motor parts, geysers, and phone cases lay about, but a majority of the waste seemed to be motherboards and electronic chips. While fixing motor parts in his shop, a worker kindly offered us deeper insights into this market, which he explained starts at 12 AM and winds down by 6 AM. Scrap electronics from across India make their way to Old Seelampur, where they are dismantled, segregated and then sold back into the market to buyers who take them for further processing. High-value and good-quality chips containing gold and large RAMs are exported, mainly to China, while the remaining material is processed domestically. According to him, Old Seelampur now functions only as a hub for dismantling and sorting e-waste. While earlier there used to be some smelting for copper extraction, no polluting activities happen here anymore. A few others we spoke to in the area reinforced the same, stating that recycling and processing of e-waste occurs elsewhere, in places like Loni and Moradabad.

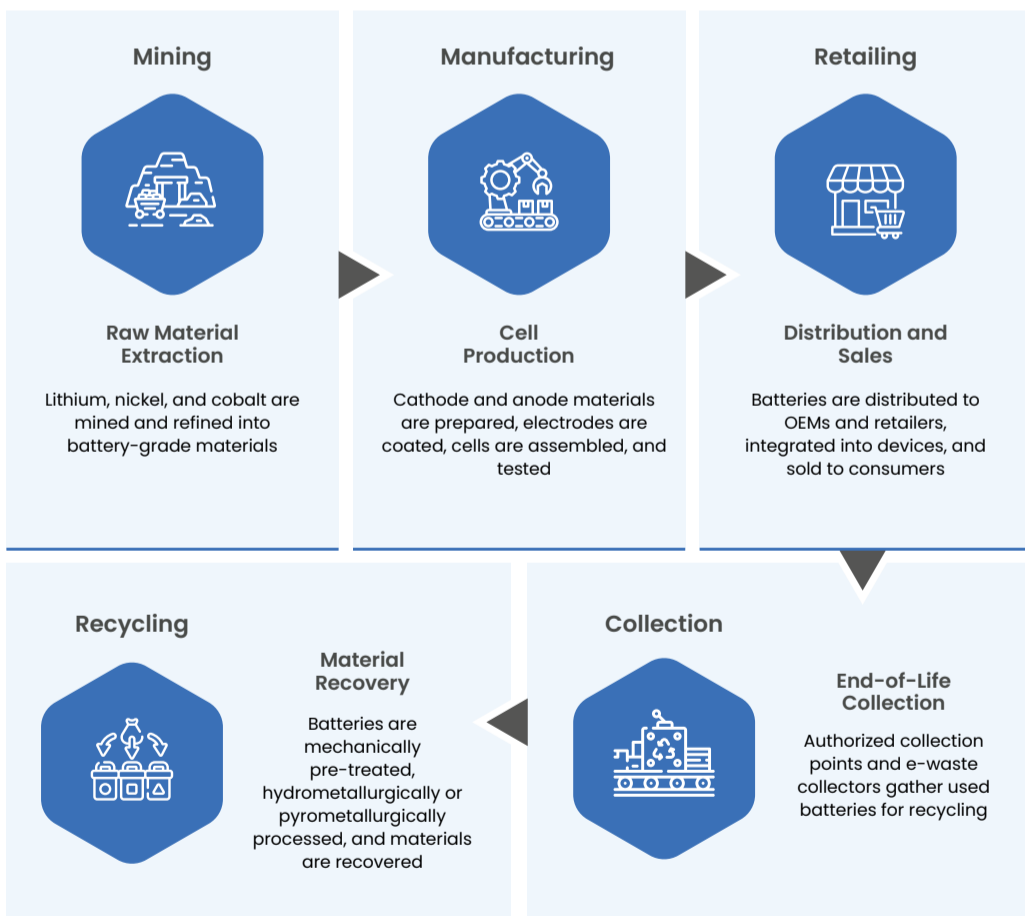
While that may or may not be the case, the work happening in Seelampur is far from non-polluting or harmless. Scrap materials and loose electronic parts spill into the streets, while the workers sit in dimly lit shops, picking apart motherboards with their bare hands. A few meters away, at the opening of the street, the Seelampur nala sits choked to the brim with waste.

### DO YOU KNOW?

- ▶ India is the **4th** largest e-waste generator, contributing **7%** of total e-waste globally.
- ▶ In 2024, India generated **~6.19 MMT** of e-waste.
- ▶ Out of India's total e-waste, **~78%** is informally recycled.
- ▶ India is estimated to generate around **4.5 - 7.5 million tonnes** of cumulative waste from PV panels by 2050.
- ▶ Recyclers have collected over **2,500 metric tonnes of lithium-ion EV waste batteries** since 2022.

Source: NITI Aayog's Report on 'Advancing Circular Economy of Waste Electronic and Electrical Equipment (E-waste) and Lithium-ion Batteries in India'; IRENA's Report on 'End-of-life management: Solar Photovoltaic Panels'; Economic Times

## Lithium-Ion Battery Value Chain



## Why Second-Life Batteries Matter Now More Than Ever

We are witnessing a rapid surge in demand for lithium-ion batteries, driven by the growing integration of battery technology across digital devices, household appliances, electric vehicles (EVs), and renewable energy systems. As their adoption scales, it is essential to consider not only their first – or “primary” – life, but to adopt robust lifecycle management that unlocks value well beyond first use.

For a country like India, which is ramping up EV adoption while remaining heavily reliant on imports for battery raw materials, second-life battery reuse offers a strategic advantage. Furthermore, second-life battery initiatives align strongly with the principles of a circular economy. Rather than viewing batteries as disposable goods, they can be treated as assets whose value is recovered in multiple phases – first mobility, then stationary storage, and finally material recovery via recycling. This is not merely a waste-reduction strategy, but a model for value creation.

Also, second-life battery deployment offers social and economic benefits. A vibrant refurbishing ecosystem, involving collection, testing, repackaging, and redistribution, opens up new business opportunities and local employment (refurbisher-driven micro-enterprises can provide jobs in battery handling, testing, safe dismantling, reassembly, packaging, and distribution). For many communities, this can be a route to skill development and income generation, enriching local livelihoods

while contributing to a green industrial ecosystem.

However, for this to scale successfully, the challenges faced by refurbishers need to be addressed. They struggle to scale as they buy retired batteries by weight or superficial metrics (rewarding bulk over usable capacity), leading them to overpay for degraded packs and ultimately affecting economic viability for second-life recovery. It can be resolved by public awareness, circularity-friendly product design, efficient take-back and testing mechanisms, a fair procurement system for refurbishers, and informed policies.

### DO YOU KNOW?

A **refurbished battery** produces **4 times less** emissions than manufacturing a battery made with recycled materials and **7 times less** than a battery made with virgin materials!



Photo Credit: Vasudha Foundation



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