

CALOGUES77 ANNUAL REPORT 2023



⁴⁴ENERGY DIALOGUES⁷⁷

ANNUAL REPORT 2023

CONTENTS



LETTER FROM THE CHAIRPERSON | 04

2 LETTER FROM THE CEO (INTERIM) | 05

3 BOARD OF DIRECTORS | 06

4 ABOUT SHAKTI | 07 5 SPECIAL HIGHLIGHTS | 10

> Building the Climate Narrative for 2023 | 10

Shakti at COP28 | 14

ACCLIMATE Challenge Fund | 17

Shakti Partners with HSBC for Innovation in Green Hydrogen | 19

6 AREAS OF FOCUS | 21

Climate Insights Unit | 22

• Building Foundations for a Sustainable and Resilient Future | 22

Critical Raw Materials | 31

Industry, Buildings & Cooling | 36 • A Holistic Approach to Drive

Sustainable Practices | 36

CONTENES

Climate Policy, Cities and Climate Finance | 46

• Combating Climate Change Globally and in India | 46

Sustainable Agriculture | 58

Electric Mobility Initiative | 60

• Charging Towards a Greener Future | 60

Clean Power | 71

 Shaping a Resilient and Sustainable Renewable Energy Ecosystem | 71

8

COMMUNICATIONS | 85

• Spreading Awareness, Creating Impact and Visibility | 86

9

HUMAN RESOURCES AND ORGANISATIONAL DEVELOPMENT (HR & OD) | 90

10 ENGAGE WITH SHAKTI SUSTAINABLE ENERGY FOUNDATION | 94

11 AUDITED FINANCIALS FOR FY 2022-23 | 96

CORPORATE AND PHILANTHROPIC ENGAGEMENT | 79

 Crafting a Philanthropic Pivot for Sustainable Development | 80

1 | LETTER FROM THE CHAIRPERSON



THE YEAR 2023 SAW SHAKTI SUSTAINABLE ENERGY FOUNDATION (SHAKTI) COMPLETING 14 YEARS OF ITS IMPACTFUL JOURNEY IN INDIA. FOUNDED IN 2009 WITH THE IDEA OF STAYING AHEAD OF THE CURVE ON ENERGY TRANSITION IN INDIA, 2023 WITNESSED SHAKTI'S CONTINUED MARCH TOWARDS CLEAN ENERGY AND CLIMATE CHANGE SOLUTIONS THROUGH ITS RECENTLY EXPANDED REPERTOIRE.

India has made ambitious climate commitments in its revised NDCs and long term goals. We are pleased with Honourable Prime Minister's announcement of India moving ahead on net zero by 2070 and the launch of the Green Hydrogen Mission. Shakti considers this an opportunity to help strengthen India's energy security by enabling policies that support energy efficiency and renewable energy. Working closely with Central Government and its Ministries as well as with State Governments, Shakti is geared towards higher engagement at the Sub-national level, where lot more policy work is required. We need to reimagine not only our energy systems but also our models for economic growth and development. India needs to develop holistically and it is our responsibility to support this transition by providing rigorous evidence based design and solutions around climate, energy and economic development.

India's engagement with the world has reached a high plateau and it is an opportune time for India to position itself as a climate leader. I am glad to share that Shakti demonstrated its capacity to convene stakeholders at a global platform on key issues of sustainable development at COP28 hosted by UAE in Dubai in 2023. India is now being recognised as one of the most important places where philanthropy can make a difference. With a greater understanding of the role of philanthropy after more than a decade of working in India, Shakti looks forward to collaborating with philanthropy in India and hopefully increasing its reach in the years to come.

I am proud of Shakti's successful expansion and evolution made possible by a highly motivated team and inspiring leadership. I extend my deepest gratitude to all the partners and stakeholders for their continued support.

Jamshyd Godrej Chairperson of the Board

2 | LETTER FROM THE CEO



Shakti began its journey in 2009 with an aim to work towards changing the energy landscape in India. Since then, it has broadened its horizons to encompass the issue of climate change, something larger and more complex. In recent years, our goals, our approach and our efforts focus on greater flows of capital into climate action and on prioritisation of collaboration, scale, and capacity towards climate solutions.

This Annual Report 2023, looks back on the year gone by and informs on the effort, effectiveness and impact of activities and initiatives of Shakti as an organisation and as a team of experts. This is a comprehensive document that takes a deep dive into our various programmes in sectors which include Renewable Energy, Industry, Buildings, Cooling, Sustainable Agriculture, , Electric Mobility, Critical Raw Materials and cross-cutting issues like Climate Finance and Sub-national Climate Action. During our next phase, our work, pioneering efforts in various areas, partnerships, research, and strategies in 2023 will be the foundation that will enable us to continue to make meaningful impact.

Special highlights in this report chart Shakti in its role as a convener where it has taken up the mantle of bringing together stakeholders from different areas to SHAKTI BEGAN ITS JOURNEY IN 2009 WITH AN AIM TO WORK TOWARDS CHANGING THE ENERGY LANDSCAPE IN INDIA. SINCE THEN, IT HAS BROADENED ITS HORIZONS TO ENCOMPASS THE ISSUE OF CLIMATE CHANGE, SOMETHING LARGER AND MORE COMPLEX. IN RECENT YEARS, OUR GOALS, OUR APPROACH AND OUR EFFORTS FOCUS ON GREATER FLOWS OF CAPITAL INTO CLIMATE ACTION AND ON PRIORITISATION OF COLLABORATION, SCALE, AND CAPACITY TOWARDS CLIMATE SOLUTIONS.

enable them to analyse problems, explore solutions and encourage innovative thinking in various events in India and at COP28 in Dubai, UAE where Shakti organised eight convenings at the Regional Climate Foundation Pavilion. Other important highlights in this edition include The ACCLIMATE Challenge Fund that was launched with the objective of providing selected CSOs with technical assistance and financial support, Shakti's partnership for innovation in Green Hydrogen and research by the Climate Insights Unit.

Dedicated sections in the Annual Report cover Human Resources and Organisational Development interventions in 2023 as well as Shakti's communication activities.

This is a path where we cannot walk alone. Climate action needs all stakeholders and partners to come together, and Shakti derives its strength from its network of partners, stakeholders and our Board and staff. I would like to express my heartfelt gratitude to each and every one of you for being part of our journey. We look forward to your continued support in our future endeavours.

Vatsala Joseph Chief Executive Officer (Interim)

3 | BOARD OF DIRECTORS



JAMSHYD GODREJ Chairperson of the Board and Managing Director, Godrej & Boyce Manufacturing Company Ltd.



NITIN DESAI Former Under Secretary General, United Nations



MEHER PUDUMJEE Chairperson, Thermax Limited



SURESH PRABHU Founding Chancellor of Rishihood University and Chairperson of the drafting committee for National Cooperation Policy, Chartered Accountant, Parliamentarian, Educationist, Banker, Social Worker



RAJIV LALL Professorial Research Fellow, Singapore Management University, Singapore



HARISH HANDE Founder and Chief Executive, SELCO Foundation



MOUTUSHI SENGUPTA Chief of Capital Mobilisation, AVPN (Asian Venture Philanthropy Network)

4 | ABOUT SHAKTI

Who We Are

SHAKTI SUSTAINABLE ENERGY FOUNDATION, SET UP IN 2009, IS A STRATEGIC AND KNOWLEDGE PLATFORM FOR PHILANTHROPY AND GOVERNMENTS TO ENABLE HIGH-IMPACT CLIMATE ACTION AND DEVELOPMENT-POSITIVE PROGRAMMES IN INDIA.

IT IS COMMITTED TO THE PURSUIT OF A CLIMATE FRIENDLY AND CLEAN ENERGY FUTURE FOR ALL BY COLLABORATING WITH POLICY MAKERS, CIVIL SOCIETY, ACADEMIA, AND INDUSTRY.

Bringing together stakeholders from different

arenas, Shakti enables impactful and positive discussions enabling them to work together, analyse problems and explore solutions to build and strengthen the ecosystem.

Encouraging innovative thinking, Shakti engages with stakeholders to help catalyse effectiveness towards a more sustainable future.

A thought leader and respected knowledge partner, Shakti is recognised for being a hub of interdisciplinary expertise and knowledge.

Acting as a bridge between policy and practice,

Shakti helps undertake climate action by working collaboratively with academia, policymakers, industry, and civil society.

Shakti expanded its horizons in the last two years, working in broader areas in the field of climate change, while retaining its focus on the energy sector.

At its core, Shakti is:

A trusted source providing research, analysis, and recommendation services on tackling pressing climate and energy challenges.

An active collaborator as we employ multi-faceted and highly collaborative approaches to driving change.

A bridge-builder as we convene city, state, national and global policymakers together with civil society, industry, and academia to identify common ground and move solutions forward.

A policy innovator deeply invested to develop policy and market-based solutions that inform decision makers and deliver real and lasting climate progress.



Our Vision A CLEAN AND SECURE ENERGY FUTURE



Our Mission

TO CATALYSE CLEAN ENERGY POLICY SOLUTIONS IN COLLABORATION WITH POLICY MAKERS, CIVIL SOCIETY, ACADEMIA, AND INDUSTRY





Our Values

COLLABORATION:

We connect effectively with each other and with our partners in order to leverage expertise and maximise impact.

AMBITION:

We aim for large scale and transformative change by adopting approaches that look over the horizon.

QUALITY: We deliver quality analyses and information on a consistent basis.

ACCOUNTABILITY: We take responsibility for the impact of our efforts.

INNOVATION: We seek new and creative ways to address challenges by devising solutions that are not necessarily limited to current paradigms.

What We Do

SHAKTI SUSTAINABLE ENERGY FOUNDATION IS A DYNAMIC ENTITY PROPELLING CLEAN ENERGY AND CLIMATE SOLUTIONS.

In the light of India's new commitments, the focus has expanded to an economywide progression where energy is an important focus but not the only one.

Shakti's area of influence covers sectors including Renewable Energy, Industry, Buildings, Cooling, Electric Mobility, Critical Raw Materials, Sustainable Agriculture, and the cross-cutting areas like Climate Finance and Sub-national Climate Action.

Shakti combines philanthropy, policy research and analysis, and stakeholder dialogue and engagement to address climate change issues.

It explores clean air solutions with a focus on the climate resilience imperative.

It delivers strategic inputs for clean energy and climate related philanthropic investments in India through cross-disciplinary efforts and developing powerful communications strategies to build support for climate change solutions.

5 | SPECIAL HIGHLIGHTS

Building the Climate Narrative for 2023 THE YEAR 2023 BEGAN WITH SHAKTI'S ANNUAL WORK PLANNING WORKSHOP ON JANUARY 24 AND 25 TO BUILD THE CLIMATE NARRATIVE FOR THE YEAR.

THIS ANNUAL WORKSHOP IS A CONGREGATION OF EXPERTS FROM VARIOUS SECTORS TO COLLECTIVELY BRAINSTORM AND DELIBERATE ON CRITICAL CHALLENGES AND BARRIERS CONFRONTING SECTORS RELEVANT FOR CLIMATE ACTION AND TO PONDER UPON AND CONCEPTUALISE INTERVENTIONS AND SOLUTIONS.





Mr Jamshyd Godrej, Board Chair, delivering opening remarks at the inaugural session.

The annual convening 'Building the Climate Narrative for 2023' generated robust discussions with various stakeholders to find solutions for a more sustainable future. It was an opportunity for stakeholders to share their learnings, exchange ideas and explore collective approaches towards solutions for common challenges. This convening successfully paved the way for creating a clear roadmap for building the climate narrative for the year.

Delivering the opening remarks at the inaugural session of this convening, Mr Jamshyd Godrej, Board Chair, reiterated Shakti's commitment towards working with stakeholders on shared goals. He spoke about how there is an increasing understanding about the role of philanthropy and how India is now being seen as an important place where philanthropy can make a difference.

The two days of the workshop were replete with insightful discussions about various sectors and interventions required that will equip the stakeholders to support India's climate journey. Some of the key commitments of India in the area of climate change and transition to cleaner energy



Dr Anshu Bharadwaj, CEO, speaking at the inaugural session.



Koyel Kumar Mandal, Chief of Programmes, at the inaugural session.

were central to Shakti's work planning sessions that sought to identify how philanthropic, civil society and private sectors could support the realisation of these NDCs. Programme areas of focus at the Work Planning Workshop.

1

Steel Decarbonisation

The industrial sector can contribute significantly to reducing India's emissions with the steel industry playing a major role in adoption of new technologies to reduce emissions and improve efficiency. The session on Steel Decarbonisation deliberated on and analysed the required actions for steel industry to decarbonise and policy directions that can support steel stakeholders in their transition towards decarbonisation.

2

Buildings Decarbonisation

An energy intensive sector in India is the buildings sector. Since urbanisation is expected to increase in the coming decades, measures are necessary to help the buildings sector avoid embodied and operational emissions. The emphasis of the Buildings Decarbonisation session was on challenges and barriers that must be vanquished to be able to create an enabling environment for net zero buildings.

3

Sustainable Energy Technologies and Fuels

In the backdrop of the fact that clean energy technologies are central to operationalising the net zero transition, the session on Sustainable Energy Technologies and Fuels concentrated on identifying the course of action for scaling up key technologies such as Offshore Wind and Carbon Capture and Storage and Technology and Finance Barriers to overcome for these to be successful.

Distribution Reforms and Power Markets

At this session the priority was on understanding and conceptualising strategies for providing the required support to the power sector, the highest emitting sector in India, in its transition to cleaner sources of energy. The institutional factors to be considered in facilitating a smooth and efficient transition was also an important area of deliberation.

5

6

4

Energy Access for Development

Access to clean energy is significant in the country's developmental agenda as it can result in increased labour productivity, enhanced agricultural efficiency, and improved livelihoods. The session on Energy Access for Development focused attention on areas where Decentralised Renewable Energy (DRE) solutions can have the highest impact and business models and policy landscape required to support DRE scale up across the country.

State Level Climate Action

Sub-national actors play a key role in implementing the climate targets set by the Central Government. So, it is imperative to concentrate on the challenges faced by these stakeholders and find solutions to support them in the successful implementation of climate actions. This was the theme of the sessions on State Level Climate Actions and Cities and Climate Action which undertook a deep dive into challenges faced by Sub-national actors in the climate action journey and tactics and initiatives to help them overcome these obstructions.

Sustainable Agriculture

The main focus of the session was to gain insight on methods to support the agriculture sector to improve resilience to climate impacts while parallelly improving livelihoods of those who are dependent upon it and also reducing emissions from the sector.

8

7

Sustainable Marine Resource Management

Ocean-based mitigation strategies can play a significant role in capturing emissions and increasing community resilience to climate change impacts on India's coastline which is extremely vulnerable because of rising sea levels and ocean acidification impacting livelihoods of the coastal communities. This was the issue discussed in the session on Sustainable Marine Resource Management which sought improved knowledge of the ecosystem to discern ways in which coastal interventions can support India's climate ambitions.

9

Climate Resilient and Adaptation Financing

The impacts of climate change can be felt across the country, with maximum ramifications for the vulnerable communities. Measures to help these communities to improve their ability to adapt to climate change are critical.

A key challenge here is the inadequate financing available for these adaptation. Overcoming financing challenges is crucial for increasing adaptation and resilience interventions in India. The Climate-Resilient and Adaptation Financing session concentrated on exploring strategies for increasing financial flows for adaptation and resilience to support these communities.



Shakti at COP28

COP28 IN 2023, HOSTED BY UAE IN DUBAI, BROUGHT TOGETHER GLOBAL STAKEHOLDERS TO ALIGN ON TRANSFORMATIVE AND TANGIBLE CLIMATE ACTION.

THIS COP WAS SINGULARLY NOTEWORTHY FOR THE REGIONAL CLIMATE FOUNDATIONS (RCF) INCLUDING SHAKTI BECAUSE IT SAW THE DEBUT OF THE COP PAVILION HOSTED BY FIVE RCFS FROM GLOBAL SOUTH THAT INCLUDED SHAKTI FROM INDIA, INSTITUTE FOR CLIMATE AND SOCIETY (ICS) FROM BRAZIL, AFRICA CLIMATE FOUNDATION FROM SOUTH AFRICA, VIRIYAENB FROM INDONESIA AND INICIATIVA CLIMÁTICA DE MÉXICO (ICM). THIS PROVED TO BE A REMARKABLE PLATFORM FOR THESE REGIONAL CLIMATE FOUNDATIONS TO SHARE CLIMATE STORIES

Shakti, in its role as a Convener, took up the mantle of bringing together stakeholders from different areas to enable them to analyse problems, explore solutions, encourage innovative thinking and engage with them in eight crucial events at the RCF pavilion. The events organised by Shakti included sectors such as Renewable Energy, Industry, Agriculture and Land Use, Electric Mobility, and the cross-cutting issues like Climate Finance and Sub-national Climate Action.

Convenings Organised by Shakti

Shakti Co-hosted Official UNFCCC Side Event: Trade in a Climate-Constrained World: Adding Value from US Manufacturing to Indian Entrepreneurship

Koyel Mandal, Chief of Programmes, Shakti, moderated this session to discuss the implications of new global trade mechanisms within the context of climate change. The session aimed to explore potential opportunities for industrial growth and energy transitions while addressing the compliance challenges that these mechanisms present for developing nations. Mr John Podesta, Senior Advisor to the US President for Clean Energy Innovation, gave the keynote address at the panel which had a distinguished panel of global participants.



Mr John Podesta, Senior Advisor to the US President for Clean Energy Innovation, giving the keynote address.









Energy Transition Planning at the Sub-national Level

This event, with an esteemed panel of participants, moderated by Nidhi Madan from Shakti's Climate Policy team, focused on the collaborative efforts required from Sub-national entities to achieve India's 2070 net zero emissions target and ambitious shortterm climate goals.

The concluding remarks made by Shubhashis Dey, Director, Climate Policy Programme at Shakti emphasised the importance of exploring opportunities in translating national climate goals to the Sub-national level.

Operationalising Carbon Market for Achieving Energy Transition Goals

At this event moderated by Shubhashis Dey, a panel of distinguished climate experts deliberated on the role of the carbon market in achieving energy transition goals in the global south, including India. The discussions revolved around the topics - Role of carbon market in shifting sectors away from fossil-intensive technology lock-in; Promoting low carbon investments; Providing strong price signal to investors; Potential mechanisms for the government to raise revenues through carbon market and; Impact of carbon pricing on competitiveness of hard to abate sectors undergoing energy transition.

Women Empowerment through Distributed Renewable Energy (DRE) Solutions

This event, moderated by Dr Amit Kumar Parihar, Director, Clean Energy Programme at Shakti, delved into the dynamic intersection of women empowerment and Decentralised Renewable Energy (DRE). By bringing together experts, practitioners, and advocates, the event shared success stories, facilitated knowledge exchange, and explored collective recommendations to increase women empowerment through DRE solutions in the context of sustainable development. The side event touched the aspects of achieving women empowerment through DRE.

Unlocking Financing Opportunities for Climate-Resilient, Sustainable Agriculture in India and the Global South

This event, moderated by Vidvatta Sharma, Senior Programme Manager, Shakti, highlighted innovative financing mechanisms and strategies that can catalyse climate-resilient, sustainable agriculture systems in the Global South. By bringing together key stakeholders from diverse backgrounds, the event facilitated knowledge exchange, partnership building, and mobilisation of resources to drive transformative change in agricultural and food systems.



e-FAST: Paving the Way for Zero-Emission Freight

Moderated by Narayankumar Sreekumar, Associate Director, Electric Mobility Initiative at Shakti, this convening examined and proposed necessary policy, regulatory, and financial structures that can expedite the widespread utilisation of Zero Emission Trucks (ZETs). It also focussed on fostering partnerships and addressing the challenges and opportunities inherent in the scalable implementation of ZETs. The aim was to showcase best practices that can serve as a guide for other developing nations.



Promoting Green Cooling in India and Global South

The objective of this convening was to discuss how to strengthen the Cooling Action Plan in India and other Global South countries by sharing insights from India's initiative, pinpointing practical strategies to overcome challenges in implementation, and defining the degree and nature of global support needed. Dr Sachin Kumar, along with other distinguished guests, participated in this panel moderated by Chandra Bhushan of iFOREST.





Hydrogen Economy: Innovation-led Growth in Industry Clusters

Dr Sachin Kumar, Director, Industry, Building and Cooling Programmes and Shakti, moderated this session that deliberated on possible pathways for India's transition to a Hydrogen based economy, accelerate Industry's readiness towards adopting Green Hydrogen technologies, enhance capacities of stakeholders and link Green Hydrogen production centres with industrial clusters in the most beneficial way. A panel of distinguished experts from India deliberated on topics to provide key insights for strengthening India's National Green Hydrogen Mission.

Shakti's team members were also invited to participate in other events at COP28 to share their expertise. Shubhashis Dey was invited to speak at a roundtable 'Net zeroing: Incentives and Carbon Markets for a Sustainable Future' organised by BFA-AIIB-CAIXIN. Narayankumar Sreekumar was invited to speak at a side event 'Electric Bus Transition: Global Experiences and Learnings' organised by World Resources Institute (WRI), India. He also took part in a two Panel Discussions at the India Pavilion - 'Making India's Public Transport Efficient, Electric, and Equitable' and Multilevel Action, Urbanisation & Built Environment, Transport. Narayankumar was invited to participate in a discussion 'Towards Sustainable Growth through Green Transformation' organised by GISPRI, Institute of Energy Economics, Japan – IEEJ, and Keidanren (Japan Business Federation).

ACCLIMATE Challenge Fund

ACCELERATING CIVIL SOCIETY ORGANISATIONS TOWARDS CLIMATE MITIGATION AND TECHNICAL EXCELLENCE .

Strengthening Civil Society Capacities for Effective Climate Action

In 2023, Shakti intensified its commitment to bolster the civil society ecosystem's capacity to address the pressing issue of climate change. Recognising the pivotal role that Civil Society Organisations (CSOs) play in driving climate action and supporting local governments, Shakti had initiated the ACCLIMATE Challenge Fund initiative as a catalyst for empowering CSOs across India and fostering their ability to contribute meaningfully to the climate change agenda.

The initiative had invited applications from organisations seeking to enhance or establish their capacity to tackle climate-related challenges. The response was overwhelming, with over 150 applications received during the first round of Expression of Interest. To ensure a rigorous selection process, Shakti implemented a multistage evaluation procedure. This encompassed a detailed proposal submission, followed by indepth discussions with the senior management teams of shortlisted organisations. The final stage involved a jury presentation, where 16 organisations showcased their ideas for institutional transformation. The distinguished jury comprised senior representatives from international and domestic philanthropies, as well as esteemed members from Indian think tanks.

The culmination of this thorough process led to the identification of organisations for institutional support, facilitated by Shakti.

Shakti recognises that empowering these organisations requires more than just financial support. As part of the initial handholding phase, the focus has been on guiding them towards institutional strengthening and seamlessly integrating climate considerations within their programmatic scope. This strategic approach aims to fortify their foundations, enabling sustained impact in the realm of climate action.

A detailed capacity building plan was meticulously curated for the selected organisations. This plan encompasses a diverse array of technical trainings, targeting various facets of climate policy specific to the Indian context. Additionally, specialised trainings have been designed to fortify financial and human resources systems within these organisations. Leadership development programmes are also integral to the plan, recognising the critical role that effective leadership plays in driving meaningful change.

Two of the organisations under ACCLIMATE received institutional support from Shakti in 2023 to advance work that seeks to build community resilience and advance climate action through interventions in decentralised renewable energy and green entrepreneurship.

Clean Energy Access Network (CLEAN)

CLEAN is an industry association for Decentralised Renewable Energy (DRE) with 200+ members from various DRE segments including RE-powered mini grids, appliances, clean cooking energy, solar rooftop, and green fuels. They have a diverse member base which includes businesses (mainly social enterprises), Civil Society Organisations and research organisations. As part of the support, CLEAN seeks to strengthen their institutional processes and build technical capacities within their organisation which can help them support Indian Government's target of having 500 GW of non-fossil fuel-based electricity installed capacity by 2030 through increased decentralised renewable energy (DRE) penetration. CLEAN seeks to set up a DRE Finance Facilitation Desk with the support provided, recognising that access to dynamic financing is a key barrier to scaling up DRE in India. The desk will ultimately seek to mobilise market solutions to support scale up of DRE in India. The capacity building support provided by ACCLIMATE aims to boost the capacity of CLEAN's internal staff, thereby strengthening the way in which they engage with their members to accelerate climate action.

The Entrepreneurs Associates (tEA)

tEA is an organisation working to create wealth and opportunity for communities in the Northeast through entrepreneurship and promotion of livelihoods by leveraging local resources and assets. tEA was started with the aim of promoting selfreliance and self-sufficiency leading to increased wealth and opportunities for the local indigenous communities in the Northeastern region of India. As part of the support provided, tEA seeks to build capacities at the organisational and community level to strengthen the implementation of its flagship programme 'Trees for Wealth', which was launched in November 2019 to revolutionise Nagaland's agricultural landscape, restore the ecosystem, and make the state the 'Fruit Hub of India'. Under this programme, tEA envisions planting 2 million fruit trees by 2025, 200 million by 2035 and 1 billion

by 2050 to positively impact 1 million farmers in Northeast India. This effort will not only have significant sequestration benefits, but also improve the livelihoods and build climate resilience of the communities.

As we navigate the complexities of the climate crisis, Shakti remains committed to nurturing a network of empowered organisations capable of supporting policy insights, driving innovation, and collaborating with local governments. Shakti's ACCLIMATE Challenge Fund initiative represents a pivotal step in fostering a robust civil society ecosystem geared towards climate action.

By providing targeted support to these organisations, Shakti aims to create a multiplier effect, amplifying their impact on the ground and facilitating a more concerted effort towards addressing the challenges posed by climate change.

Shakti Partners with HSBC for Innovation in Green Hydrogen

HSBC INDIA PARTNERED WITH IIT (INDIAN INSTITUTE OF TECHNOLOGY) BOMBAY AND SHAKTI TO PURSUE TECHNOLOGICAL ADVANCEMENTS TO MAKE GREEN HYDROGEN MORE EFFICIENT, COST-EFFECTIVE, AND SCALABLE. THE HSBC LAUNCH WAS ANNOUNCED BY HONOURABLE UNION FINANCE MINISTER, SRIMATI NIRMALA SITHARAMAN.



Hon'ble Union Finance Minister Shrimati Sitharaman announcing the HSBC launch.

These two partnerships, with total grant support of Rs 15 crore or about \$ 2 million focuses on innovation projects that will help prioritise Green Hydrogen as a strategic alternate fuel, help in building a robust Green Hydrogen economy, and achieve the government's vision of an energyindependent nation.

The National Hydrogen Energy Mission was announced in the Union Budget 2021-22. These partnerships are expected to help boost the government's National Green Hydrogen Mission, which is providing policy support towards achieving global leadership in Green Hydrogen transition.

The objective of the Green Hydrogen Mission and performance linked incentive scheme is to make India a global hub for Green Hydrogen production, usage and export. The Mission will help decarbonise Indian economy, improve energy security by reducing dependence on fossil fuel import and



position India as a technology and market leader in Green Hydrogen. For the Mission, the CSO community provided technical assistance, helped in organising stakeholder consultation and shared technical insights while policy makers drafted the mission document.

The partnership with Shakti focuses on a geospatial analysis of industrial clusters in the states of Gujarat, Maharashtra, Jharkhand, and Chhattisgarh that have the potential to produce and use Green Hydrogen.

Mr Jamshyd Godrej speaking at the HSBC launch.



6 | AREAS OF FOCUS

21

Climate Insights Unit



THE YEAR 2023 MARKED A NEW BEGINNING WITH THE NASCENT CLIMATE INSIGHTS UNIT WORKING TOWARDS CREATING MATURE, IMPACTFUL PROGRAMMES. ADDITIONALLY, THE CRITICAL RAW MATERIALS PROGRAMME, A CONCEPT CONCEIVED IN 2021, WAS READY TO MOVE FROM THEORY TO EXECUTION.

Monitoring, Evaluation and Learning (MEL)

Our ambition for MEL was to craft a framework aligned with Shakti's theory of change - one that was intuitive, user-friendly, and enhanced our partners' project conceptualisation and execution. As anyone familiar with institutionalising MEL will attest, this is no easy feat. Not only must the framework be logically sound, but it also requires robust institutional leadership for adoption and consistent stakeholder follow-through.

Starting with the organisational strategy established in 2021, we distilled three transformative strategies: High Impact Climate Mitigation Programmes, Strengthening the Field through Capacity Building and Collaboration, and Development Positivity. These were transformed into a programme Theory of Change (ToC), focusing on 'Big Wins', and accompanying project ToCs targeting 'Small Wins'. Adopting the MEL frameworks was a participatory journey. The organisational strategy emerged from in-depth consultations with Shakti Leadership. Programme and Project ToCs, along with results frameworks, were shaped through multiple rounds of discussions and inputs from programme teams and partners.

This year was a milestone with the hiring of our first dedicated research staff. We also garnered support from Rainmatter Foundation to explore climate, environment, ecology, and development integration. Addressing the complex issues of climate and energy transition requires a multidisciplinary approach. In this vein, we launched the 'Leaders for a Developed and Sustainable India' (LEADS India) platform, bringing together climate leaders to spearhead research with transformative potential.

Critical Raw Materials (CRM)

Our journey into the Critical Raw Materials initiative began this year, addressing the need for secure, reliable access to minerals crucial for lowcarbon technologies and progressing towards net zero emissions. The scope of this challenge is vast, encompassing domestic exploration, mining policies, refining technologies, trade, geopolitics, recycling, and environmental and social responsibility. The energy transition presents an opportunity to address traditional concerns associated with mining, particularly those related to fossil fuels. Given the complexity and novelty of this task, we collaborated with Council on Energy Environment and Water (CEEW), Centre for Social and Economic Progress (CSEP),Indian Council for Research on International Economic Relations (ICRIER), and Indian Institute Of Sustainable Development (IISD) to tackle these critical challenges.

This form of close collaboration with our partners was a new approach for Shakti and the team. The need for consistent sharing of learnings, progress and coordination to engage with stakeholders, help us understand and appreciate each other's strengths and the collective needs of a CRM initiative. The effort culminated in a recommendations workshop that was well attended by stakeholders from industry, government and thinktanks alike.

As we look back on a year filled with innovation, collaboration, and significant strides in climate action, there is a sense of pride and optimism. The journey through 2023 has not only been about achieving milestones but also about learning, adapting, and preparing for the future. Our work in the Climate Insights Unit, the ground-breaking initiatives in the Critical Raw Materials programme, and the pioneering efforts in urban climate action through the Cities programme, have all set the stage for a more sustainable, resilient future. The partnerships we've forged, the research we've conducted, and the strategies we've implemented are testaments to the power of collective action and shared vision. As we look ahead. I am confident that the foundations we have built this year will enable us to reach new heights and continue making a meaningful impact in the fight against climate change. The journey continues, and I am excited to see where it takes us next.





Shakti's Monitoring, Evaluation and Learning (MEL) Vision

Organisation Strategy

In a post Glasgow scenario, with significant climate commitments being made, it was necessary for us, as an organisation, to re-group, re-vision, and re-structure the goals that we intend to direct our efforts towards.

A participatory approach was followed, involving all members of the organisation and three key strategic priorities were identified:

High Impact Programmes

- Development Positive Climate Action
- Proficient CSO ecosystem

With the priorities identified, the latter part of 2022 was invested in developing the strategy towards these ends translating into Shakti's Theory of Change.

Shakti's Theory of Change

India envisions a sustainable and resilient future with its commitment to achieving a net zero carbon footprint. India has outlined a comprehensive strategy that intertwines economic growth with environmental stewardship. The vision for a net zero climate future involves a transformative shift towards renewable energy sources, increased energy efficiency, and the adoption of green technologies across sectors. India is also committed to enhancing carbon sinks, afforestation initiatives, and sustainable agriculture practices to absorb and mitigate greenhouse gas emissions.



Figure 1: The Shakti ToC

All three strategic priorities of Shakti are geared towards India's vision for a net zero resilient climate future. Our efforts are directed towards this end through a portfolio of programmes. The organisation Theory of Change ensures strategic alignment of the entire portfolio.

High Impact Programmes

Shakti programmes are geared towards socialising technological change that contribute to a certain degree of emission reduction by 2030. Socialising technological change or large-scale adoption of desired practices require policy nudges. Shakti's programmes are designed to facilitate these policy nudges. Shakti takes prides in being able to identify relevant programmatic pathways which can lead to effective policy and implementation action that can create large scale socialisation and adoption of desired technological change and practices for emission reduction.

To enable this transition, Shakti programmes engage with diverse policy venues. Engagements are in form of research, technical engagement, communications, or capacity development. These engagements are undertaken to support policy venues navigate a sequence of shifts that ultimately lead to policy formation or implementation action.

All of Shakti's 14 programmes/sub-programmes have adopted this framework to refine their respective Theories of Change. Working with all programmes to help them refine their ToCs has been one of the critical activities undertaken by the MEL function in 2023.

Development of Positive Climate Action

Climate action, especially mitigation, has been around technology penetration. While technology undoubtedly plays a crucial role in climate action, an exclusive focus on technological solutions tends to overlook the social and behavioural aspects of climate change. The benefits of some technological solutions may not be evenly distributed across different socio-economic groups or regions. For instance, vulnerable communities might have limited access to or be disproportionately affected by certain technologies, leading to social inequities.

While programmes are geared towards ensuring reduction of carbon emissions, Shakti identifies delivery of developmental outcomes along with mitigation results as a key strategic priority. Incorporation of development focus within programmatic strategies can highlight and demonstrate potential developmental outcomes. The underlying ethos behind this approach is to enable policies and implementation frameworks that view mitigation coupled with development benefits and not in silos.

Currently, programmatic ToCs are not geared towards incorporating the development lens within their strategies. While the framework for incorporating a development lens was identified in 2023, we aim to see this being incorporated within programmatic strategies in 2024.

Proficient CSO Ecosystem

Shakti identifies itself as a sector convener bringing together CSOs working in the climate action space. The objective envisioned through this strategic priority is to enhance effectiveness and efficiency of climate action undertaken by the CSOs. Shakti identifies two strategies towards this end:

- Developing CSO capacity
- Facilitating CSO collaboration

Developing CSO capacity

The objective of this strategy is to ensure that CSOs are effectively and independently able to inform policy change. Through programmes as well as independent engagements, Shakti aims to enhance technical, financial and MEL capacities of CSOs working in the climate action space. Capacity development is viewed not just in terms of trainings or exposure received by CSO but helping them navigate the journey from awareness to engagement to application. CSOs, empowered with adequate capacity to apply technical, financial and MEL knowledge, are expected to have a more fruitful and effective engagement at policy venues.

Currently, programmes do not factor a dedicated strategy towards technical capacity development of CSOs. However, technical capacity development has been undertaken through the Challenge Fund initiative of Shakti. Financial capacity development has been a long running initiative of Shakti spearheaded by Shakti's finance team.

The MEL capacity development has been initiated, for the first time, in 2023. This engagement has been designed to enhance CSO capacities to develop impactful project strategies and undertake MEL within their organisations. The engagement will be operationalised in the first half of 2024 with CSOs being exposed to interactive sessions supplemented with a variety of knowledge products that can act as ready reckoners.

Facilitating CSO collaborations

This strategy is designed to help CSOs reinforce their strengths towards a more efficient climate action. A sector convenor, Shakti believes that climate action can be more effective if CSOs work towards the cause collaborate to mutually reinforce on each other's strengths. Collaboration does not actively feature in any programmatic strategy yet. Although, a few programmes have worked towards creating CSO collaboratives for efficient engagement at policy venues.

Programmatic Theory of Change

Background

1

Shakti programmes target systems transformation. One of the key characteristics of systems transformation is their non-linear and complex change pathways. All programmatic Theories of Change had to be cognisant of this context. Although an overarching framework was adopted, individual programmatic theories of change were developed using a Transformative Theory of Change (TToC) approach. In principle, a TTOC¹ helps provide an adaptive lens to ToCs and ensures democratic participation. This approach has helped factor horizontal and vertical interactions between projects (within a programme) to be able to provide commentary to the larger ecosystem shifts.

All programmatic ToCs are designed towards delivering results across policy venues. Given the externalities that govern results at these venues and the limited sphere of influence programmes would have towards ensuring policy change, it was necessary that programme ToCs remained flexible and have the scope of modifications as contextual understanding gets built.

Frameworks Governing Programmatic ToC

One of the key activities undertaken in 2023 was the refinement of all Shakti programmatic ToCs. As indicated under the high impact programme strategic priority, emission reduction within a tenyear timeframe is the impact being targeted by all programmes. The long-term outcome towards this end is the socialisation of technological change and/ or adoption of desired practices. These are the bigger bets or goals that the programmes identify their strategies towards. Hence, all programmes identify policy and implementation outcomes within a five-to-seven-year timeframe as their intermediate outcomes.

Policy changes are significant system transformation vehicles. The challenge that comes with systems transformation work is that while there lies clarity on the bigger bets, there is limited visibility on the immediate results. This is where a 'Small Wins' framework comes of use. This framework essentially helps break larger systems transformation goals into more near-time progress markers that not only help practitioners identify and celebrate smaller wins but also ascertain the relevance of the change pathway.

At Shakti, we have incorporated the small wins framework to identify the immediate programmatic outcomes. Each programme adopts a Consensus-Solution-Articulation (CSA) [for policy work] approach or a Targeted & Explored Solution-Trial-Scale (TESTS) approach [for implementation work]. These approaches essentially outline the sequence of shifts or small wins in the policy or implementation venues towards creating a policy or implementation change.

Over the last year, all programmatic ToCs were refined on these lines and their corresponding results framework have been developed. While the ToCs harbour the vision and aspirations of the programmes, the results frameworks provide a structure to the vision by outlining relevant indicators that help mapping progress towards the intended outcomes.

Nesting Projects within Programmes

The intermediate and immediate outcomes of programmes act as the guiding light for projects commissioned by Shakti. Each project is governed by its own ToC. These ToCs are indicative of project strategies towards the policy level outcome (intermediate) identified in programmatic ToCs. Projects help identify key milestones or venue level unlocks that could lead to the series of shifts in the policy venue leading to the policy or implementation change.



Figure 2: Nesting projects within programme ToC

Our MEL Framework

Background

MEL frameworks are supposed to work as learning and planning tools instead of accountability metrices. Traditionally, M&E have relied more on quantitative metrices, often leaving out qualitative nuances. Thereby, falling short of explaining why and how change takes place. An MEL system does not serve its purpose if it does not allow practitioners to pause, reflect and adapt to learnings. With all programmes working towards systems transformation, we had to be mindful of ensuring our MEL framework help programmes pause, reflect, and adapt.

There has been cognisant effort to make our MEL systems more 'conversational' with learning at the forefront. While measurement is an integral part of MEL systems, the objective of measurement becomes critical- **Is measurement for continual learning and improvement or Is measurement to ensure accountability to funders?** Accountability-centric measurement often corrupts the process. Semantics also play a significant role on how measurement is perceived positively by practitioners. Measurement for learning provide practitioners the confidence in MEL systems to contribute to programmes instead of playing an auditory role. Hence, we have been conscious to let learning guide our frameworks.

MEL systems tend to be useful only if they are comprehensible by programmes. Hence, there lies a need for systems to be simple, method agnostic and shared. Over-reliance on KPI based measurement tend to distance practitioners from MEL systems. Historically, dependence of evaluations on attribution as means to ascertain change also tend to underestimate programmes' roles in creating a system transformation. Especially for portfolio level evaluation, there is a need to shift the narrative from achievement of KPIs to 'good enough' evidence of achievement. MEL systems should facilitate discussions around identifying scope for improvement and re-strategising. It should give stakeholders the confidence of discussing failures and misses. We have tried to ensure our MEL frameworks facilitate an environment of learning and selfreflection within the organisation. Development of the MEL framework was another key initiative taken by the MEL function in the last year.

MEL Framework and Mechanism

We have developed a MEL framework involving with learning at the core of it. Both monitoring and evaluation seek to pose certain learning questions to projects and programmes that aim to capture ecosystem level movements.

Monitoring

Monitoring queries revolve around understanding: a) progress within the targeted policy and implementation venues towards outcomes; b) possible barriers to intended outcomes and c) any evidence of milestone achievement. With projects nested within programmes, project level monitoring feed into programme monitoring. Project level monitoring essentially try to capture milestone level progress through quarterly touchpoints with CSOs. The information captured across projects are expected to feed into programme level monitoring information. Monitoring information can help identify movement towards outcomes and help identify possible course correction measures.

Learning acts as a key pillar for monitoring. Information from quarterly monitoring will be synthesised and shared through a common learning platform. The objective of these platforms is to encourage conversations on how policy and implementation venues react to the work being done; facilitate cross learning across verticals and revisit activities if needed.

Evaluation

Evaluations have been located at two levels: a) Strategy and b) Outcome. While Strategy evaluations are designed to be undertaken annually, outcome evaluation are set to be undertaken once in every three years. Strategy evaluations will focus on effectiveness of programme strategies and efforts and validate assumptions therein. Outcome evaluations are designed to map programmatic achievements towards outcomes, the relevance of the outcomes towards the intended impact and the assumptions therein. Evaluations will culminate into reports that highlight strategic effectiveness and can set base for the annual programmatic strategy refresh.



Figure 3: MEL Framework

The Next Steps

The MEL function spent 2023 in developing and refining frameworks. The upcoming year anticipates operationalisation of the frameworks. The key activities that will be undertaken include:

Organisation Strategy

While development positive climate action and proficient CSO ecosystem have been identified as organisation strategic priorities, they have not yet translated into programme strategies. In 2024, we expect these strategic priorities to get integrated with the programmatic strategy and get reflected in the respective ToCs.

Operationalisation of Monitoring Framework:

Project level monitoring was initiated in 2023. However, the information transfer from project data to programme has not been operationalised. The MEL framework is geared towards that. This is one of the key activities that the MEL function intends to undertake.

Operationalisation of Learning Forums: With monitoring being adequately operationalised, we intend to roll-out the learning forums going forward.

Developing MEL Report: As the first output from the function, we intend to develop the MEL report. This report will entail details from the baselining of the outcomes substantiated with information from the first learning forum.

Leaders for a Developed, and Sustainable - India (LEADS-India)

India - one of the world's largest and fastestgrowing economies, is poised to play a pivotal role in shaping global efforts towards climate mitigation. Simultaneously, India has also prioritised addressing poverty eradication and socio-economic development, which requires increased energy production and consumption. Meanwhile, the climate crisis is no longer a distant threat for India, with its impacts being increasingly evident across the country, affecting vulnerable communities, agriculture, water resources, and urban infrastructure. These consequences demand swift and coordinated action.

The intricate relationship between the clean energy transition and socio-economic development is undeniable. The path toward low-carbon technology adoption presents a distinctive challenge — these innovations are poised to disrupt existing systems. Whether it is electric vehicles revolutionising transportation or the integration of green hydrogen in industries, each advancement introduces intricate trade-offs with well-established frameworks, necessitating cautious manoeuvring. The implications span far beyond technological shifts; they interweave with producers and supply chains, leaving a lasting impact on consumption, jobs, natural ecosystems and income landscapes.

Existing research by civil society, think tanks, and academic institutions largely focus on the technocommercial aspects of the transition and the related policy solutions and business models. There is scope for better alignment of civil society research agenda with broader public policy priorities. Also, there are few venues for an objective and intellectual discussion among all stakeholders on research and evidence produced by the think tank community.

Recognising the urgent need for innovative solutions to the complex challenges of climate mitigation, while ensuring economic growth, and equitable and inclusive social development, the 'Leaders for a Developed, and Sustainable-India' platform, was established. It is a forward-thinking initiative, under the Climate Insights Unit's Research Vertical, designed to foster collaboration and innovation in climate action and sustainable development. This Track 1.5 initiative serves as a vital bridge connecting government, think tanks, industry, and various stakeholders, addressing the need for coherent policies, integrating climate action across sectors, and exploring innovative financing mechanisms.

Its objectives include inclusive collaboration, cross-sectoral integration, technology adoption, policy innovation, international partnerships, and resource mobilisation. We hope that LEADS-India can become an instrument to propel India towards a sustainable and resilient future, enhancing global climate discussions, and establishing India as a leading climate actor.

This holistic approach ensures that climate action is not seen as a standalone objective but as an integral part of India's broader developmental pursuits, promoting sustainable progress and safeguarding the well-being of all its citizens. By bringing together climate leaders from diverse stakeholder groups under the umbrella of LEADS-India, we can harness collective expertise and resources to address these challenges effectively, and together champion the change required for a clean, secure, and resilient energy and climate future for India.



Critical Raw Materials (CRM)



Theory of Change for Critical Raw Materials Programme

Critical raw materials play a pivotal role in the global clean energy transition, an issue of paramount importance in the context of India's sustainable energy future. The strategic role of minerals such as copper, lithium, and others, in renewable energy technologies, like solar panels, motors, electric vehicle batteries, and the grid make them indispensable in a clean energy transition.

The global supply chain for critical raw materials faces a heightened risk of disruption due to high concentration. This vulnerability is exacerbated by the absence of viable and affordable substitutes, raising concerns about the stability of prices. Compounding these challenges is the consistent upward trajectory in demand for critical raw materials. Estimates suggest that to achieve a net zero transition by 2050, the global demand for CRMs is expected to increase by up to six times by 2040.

India faces a challenge with limited reserves of crucial raw materials, including Lithium, Cobalt, and rare earth elements essential for Low Carbon Technologies manufacturing. The scarcity of these resources within the country prompts heavy reliance on imports, intensifying India's dependence on other nations for its supply chain. This vulnerability raises concerns about the security and stability of the nation's access to critical raw materials, highlighting the imperative need for strategic measures to enhance domestic production, diversify sourcing channels, and secure a sustainable supply chain for the development and advancement of Low Carbon Technologies in the country.



Long Term Outcomes

The Critical Raw Materials Programme in the long term works towards ensuring reliable and secure access to Low Carbon Technologies for India through diversification and localisation of CRM supply chain in the country. In the long term, India needs to ensure greater global diversification and augmentation of the CRM supply chain, through the adoption of international policies and mechanisms that ensure strong and transparent global CRM markets and trade. Towards this effort, India needs to adopt policies that encourage Indian investments in Critical Raw Materials and Low Carbon Technologies value chains outside of India. To achieve these goals and swift global and domestic progress, there is also a need for the government to provide strong longterm LCT adoption signals.

As a long-term strategy, the country may also focus on developing upstream and midstream value chains of Critical Raw Materials that will help reap economic benefits from the opportunity. This would require revisiting national and Sub-national exploration policies and prioritising CRM extraction through optimal incentives and policy structure.

The processing and recycling projects also need to be encouraged through the revision of national and Subnational policies that prioritise Critical Raw Materials. The sector is currently at a nascent level and low-cost finance is currently available to only large players.

The same should also be made available to other players by tapping new resources and helping Indian companies become competitive with other global companies by following the ESG norms.

There is also a need to ensure the adoption of environmentally and socially responsible practices and develop the CRM value chain responsibly. Globally there is an acknowledgement that it has remained a major concern for the mining sector and new norms and regulations need to be adopted to ensure justice on these fronts. This would also help India become export-competitive and tap ESGindexed finance.

Strategies

The strategies of the programme will include researching and building insights into existing knowledge gaps and offering technical support to governments to implement policies and programmes. As part of the Shakti CRM Programme, several strategic initiatives are underway to address critical aspects of India's engagement in the global sphere. Policy inputs are being actively formulated to guide interventions and reforms in the mining, exploration, industrial policy, and recycling sectors. Building consensus with the government on Low Carbon Technologies (LCT) targets is recognised as imperative, fostering a collaborative approach to sustainable development.

The programme focuses on devising solutions to streamline the implementation of environmental and social norms while concurrently aiding downstream industries in integrating traceability and Environmental, Social, and Governance (ESG) considerations throughout the value chain.

A crucial element involves finding a venue for setting up a coordination mechanism across ministries responsible for CRM policies, ensuring effective decision-making. Moreover, efforts are directed towards enhancing the government's decision-making capabilities by developing CRM modelling expertise within Civil Society Organisations (CSOs). The efforts will also focus on helping Industries to come together and identify the need for collectively identifying solutions, engaging with the government to convey their needs, and embracing environmentally and socially responsible practices, fostering a holistic and integrated approach to address challenges in the CRM sector.

Efforts in 2023

Scoping Study and Collaboration among Four Partners

In 2023, we embarked on a significant research journey, focused on improving our understanding of critical raw materials vital to India's transition to a net zero economy through a scoping study on the topic. The study was conceptualised as a collaborative effort among four civil society organisations, the Centre on Energy Environment, Environment and Water (CEEW), Centre for Science and Economic Progress (CSEP), India Council for Research in International Economic Relations (ICRIER) and International Institute for Sustainable Development (IISD) using their capacities to deep-dive into the subject. The collaboration was built on the principles of a common agreed agenda, dedicated backbone infrastructure, mutually reinforced activities, shared measurements and continuous learnings and communications across collaborators.

The study focuses on deep-diving into the value chain (extraction, refining, processing, recycling etc.) of six minerals for six low-carbon technologies, looks into policy barriers and concerns related to geopolitics and other external factors and suggests potential solutions that could be followed to overcome those.

CSO Meeting in September 2023

Shakti convened a Brainstorming Meeting on September 14, 2023, on 'The role of CSOs in India's



Shakti's convening on 'The role of CSOs in India's response to CRMs'.

response to Critical Raw Materials'. The meeting brought together a remarkable assembly of Civil Society Organisations (CSOs) leading the charge on CRMs. The purpose objective of the meeting was to jointly come together to share progress on the topic, and importantly, explore ways to amplify our collective impact in paving the way for a smooth net zero transition for India.

The meeting spanned four sessions with the first session on State of Play focussing on witnessed CSOs sharing their explorations, the outcomes they achieved, and their learnings from working on critical raw material. In the subsequent session on gaps and challenges, CSOs explored transformative strategies essential considering recent developments and opportunities that can shape a secure energy and low-carbon future for India. The third session, Civil Society and Philanthropy's Potential delved deeper into the role of civil society in enhancing India's response to CRM. Finally, the convening culminated in a session on collaborative vision. Here participants discussed, areas of synergy, identified capacities that need nurturing within the CSO ecosystem, and explored potential strategies for collaboration that can enhance and amplify our collective impact. Immediate needs, such as frequent exchange of knowledge and learnings, mapping institutional interests and strengths within the ecosystem, and attracting fresh talent to work on CRMs were identified.

Sectoral Landscape

Globally there has been a concerted effort to address the challenges associated with critical raw materials. These actions encompass legislative measures, international collaborations, and domestic policies, all aimed at ensuring sustainable access to CRMs, safeguarding the national interest and manufacturing ambitions and fostering responsible resource management.



Major Global Moves

Critical Minerals ACT (European Union): In March 2023, the European Union (EU) took a significant step by promulgating the Critical Minerals ACT. This legislative move underscored the EU's commitment to ensuring its access to a secure, diversified, affordable, and sustainable supply of CRMs. The ACT represents a strategic response to the increasing importance of CRMs in driving technological innovation and economic growth across various industries.

Export Control Measures: China, a major player in the global CRM landscape, made notable policy moves that reverberated internationally.

Export Control on Graphite: In October 2023, China implemented export controls on graphite, a critical mineral with applications in various industries. This move impacted global supply chains, highlighting the influence that a single nation can exert on the CRM market dynamics.

Ban on Rare Earths Technology Export: China also imposed a ban on the export of technology crucial

for the extraction and separation of rare earths. These rare earths are pivotal in the production of magnets used in electric vehicles, wind turbines, and electronics. This ban signalled China's intent to control the technologies underpinning the global green and electronics sectors.

Responsible Value Chain Development: A global consensus has emerged, acknowledging the imperative of addressing environmental and social concerns in the CRM value chain. This recognition underscores a paradigm shift towards responsible and sustainable practices in CRM extraction and utilisation. The worldwide acceptance of these principles signifies a shared commitment to ethical and environmentally conscious approaches to managing these critical resources.

Progress During India's G20 Presidency and a Priority for Other Global Platforms

New Delhi's G20 Declaration: India, during its G20 presidency, played a pivotal role in elevating the discourse on CRMs. The New Delhi Declaration issued during this period emphasised the significance of addressing challenges in the global CRM supply chain. This declaration set the stage for collaborative efforts among G20 nations to ensure the responsible and sustainable management of CRMs.

High-level Voluntary Principles by G20: Under India's leadership, the G20 established high-level voluntary principles, providing a framework for member nations to adopt responsible practices in CRM management. These principles serve as a guideline for fostering transparency, ethical sourcing, and sustainability in the extraction and utilisation of CRMs on a global scale.

Domestic Policy Landscape and Efforts of the Indian Government

Shortlisting of Critical Minerals by Ministry of

Mines: The Ministry of Mines in India proactively identified and shortlisted 30 critical raw minerals necessary for the country's economic and low-
carbon transition. This step demonstrates India's commitment to strategic resource planning and aligning mineral resources with its developmental goals.

Amendment of MMDR and OAMDR Acts (2023):

In a landmark move, the Mines and Minerals (Development and Regulation) Act (MMDR) and the Offshore Areas Mineral (Development and Regulation) Act (OAMDR) were amended in 2023.

These amendments paved the way for the commercial mining of six critical minerals lithium, beryllium, niobium, tantalum, titanium, and zirconium. The introduction of a two-stage operating right granted for exploration followed by production operation signifies a comprehensive and structured approach to mineral resource development.

Bilateral Agreements and Mineral Security

Partnership: India, recognising the importance of international collaboration, entered into bilateral agreements with key countries such as Australia and Japan to secure access to critical raw materials. Furthermore, India joined the Mineral Security Partnership with the United States in June 2023, signifying a commitment to ensuring a stable supply of essential minerals through strategic alliances.

Auctioning of Critical Mineral Blocks (Nov 2023):

In a move to encourage private sector participation and responsible resource extraction, the government of India launched the auction of 20 critical mineral blocks in November 2023. This initiative aligns with global efforts to engage the private sector in sustainable mineral resource development.

Launch of National Geoscience Data Repository

(NGDR): Recognising the importance of data transparency in informed decision-making, India launched the National Geoscience Data Repository (NGDR). This repository serves as a valuable resource for geological data, promoting accessibility and aiding in the exploration and exploitation of critical minerals with a focus on sustainable practices.

Future Plans for the Programme

The next phase of the CRM programme will be based on strategies and gaps identified in the scoping study. It would focus on digger deeper into the value chains of minerals which are a priority for India, assessing value addition and identifying part of value chains where India holds competitive advances and a better understanding of markets. The programme will also focus on creating a better linkage of industrial policies with critical minerals strategy and researching incentives and levers to attract private sector investment in manufacturing, refining, processing and extraction. We will also work on identifying and strengthening diversification strategies through bilateral partnerships and other strategies such as friend-shoring or ally-shoring i.e., manufacturing and sourcing from countries that are geopolitical allies, etc. The circularity of the Critical Raw Materials will be an important focus area and we will focus on finding policies India can adopt to develop a recycling ecosystem in India. The environmental and social impact of CRM value chain development needs more thorough research and developing norms which ensure the adoption of responsible practices by value chain players.

During our next phase, we will also set up a Community of Practice on Critical Raw Materials. Our work in the sector has suggested that the topic is currently at a nascent stage in terms of the availability of insights and strategies India should adopt to secure these resources. Some Indian CSOs have started working on CRMs and there is a need for exchanges on learnings and developments on the topic. As a platform, the community of practice will help with sharing knowledge within organisations through research findings, expertise, best practices and developments, foster collaboration between organisations working on the topic enabling them to find potential opportunities for joint projects, research initiatives, or partnerships, jointly discuss the CSO capacity gaps in the sector and the skills and expertise required to expedite action and identify key evidence/insights that need to be built for action in the sector and research pieces that can be delivered through the effort of CSOs.

Industry, Buildings & Cooling



INDIA, WITH ITS PREDOMINANTLY TROPICAL CLIMATE, IS EXPERIENCING ESCALATING TEMPERATURES AND HEAT WAVE EVENTS DUE TO CLIMATE CHANGE. THIS, COUPLED WITH POPULATION GROWTH, RAPID URBANISATION AND INDUSTRIALISATION HAS LED TO A SIGNIFICANT INCREASE IN THE RESOURCE AND ENERGY DEMAND; STRESS ON THE ELECTRICITY GRID; AND HIGHER GHG EMISSIONS. ADDITIONALLY, THIS HAS INCREASED THE RELEASE OF HYDROFLUOROCARBONS (HFCS), WHICH ARE HIGH GLOBAL WARMING POTENTIAL (GWP) GASES.

Despite these challenges, the year 2023 saw India at the forefront of the climate change debate and aggressively advocating for affirmative action to restrict the impact. Inspite of having low per capita GHG emissions, India has committed to becoming net zero by 2070. In line with the country's climate commitments, in 2021, the Honourable Prime Minister of India announced the 'Panchamrit' action plan which targets reaching a non-fossil fuel energy capacity of 500 GW; fulfilling 50% energy requirements via renewable energy; reducing CO₂ emissions by 1 billion tons; & reducing carbon intensity below 45% by 2030; and achieving a net zero emission target by 2070. Meeting the ambitious 2030 targets and transitioning the country towards a net zero pathway will require significant effort at both the central and Sub-national level.

During its G20 presidency, India brought the climate crisis and greater cooperation on energy transition to the forefront of the global agenda. In July 2023, the G20 Outcome Document, released by the Energy Transitions Working Group (ETWG), emphasised the pivotal role of mitigating GHG emissions from the energy-intensive industrial sector in achieving global net zero and carbon neutrality goals by or around mid-century. India's energy production and consumption landscape are changing rapidly. Industry, Building, and Cooling – a cross- cutting domain that is increasingly becoming essential for human comfort and enterprise, have to play a central role in achieving India's climate goals.

To augment country's aim to become 'Aatmanirbhar' through deployment of clean energy and serve as an inspiration for the global Clean Energy transition, the National Green Hydrogen Mission (NGHM) was also launched with the overarching objective to make India the Global Hub for production, usage and export of Green Hydrogen and its derivatives. The Mission announced an outlay of Rs 19,744 crore, including an outlay of Rs 17,490 crore for the Strategic Interventions for Green Hydrogen



Transition (SIGHT) programme. In tandem with these efforts, Ministry of Power (MoP) has also implemented the Renewable Purchase Obligation (RPO) as part of its commitment to clean energy transition. RPO mandates to specify a minimum percentage of renewable energy consumption by designated consumers. These initiatives align with the overarching aim of decarbonisation in the economy.

India has introduced 8 missions under the umbrella of the National Action Plan for Climate Change (NAPCC). The National Mission for Enhanced Energy Efficiency (NMEEE) is among the eight missions that specifically focuses on improving energy efficiency. Under the NMEEE, in 2012, the Perform-Achieve-Trade PAT scheme (PAT) was launched as a marketbased mechanism for reducing the specific energy consumption of energy-intensive industries (known as Designated Consumers) by setting targets and allowing entities to trade energy saving certificates (ESCerts). The Government has also laid out some policies and regulations to mitigate adverse impact of climate change and to achieve net zero targets.



As we ponder over the efforts of Shakti's Industry, Buildings and Cooling Programmes in the year 2023, we can say with confidence that we have significantly contributed towards and supported India's progress towards driving sustainable practices in these sectors.

In 2023, some of the key areas where Shakti provided technical and knowledge support included - Ministry of New and Renewable Energy (MNRE) for development of the National Green Hydrogen Mission; Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, on Extended Producer Responsibility (EPR); Ministry of Steel (MoS) to formulate a National Mission on Green Steel; Bureau of Energy Efficiency (BEE), on revision of ECBC-R/Eco Niwas Samhita and specifying minimum share of consumption of non-fossil sources by designated consumers as energy or feedstock; National Centre for Cold-chain Development (NCCD), on energy transition aspects in cold chain sector; and Airports Authority of India (AAI) on enhancing energy efficiency & sustainable development of Indian airport terminal buildings.

I am also pleased to say that we made some key contributions at the Sub-national level. These included initiating an in-depth analysis of industrial clusters and facilitating the development of Green Hydrogen ecosystem in Gujarat, Maharashtra, Jharkhand and Chhattisgarh; assisting in implementation of India Cooling Action Plan (ICAP) in states of Karnataka and Kerala and knowledge support to the Government of Bihar for development of low carbon pathways; and Government of West Bengal on promoting green energy efficient technologies and practices among MSMEs.

As part of our vision towards a transition to a sustainable and energy efficient future for India, Industry, Buildings & Cooling Programmes organised various stakeholder consultations, convenings, workshops and knowledge sessions throughout the year to facilitate exchange and sharing knowledge and expertise.

As we step into 2024, we look forward to continuing and expanding our efforts towards combating climate change with a holistic approach towards addressing industry, buildings, and cooling sectors to foster a transition towards a low-carbon future. As the nation strives to achieve its ambitious climate goals, we hope to act as pivotal drivers, emphasising the importance of collaborative efforts and innovation and widespread adoption of climate-friendly solutions.





Context

The industry sector stands as a major contributor, accounting for approximately 25% of India's total greenhouse gas (GHG) emissions². Within this sector, steel, cement, and chemicals emerge as the primary contributors, owing to their energy-intensive manufacturing processes and widespread usage. Notably, the Indian steel industry stands out as one of the most energy-intensive globally, utilising energy at a rate approximately 40% higher than the global average³. The steel sector contributes 5% to the country's total GHG emissions and 33% to emissions from the manufacturing and construction sector. On the other hand, while the Indian cement industry is considered relatively energy-efficient compared to global counterparts, it still accounts for around 4% of India's overall GHG emissions⁴. The steel and cement production are poised to increase 2-3 fold⁵ and 2 fold⁶ respectively by 2030. The Government of India's vision of achieving a US\$5 trillion economy by 2024, with substantial investments in infrastructure, is expected to drive a surge in demand for these materials, impacting energy consumption, the environment, resources, and the economy.

The construction sector primarily drives the demand for steel and cement, particularly in housing and commercial spaces. In 2022, this sector accounted for 45% of the steel demand, and this is expected to increase up to 60% by 2030^7 . The building operation in India today accounts for about a third of its energy use, with the residential sector alone consuming one-fourth of the total national demand. In addition, around 10% of the country's energy is used in the production of building materials and construction of the new building (MOEFCC, 2021). During 2020, the building sector was responsible for 1000 million tons of CO₂ emissions, out of which 50% was contributed by embodied carbon⁸. As per the estimates, India is expected to add 5.7 billion square meters of building stock by 2030, 21.5 billion square meters by 2040, and 45 billion square meters by 2060⁹. The share of embodied energy and carbon from the manufacture of materials and components and the construction of buildings will majorly drive sector emissions between 2020 and 2050.



^{2.} https://www.niti.gov.in/sites/default/files/2022-11/Report-Committee-on-Low-Carbon-Technologies.pdf

^{3.} Samajdar, C. 2012. Reduction in Specific Energy Consumption in Steel Industry - with special reference to Indian steel industry. Energy and Environmental Engineering Journal.

^{4.} MoEFCC. (2021). India: Third Biennial Update Report to the United Nations Framework Convention on Climate Change. Ministry of Environment, Forest and Climate Change, Government of India.

^{5.} Decarbonizing India: Iron and Steel Sector (2022), CSE

^{6.} Decarbonizing India: Cement Sector (2023), CSE

^{7.} https://www.theclimategroup.org/sites/default/files/2023-01/India%20Net%20Zero%20Steel%20Demand%20Outlook%20 Report_2.pdf

^{8.} National Institute of Urban Affairs and RMI. From the Ground Up: A whole-system approach to decarbonising India's buildings sector, November 2022 https://rmi.org/insight/wholesystem-approach-to-decarbonize-indias-buildings/.

^{9.} https://www.oneplanetnetwork.org/knowledge-centre/projects/transforming-built-environment-through-sustainablematerials.

The current policy landscape and the practices in the country are mostly aligned in addressing operational carbon with a little focus on the life cycle approach covering embodied carbon. Achieving net zero emissions in the building sector means addressing lifecycle carbon emissions, i.e., both embodied and operational carbon. Estimates suggest that about 70 per cent of India's 2030 urban infrastructure is yet to be built, signalling huge opportunities to save embodied carbon emissions—the emissions from the full life cycle of building materials. Cement, steel and walling materials constitute the largest chunk of this in buildings. Reducing their use through design and/or substituting them with low-carbon materials reduces embodied carbon.

By 2037, the demand for cooling is likely to be eight times more than current levels. This means there will be a demand for a new air-conditioner every 15 seconds, leading to an expected rise of 435 % in annual greenhouse gas emissions over the next two decades. Cooling will contribute to the increase in refrigerant and energy consumption and Greenhouse Gas (GHG) emissions with space cooling having the largest share among all sectors. 45% of India's peak electricity demand in 2050 is expected to come from space cooling alone. By 2030, about 40% of India's GDP will still depend on heat-exposed work. Lack of cooling access will have a significant negative impact on well-being, productivity, and food security leading to a 2.5-4.5% loss in GDP (~US\$150-250 billion)¹⁰. Ensuring thermal comfort for all will be critical to mitigating negative impacts on health and productivity. Access to Sustainable Cooling solutions is more urgent than ever.

Sustainable cooling is at the intersection of three international multilateral agreements viz. Kigali Amendment to the Montreal Protocol, Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) and Sustainable Development Goals (SDGs) of 2030. India has ratified the Kigali Amendment to the Montreal Protocol in 2019 and has been actively implementing HFC Phasedown plans. Concurrently, India is progressing with the implementation of the India Cooling Action Plan (ICAP), that was released in 2019. The plan aims to provide sustainable cooling and thermal comfort for all while reducing cooling energy requirements. The plan focuses on interventions across buildings, refrigeration, cold chain, transport refrigeration and consumer appliances. It seeks to promote the adoption of energy-efficient and environment-friendly cooling technologies. As per the ICAP projections, the cooling demand in 2037-38 as compared to the baseline year 2017-18, will grow by nearly 11 times in built space and 4 times in cold-chain and refrigeration sector.

India has several key policy drivers that are shaping the industry, building and cooling sector. The Energy Conservation Act was amended in 2022 to incorporate new focus areas such as mandate use of non-fossil fuels and feedstocks in industry sub-sectors. It also includes development of domestic carbon market and carbon credit trading scheme (CCTS) and extending the applicability of Energy Conservation Building Code to residential buildings, along with sustainability aspects. The amended act aims to promote efficient use of energy and its conservation across sectors. In pursuit of this amendment, Shakti is providing knowledge support to the Bureau of Energy Efficiency (BEE) for target-setting assessment for non-fossil fuel or feedstock use in industries like Steel, Chlor Alkali, Fertiliser, Cement, Refinery, Aluminium, Pulp and Paper. Shakti is extending knowledge support to BEE in developing norms for energy efficiency and conservation, the use of renewable energy, and other requirements for green buildings in codes for residential buildings, hereafter referred to as Energy Conservation and Sustainable Building Codes for Residential Buildings (ECSBC-R).

Technical and Knowledge Support

Technical Assistance to MNRE for National Green Hydrogen Mission

Shakti has extended technical assistance to the Ministry of New and Renewable Energy for development of the National Green Hydrogen Mission. Going ahead, Shakti is engaged with BEE in defining a comprehensive green hydrogen taxonomy specifically tailored to the Indian context.

Technical Support to MoEFCC on EPR

India served as president for G20 from December 1, 2022 till November 30, 2023. Shakti provided technical support to the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, on the sub-theme Extended Producer Responsibility(EPR) under the thematic track of Encouraging Resource Efficiency and Circular Economy (ERECE) in G20. Amongst the major topics, the G20's official Delhi Declaration has included and recognised the importance of EPR.

Knowledge Partner to Ministry of Steel (MoS)

Shakti provided support to Ministry of Steel (MoS) as a knowledge partner for its initiatives to formulate a National Mission on Green Steel, aimed at accelerating the decarbonisation of the Indian steel sector. The objective of the mission is to decarbonise the steel sector by 2070, in line with India's target announced at COP26. Under this mission, a roadmap is expected to be developed for the steel industry that will provide a direction to meet future steel demand sustainably and align the efforts and strategies of all stakeholders to facilitate a transition toward low-carbon steel production. The Mission also aims to build a policy and regulatory framework, providing an incentive structure that enables rapid and large-scale investment in low-carbon technologies and demand creation for green steel.

Knowledge Support to BEE and NCCD

Similarly, the National Centre for Cold Chain Development (NCCD), an autonomous think tank under the Ministry of Agriculture and Farmers' Welfare, is actively engaged in initiatives addressing energy transition, digitisation, and infrastructure gaps analysis within the cold-value chain sector. Recognising the significance of 'Built space' and 'Cold-value chain,' these domains are identified as key areas of focus in India's cooling landscape, Shakti is extending knowledge support to BEE and NCCD on a few of their initiatives in these domains. One key initiative includes development of a roadmap for energy transition in cold chain sector in India. Realising the food losses in cold value chain, Shakti has initiated development of web-based tool and mobile application to enable market linkages between farmers and cold chain operators. The objective is to ensure energy monitoring of cold storages to maximise utilisation, reduce costs through a hub-and-spoke logistical approach, address information gaps related to capacity, energy demand and costs, and lastly enable access to cooling.

Technical Support to Airports Authority of India (AAI)

With the amendment of EC act, several initiatives are being undertaken in built space area, more specifically focusing on sustainability aspects. Shakti is extending technical support to the Airports Authority of India (AAI) on various research activities specifically focusing on enhancing energy efficiency & sustainable development of Indian airport terminal buildings.



Dr Sachin Kumar (centre) at the India Cold Chain Conclave, Himalayan Chapter.

Initiatives at Sub-national Level

Gujarat, Maharashtra, Jharkhand and Chhattisgarh

Shakti led an in-depth analysis of industrial clusters in four states: Gujarat, Maharashtra, Jharkhand and Chhattisgarh; and facilitating the development of green hydrogen ecosystem in these states. This initiative under HSBC's India's strategic partnership towards enabling innovations in green hydrogen was launched by the honourable Finance Minister, Government of India in August 2023¹¹.

Facilitating Implementation of ICAP in Karnataka and Kerala

States play a critical role in undertaking measures and implementing the actions required for change on the ground. Climate change and low carbon development are new and fairly technical fields in most of the states. It is therefore important to develop and execute climate action plan addressing state specific contextualities.

Shakti is facilitating the implementation of ICAP at Sub-national levels in states of Karnataka and Kerala. Shakti is also providing technical support to the Directorate of Micro, Small & Medium Enterprises, Government of West Bengal to promote green, energy efficient technologies and practices among the MSMEs in the state. Similarly, in an programmatic intervention, Shakti is extending knowledge support to the Government of Bihar for development of low carbon pathways.

Under this initiative, Shakti is helping the state Government to assess the GHG emissions from the industry sector and develop sub-sector specific roadmaps. The state has a mix of emission intensive industry sub-sectors like clay-fired brick manufacturing, rolling mills, sugar mills, rice mills, coal briquetting, etc.



MoU signing with KREDL.

MoU with Karnataka Renewable Energy Development Ltd (KREDL)

Shakti signed a Memorandum of Understanding with Karnataka Renewable Energy Development Ltd (KREDL) to extend knowledge support for development of long-term economy-wide sectoral roadmaps including implementation of Karnataka Energy Conservation and Energy Efficiency Policy 2022-2027, and Green Hydrogen-related interventions focusing on both demand and supply side aspects including export. Dr Sachin Kumar, Director, Industry, Building & Cooling Programmes, Shakti, exchanged the MoU with the Managing Director of KREDL.

Collaborative with Bihar State Pollution Control Board

In a collaborative effort spearheaded by the Bihar State Pollution Control Board (BSPCB), alongside Development Alternatives (DA) and Shakti, the Bihar Minister of Environment, Forest, and Climate Change (DoEFCC) released the following two pivotal reports:

- Low Carbon Pathway for Sugar Mills in Bihar
- Low Carbon Pathway for Re-Rolling Mills in Bihar

Dr Sachin Kumar, attended the release of two reports by DoEFCC, Government of Bihar, by Shri Tej Pratap Yadav, Honourable Minister, DoEFCC, Government of Bihar.



Release of two reports by DoEFCC, Govt of Bihar that are part of Shakti's partnership with BSPCB.

These reports are part of Shakti's long-term partnership on BSPCB's overarching project 'Climate Resilient and Low Carbon Development Pathways for Bihar.' This initiative aims to assess Greenhouse Gas (GHG) emissions and recommend low-carbon development strategies for key industries in Bihar, including the brick sector, calcined pet coke, re-rolling mills, distilleries, rice mills, cement industries and the sugar sector. The released reports specifically focus on the re-rolling mills and sugar mills sectors after a thorough review and research under this initiative.



Industry Decarbonisation Programme

Dr Sachin Kumar (4th from left) at the Green Building Congress.

Shakti's Industry Decarbonisation Programme focuses on action-oriented research to develop supportive ecosystem for decarbonisation of various industry sub-sectors. The strategy of Industry Programme is to assess the existing gap/barriers; recommend essential techno-policy- economic levers at national and sub-national level which will facilitate creation a supportive ecosystem for low carbon growth of Industry sectors. Through focused interventions, Shakti is assessing the feasibility of decarbonisation levers in various industrial sectors. One such decarbonisation lever is Carbon Capture Utilisation and Storage (CCUS), and its techno-economic feasibility in the steel and cement industry is being assessed. At a Sub-national level, Shakti is intervening in Sub-national regions like West Bengal, Jharkhand and Chhattisgarh; to understand the potential technological, socio-economic, environmental impact on industrial clusters which can take place in the near and longer term due to adoption of low carbon technologies and practices.



Building Decarbonisation Programme

In the journey to decarbonise the building sector, Shakti's Building Decarbonisation Programme aims to initiate pilot actions and develop strategies to provide an evidence-based foundation for future policy interventions on Net zero Buildings. The programme seeks to enhance the understanding of net zero carbon buildings, life cycle carbon emissions, and building energy efficiency. Currently, India's policy landscape primarily focuses on reducing operational energy and decarbonising the power supply, with limited emphasis on embodied carbon in buildings. Thus, the intention is to address this gap and the crucial challenge of the availability and accessibility of reliable data by generating evidence on life cycle carbon emissions and creating a shared taxonomy for net zero Carbon Buildings. Shakti is engaged with initiatives around establishment of open access database of various building construction materials to facilitate adoption of LCA practices into design, construction and operation. Similarly, Shakti is involved in the development of regional roadmaps to implement net zero carbon urban housing in India. This includes creating an embodied carbon

baseline for buildings, addressing both material and geographical variations. The programme activities are conceptualised as early actions on national priorities and programmes around building energy efficiency, thermal comfort, space cooling, etc., These initiatives involve various stakeholders, such as financial institutions, developers, architects, researchers, and more.

Clean Cooling Programme

Shakti's Clean Cooling Programme aims at supporting the implementation of the India Cooling Action Plan through the phase-down of hydrofluorocarbons (HFCs) based refrigerants and concurrent improvement of the energy performance in space cooling and cold-chain.

As temperatures continue to rise, the demand for cooling is projected to increase significantly, placing a greater strain on power generation and transmission systems. Fans play a crucial role in providing essential cooling for millions of people in India and worldwide. As of January 1, 2023, star labels has become mandatory for ceiling fans. Ceiling fans hold a significant position as one of the most extensively utilised household appliances in India. However, they also rank high among the major consumers of electricity. As per estimates, by replacing all residential ceiling fans in India with super-efficient models, a significant 15%¹² reduction in residential power consumption can be achieved annually. The adoption of energy efficiency fans not only leads to significant energy savings but also translates into cost savings. However, due to limited availability and higher costs of efficient fans, their adoption is limited. Shakti has partnered with the Energy Efficiency Services Limited (EESL) to accelerate the manufacturing and adoption of Energy efficient fans through demand aggregation Strategy and development of Integrated Energy Efficiency market place and Digital Management IT tool.

12.

https://www.thehindu.com/news/national/andhra-pradesh/eesl-to-distribute-10-million-energy-efficient-fans-across-india/ article67008458.ece



Bansi Shukla (4th from left), attending the Sustainable Cooling and Consumer Behaviour workshop organised by TERI.

Knowledge Sharing, Convenings and Workshops

Shakti has undertaken a one of its kind initiatives to start a knowledge sharing series for Not-in-kind (NIK) technologies which aimed at building awareness and capacities for achieving goals under ICAP and ECBC. NIK cooling technologies are cooling technologies that offer no or low fluorocarbon and energy efficient refrigeration and cooling, making them climate friendly, grid friendly and affordable cooling options. Therefore, these technologies act as an important tool in the decarbonisation of space cooling sector.

Shakti also took the initiative in bringing together research and academic institutions, industry associations, and non-profit organisations, to form the Sustainable and Smart Space Cooling Coalition – "India Cooling Coalition". Currently, entering the fifth phase, this knowledge-exchange platform provides meaningful dialogue with various national and international stakeholders and recommends policy initiatives to ensure the success of government programmes on smart cities, smart grid, housing, buildings, universal access to power, cold-chain, transport sector, refrigeration servicing sector while ensuring affordable and sustainable cooling for all.

Throughout the year, Industry, Buildings & Cooling Programme at Shakti organised various stakeholder consultations, convenings, workshops and knowledge sessions. These events aimed to bring together grantees, experts and local partners across the country. The goal was to facilitate the exchange of ideas and experiences, foster collaboration, and strategise on how the community can continue to make strides in creating a sustainable future. Additionally, the focus was on advancing action and leadership towards decarbonisation of these sectors and climate friendly cooling solutions.

Shakti as a knowledge partner has contributed to a number of side events/dialogues at various Multilateral Cooperation Platforms in alignment with the International Commitments. This included an expert meeting during the 35th Meeting of the Parties to the Montreal Protocol in Nairobi, addressing the international governance of Stratospheric Aerosol Injection (SAI) research and deployment under the Vienna Convention for the Protection of the Ozone Layer. Additionally, to elevate sustainable cooling for the "Cool COP", Shakti organised an expert meeting at a side event in COP28, UAE focussing on Advancing Green Cooling in Global South.

The discussion aimed to strengthen the Cooling Action Plan in India and other Global South countries by sharing insights, identifying practical implementation strategies, and defining the global support needed. Hydrogen is being considered as the "Fuel of the Future" and is a highly debated topic all around the world. Shakti organised a focused event in the COP28 to discuss on the potential of this fuel in decarbonising the industrial clusters.

The stakeholders' discussion focused on various aspects, including possible pathways for India's transition to a hydrogen-based economy, feasible ways to accelerate industry's readiness towards adopting green hydrogen technologies, and strategies to build stakeholder capacity on the subject matter. The discussion also captured aspects for linking green hydrogen production centres with industrial clusters in the most beneficial way.

Climate Policy, Cities and Climate Finance



BY SHUBHASHIS DEY Director, Climate Policy and Climate Finance

AS WE LOOK BACK ON THE YEAR 2023, IT IS ESSENTIAL TO REFLECT ON OUR ACHIEVEMENT AND LEARNINGS. GEOPOLITICALLY THIS YEAR WAS SIGNIFICANT WITH INDIA HOSTING THE G20 SUMMIT, DEBATES ON CLIMATE-TRADE NEXUS AND HUMANITARIAN CRISIS IN EAST EUROPE AND MIDDLE EAST ASIA. HOWEVER, HERE I WILL DELVE INTO INDIA'S LEADERSHIP IN SHAPING DISCOURSE ON CLIMATE POLICY AND CLIMATE FINANCE AND WILL ALSO UNDERSCORE CONTRIBUTION BY INDIAN CIVIL SOCIETY ORGANISATIONS (CSO) IN FORMING THIS NARRATIVE.

CLIMATE POLICY AND CLIMATE FINANCE ARE TWO KEY COMPONENTS IN THE GLOBAL EFFORT TO COMBAT CLIMATE CHANGE AND INDIA HAS MADE SIGNIFICANT STRIDES IN BOTH POLICY FORMULATION AND FINANCIAL COMMITMENTS IN 2023. SUBSEQUENT WILL HIGHLIGHT MY OPINION ON OUR ACHIEVEMENT AND LEARNINGS FOR 2023.

G20 Summit and Delhi Declaration

During the G20 summit organised in India, the involvement of climate focused CSOs was visibly higher in comparison to earlier G20 processes. The climate focused CSOs informed various thematically oriented working groups of the Finance Track and the Sherpa Track of the G20 process during Indian presidency. Involvement of climate focused CSOs in the G20 process manifested on the prominence given to climate change in the G20 Delhi declaration. Key highlights from the declaration include the urgent need for Multi-lateral Development Bank (MDB) reforms, development of a multi-year G20 Technical Assistance Action Plan (TAAP), publication of G20 report on Macroeconomic Risks Stemming from Climate Change and Transition Pathways, recommendations for developed countries to fulfil their commitment to their collective provision of adaptation finance and implementation of Loss and damage fund. The loss and damage fund was subsequently created during COP28 in Dubai. Additionally, the Sustainable Finance Working Group underscores the need for mobilising USD

5.8-5.9 trillion climate finance till 2030 for developing countries to implement their NDCs, as well as the need of USD 4 trillion per year for clean energy technologies by 2030 to reach net zero emission target by 2050. The declaration called on Parties to set an ambitious, transparent and trackable New Collective Quantified Goal (NCQG) of climate finance in 2024.

Ahead of the G20 Leaders' Summit in New Delhi in September 2023 (G20 Summit), and the Summit for a New Global Financial Pact in Paris in June (Paris Summit), Shakti, Agence Française de Développement (AFD), and the Council on Energy, Environment and Water (CEEW) held a roundtable discussion to understand expectations and inform policy. The discussion was centred around resilient infrastructure finance and development that relates to sustainable development and SDGs, as well as on climate finance and energy transition that relates to long term development trajectories. This was deliberated upon in the backdrop of various prevalent proposals and discussions on international financial architecture (including ODA reforms, Bridgetown Agenda, MDB reform etc.).

Shakti CEO (Interim), set the context by highlighting, "Global South currencies are losing to the global currencies and this trend means that their existing debts are costlier to repay and borrowing becomes difficult and most nations in the Global South have a reverse trade deficit in terms imports vs exports. Technology transfer, debt financing at low costs is urgently required with longer durations of repayment. Increased liquidity made available to take those steps will ensure concerted efforts in helping the federal structures in these nations to work on slowing down the impacts of climate change."





COP28, Dubai

The importance of climate change negotiation was clearer during COP28 in Dubai in 2023, which was a major global event participated by heads of state from 140 countries, over 80,000 participants and more than 5,000 media personals. This COP witnessed large participation of CSOs from global South including India. The COP28 was unique and special for Shakti.

The Honourable Prime Minister of India Shri Narendra Modi announced India's bid to host COP33 (Y2028) during his speech and launched the green credit scheme, a voluntary "nature pricing" mechanism. During the COP28 process, India played key roles in areas like the COP28 UAE leaders' declaration on a global climate framework for building resilience of the international financial architecture to withstand frequent and severe shocks caused by climate change.

India's 3rd National Communication (NATCOM)

During COP28, India finalised its third National Communication on climate change based on GHG inventory of 2019. It also finalised its initial Adaptation Communication. The NATCOM highlighted India's consistent effort towards climate action while prioritising the development and wellbeing of its people.

Key highlights from the document includes India's continued effort to decouple economic growth from greenhouse gas emissions and greening of Indian electricity grid. India has successfully reduced the emission intensity vis-à-vis its GDP by 33% between 2005 and 2019 and achieved 40% of electric installed capacity through non fossil fuel sources. Indian NATCOM acknowledges the contribution from CSOs for drafting the document.

Sub-national Climate Action

During COP26, Indian Government announced its commitment to reach net zero by 2070 along with intermediate 2030 targets which include increasing non-fossil fuel electricity capacity to 500 GW, reducing carbon emissions by one billion tons, and bringing down the economy's carbon intensity by 45 percent by 2030 from 2005 level. Meeting the ambitious 2030 targets and transitioning the country towards a net zero pathway will require significant effort at the Union and Sub-national level.

States play a critical role in undertaking measures and implementing the actions required for change on the ground. Reaching the 2030 targets and eventually net zero will require substantial and immediate action from State Governments as well as local CSOs. However, this can be a challenge because there is a significant capacity gap within the states when it comes to understanding the nuances of climate change and the cross-sectoral efforts required to tackle it. It is, therefore, important that this gap is urgently addressed and state actor capacities built to ensure that India stays on track to achieve its climate action targets.

Civil society lead action proved to be an ideal tactic in states like Bihar, Uttar Pradesh, Maharashtra and Tamil Nadu for overcoming several capacity gaps. Supported by CSOs, states like Bihar and Tamil Nadu are finalising their long-term net zero or climate neutrality plans. Similarly, CSOs supported several cities and districts in Uttar Pradesh, Maharashtra, Haryana, Karnataka, Gujarat, Madhya Pradesh and Tamil Nadu have drafted their climate action plans and implementing them.



Greening of Indian Financial System

The Green Indian Financial System (GIFS) initiative, launched by Shakti along with Agence Française de Développement (AFD) and Small Industries Development Bank of India (SIDBI) in January 2022, aims to shape and broaden the discourse on greening the financial ecosystem in India. It seeks to create knowledge spill-overs, aid in capacity building, and leverage international experience. In 2022 & 2023, GIFS facilitated dialogue between public and private financial institutions, associations, regulators, and public authorities, fostering exchanges of ideas and experiences between the Indian and French-European communities.

In 2023, GIFS concentrated on key themes identified through discussions in 2022, which encompassed the greening of MSME finance and the advancement of women in climate finance. A study has been commissioned to design a technical assistance facility for MSMEs, enhancing access to green capital and incentivising green transition. GIFS has also launched the Greening of Finance by Women (GroW) network, committed to leveraging women's participation and leadership for the greening of the financial system. In 2023, the joint declaration on greening the financial system got a major boost after State Bank of India joined it.

Looking ahead, GIFS aims to establish an enhanced knowledge repository for policymakers and practitioners, showcase good practices on green financing and financing the green from emerging economies and foster increased coordination and dialogue among relevant stakeholders.

Carbon Market

Recognising the importance of carbon pricing, Government of India notified the Carbon Credit Trading Scheme (CCTS), 2023 on 28th June 2023. With this scheme, India enters the elite league of nations with domestic carbon market. Obligated entities under the Indian CCTS will receive carbon intensity targets. Key functionaries within Indian CCTS are:

- Administrator Bureau of Energy Efficiency (BEE)
- Registry The Grid Controller of India (POSOCO)

- Regulator Central Electricity Regulatory Commission (CERC)
- Committee National Steering Committee (includes BEE, several ministries, state government representatives, experts etc.) and Technical Committee (includes BEE, experts, etc.)
- Accredited Carbon Verification Agencies
- Trading Platform Power exchanges

CCTS 2023 will be a compliance-based scheme in which Ministry of Power (MoP) will decide the sectors and the obligated entities to be covered under the compliance mechanism based on the recommendation of BEE. The obligated entities shall be issued carbon credit certificates for their achievement in reducing the GHG emissions intensity beyond the target set for such obligated entities, based on the recommendation of National Steering Committee.

The obligated entities that do not achieve their targeted reduction in GHG emissions intensity shall meet shortfall by purchasing carbon credits certificates from Indian carbon market. On December 19, 2023, India notified an offset mechanism (Voluntary Market) under Carbon Credit Trading Mechanism. Under the voluntary market nonobligated entities can also register their projects as per the approved methodologies for GHG emission reduction. Again, CSO community played a vital role during the design phase of Indian Carbon Credit Trading Mechanism and expected to play an important role during its execution.

Green Credit Initiative

Indian Prime Minister, Shri Narendra Modi, unveiled the transformative Green Credit Initiative on December 1, 2023, at COP28, marking a significant stride in the realisation of the 'LiFE' (Lifestyle for Environment) movement initiated in 2021. In operationalising this initiative to enhance environmental awareness and operationalise nature pricing, the Green Credit Initiative works towards developing a market-based mechanism. It aims to issue Green Credits as incentives to a diverse array of entities, ranging from individuals and farmer producer organisations to cooperatives, forestry enterprises, sustainable agriculture ventures, urban and rural local bodies, private sectors, industries, and organisations. The initiative not only intends to reward environment-positive actions but also strives to instigate a mass movement, fostering active participation and a collective dedication to environmental well-being.

The initial set of activities eligible for Green Credits include Tree Plantation, Water conservation, harvesting and efficiency, Sustainable Agriculture, Waste management, Air Pollution Reduction, Mangrove Conservation, Ecomark Labelling, and Sustainable building, and infrastructure. Indian CSOs provided insights and inputs through ecosystem consultations, informing the programme's conceptualisation and designs for operationalisation.

Business and Climate

Investors globally and increasingly in India are applying non-financial factors like climate risk exposure and transition risk in their investment evaluation process for identifying material risks and growth levers. Additionally, public procurement agencies are proposing to mandate carbon emission disclosure by its contractors, for example the United States Federal government has proposed that all federal contractors must have science-based emissions reduction targets and disclose their environmental impacts.

These developments have accelerated adoption of voluntary emissions reduction targets by business and market regulators like the Securities and Exchange Bureau of India (SEBI) mandating Environmental, Social and Governance (ESG) disclosures from public listed companies. By November 30, 2023, 253 Indian companies have announced emission reduction targets in line with Science Based Target Initiative (SBTi), among which 130 companies have targets approved by SBTi and 85 companies have committed to net zero targets. SBTi is a partnership between three civil society organisations and a UN body.

On regulatory front, SEBI released a circular during July 2023 on revised Business Responsibility and Sustainability Reporting (BRSR) with reasonable assurance for core reporting parameters and supply chain disclosures. To implement this ambitious objective, SEBI mandated a phased approach to undertake reasonable assurance of the BRSR Core (includes climate) and disclosing ESG practices (BRSR core) in supply chain:

- FY 2023 24: top 150 listed entities
- FY 2024 25: top 250 listed entities
- FY 2025 26: top 500 listed entities
- FY 2026 27: top 1000 listed entities
- FY 2024-25: supply chain of top 250 listed entities. Assurance is not mandatory.
- FY 2025-26: supply chain of top 250 listed entities. Assurance is on comply or explain basis.

Looking ahead, we have to evaluate the inter portability of SEBI'S BRSR disclosure standards with globally accepted standards like the Corporate Sustainability Reporting Directive (CSRD) of European Union and the sustainability standards developed by International Sustainability Standards Board (ISSB), an independent standard-setting body within the International Financial Reporting Standards Foundation (IFRS) Foundation.

Green or Climate Budget

In 2023, supported by CSOs, Bihar tabled its 3rd green budget in state legislative assembly, institutionalising this process. Following this effort, several other state governments started tabling green or climate budgets. Assam and Pondicherry tabled their green budget in 2023 and Tamil Nadu is expected to table their climate budget in 2024. Currently, various CSOs are supporting states in tagging the budgetary allocation to climate positive or green activities. After the tagging is completed, the green or climate budget is submitted before the state assembly. Going forward, the focus will be to transform this budgetary exercise from ex-post to ex-ante.

Conclusion

India is on track to achieve its current NDC target. However, clarity on the pathway for achieving 2070 net zero is evolving. Under our federal structure, re-designing and implementation of several policies happens at the state, district or city level. Going forward, states have to take leadership in undertaking measures and implementing the climate actions for achieving India's 2070 net zero target. Going forward a large section of philanthropic and civil society support must be focused on Sub-national climate actions.

2024 is also important as the next round of NDC revision will happen in 2025. Substantial resources and stakeholder engagement at national and Sub-national level will be required during 2024 to inform and define our mitigation contribution and adaptation lever (at the national level) in a transparent and efficient manner. Hence, support must be directed to enable this process. As G20 and COP29 presidency is passed on to Brazil and Azerbaijan respectively, Indian civil societies must continue to play the crucial role of representing the concerns and interests of global South in climate negotiations in order to foster more equitable and effective solutions for addressing climate change.



Context

India, among the world's fastest-growing economies, grapples with the challenge of addressing climate change while sustaining development. India's climate initiatives reflect a commitment to sustainable development and climate resilience. Shakti actively collaborates with policymakers, civil society, industry, think tanks, and academia to support India's climate goals.

Shakti's Climate Policy programme concentrates on sub-national actions at the state, district, and city levels for climate change, climate resilience and air quality. The Modelling Long-term Low-carbon Pathway Programme is another key focus. In the Climate Finance programme the emphasis lies on greening finance, financing green projects, carbon pricing, and climate and business. These programmes also address cross-cutting issues like green hydrogen, climate and trade, and monitor climate actions in multilateral forums such as the Group of 20 (G20) and Conference of Parties (COP).

Sub-national Engagement on Climate Change

Achieving India's 2070 net zero emissions target, along with ambitious short-term climate goals, requires collaborative efforts, especially from Sub-national entities. Shakti is actively involved in translating national climate objectives to the Subnational level, providing advisory services for energy transition planning and implementation at different governance levels, including state, city, and district.

State-level Engagement on Climate Change

In 2020 and 2021, Shakti began state-level collaborations with Bihar and Tamil Nadu governments, respectively, to formulate their lowcarbon strategies. The engagement involves creating net zero strategies through programme management support, sectoral deep dives, and modelling longterm pathways, addressing both energy and nonenergy implications. This approach extends to Kerala and Odisha, where the National Council of Applied Economic Research (NCAER) adapts the nationallevel integrated assessment modelling approach.

City and District Levels Engagement on Climate Change and Air Quality



Vivek Chandran (4th from left) at the Better Air Quality Conference 2023 at Manila.

Cities - Project Preparation Facility (PPF)

Shakti's foray into a dedicated Cities programme began in 2021, with the development of the city's strategy. It quickly became evident that cities struggled to translate climate action plans into tangible projects. This was due to the novelty of climate mitigation projects, the variety of business models, and the subsequent project structuring and financing challenges. Under Vivek Chandran, Director, this challenge was addressed by conceiving a PPP project preparation facility, in collaboration with National Institute of Urban Affairs(NIUA), National Investment and Infrastructure Fund (NIIF), and Ministry of Housing and Urban Affairs (MoHUA).



Shubhasis Dey at National Workshop on Clean Air.

This facility, currently in its design phase, is set to begin operations in 2024. The focus on tackling solid waste is of high priority for the government of India, with the Swachh Bharat Mission.

In other notable and enjoyable achievements this year, was the contribution to the U20 whitepaper on Environmentally Responsible Behaviours. As an urban and transport planner who had worked on Public Transport and Transit Oriented Development, Vivek Chandran of Shakti, understood the importance of Behavioural Change and was part of the conversation around Behavioural Change, with the introduction of the 'Lifestyle for Environment (LIFE)' concept by the Honourable Prime Minister at COP26, along with the landmark net zero by 2070 pledge for India. As India played host to the meeting of the G20 countries, it also hosted the cities of the G20 nations in the U20 grouping, and the Whitepaper was designed to provide inputs on enabling urban focused environmentally responsible behaviours into this process.

The 'Healthy Air Zone' (HAZ) strategy is actively implemented at the city level to accelerate the

transition to low/zero-emission and non-motorised transport, improving local air quality. HAZ practices are underway in four cities: Delhi, Guntur, Visakhapatnam, and Vijayawada, with support from Urban Local Bodies, Pollution Control Boards, and Transport departments.

Shakti collaborates with states such as Tamil Nadu, Bihar, Andhra Pradesh, Maharashtra, Uttar Pradesh, and Gujarat to plan climate action and air quality initiatives at the district level. Additionally, Shakti played a role in supporting Gurugram's City Action Plan, contributing to the development of its net zero 2050 plan released by Gurugram Metropolitan Development Authority (GMDA) in November 2023.

Shakti was part of some important initiatives at the cities level.

Course on Preparing Form-Based Codes on the NUL Portal Launched

Shakti partnered with Creative Footprints to be the head and hand in preparing the documents the course on preparing Form-Based Codes launched on the NUL Portal of National Institute of Urban Affairs (NIUA). Form-based codes (FBC) are a planning and zoning tool that regulates land development. They use physical form as the organising principle, rather than land use. The goal is to achieve a specific urban form, with predictable built results and a highquality public realm. FBCs can be applied at the city, neighbourhood, or project level. They can be used as a mandatory code, hybrid code, or parallel code. FBCs can help improve the quality of life by creating a high-quality public realm.

Shakti Signed Letter of Intent with NIUA

On March 23, 2023, Shakti signed an Letter of Intent with National Institute of Urban Affairs (NIUA) to collaborate and establish a climate focused project preparation and bid process management facility to support cities. The objective of this initiative is to enable cities to conceive and successfully execute climate-focused projects that mitigate GHG emissions and therein overcome challenges to sustainable urbanisation. This facility would support cities through the entire process from conceptualising climate-friendly projects to the successful bidding of these projects.

A Report by Shakti and Oxford Policy

A report developed by Shakti and Oxford Policy Management 'Scoping Study for a Cities Climate Change Programme' serves as a comprehensive assessment of the current scenario of climate action in Indian cities. The report emphasises the benefits of undertaking climate action in cities, the specific challenges, and its utility within the larger climate actions ecosystem. It hopes to inform civil society and other urban stakeholders on the challenges and to catalyse innovation required to enable bold steps towards a sustainable urban future.

(https://shaktifoundation.in/wp-content/ uploads/2023/09/cities-scoping-report-11July23.pdf)

Modelling Long-term Pathway Programme

Developing energy and climate policies in India amid challenges like technology, finance, and rapid urbanisation requires a focus on long-term pathways. Modelling serves as a crucial policy tool to understand opportunities, challenges, synergies, and trade-offs in decarbonisation aligned with India's priorities. The programme employs three key strategies: evidence-based generation at national and Sub-national levels, and capacity building of academic institutions in modelling and data management.

Evidence-based Generation at the National and Sub-national Levels

As part of its evidence-based generation strategy, Shakti collaborates with relevant sector partners to conduct a comprehensive study assessing short-term (2030), medium-term (2047), and long-term (2070) Gross Domestic Product (GDP) trajectories aligned with India's net zero Target. This analysis informs the India Climate and Energy Modelling Forum.

Capacity Building of Academic Institutions on Modelling

Shakti collaborated with prestigious Indian institutions like IIT-Roorkee, IIT-Bhubaneshwar, and BITS-Pilani to enhance modelling capacities. This supports meaningful engagement with state governments, contributing to informed policy decisions.

Data Management

Shakti, with partner support, launched the India Climate and Energy Dashboard (ICED) (*https:// iced.niti.gov.in/about-us*), in July 2023. It aims to make data on India's climate, energy, economy, and environment publicly accessible through a single open-source platform.

eARTh: Our Planet, Our Art, Our Ideas

Shakti is part of eARTh, an initiative to inspire climate action through art, by providing knowledge inputs and support with India Climate Collaborative is a knowledge partner. CSTEP launched the eARTh Initiative in October 2023, at Bangalore bringing art to the heart of climate action. The event brought together scientists, artists, conservationists, and citizens to explore how art and science can meet to trigger a positive change for the planet. The objective of the eARTh Initiative is to build a community/ collective of artists and communicators to highlight the climate crisis in an accessible manner to trigger climate action. An artist collective to mentor young artists and a climate fellowship for students is planned as part of the initiative.



A painting exhibition on climate change at the launch of eARTh.



Post COP26, India faces a critical juncture in achieving ambitious climate goals, requiring a substantial USD 2.5 trillion (2015-2030). Yet, green investments cover less than 25%, creating a funding gap. Inadequate regulatory frameworks contribute to information gaps hindering climate risk integration into financial strategies. Without evolving regulation, India risks being seen as a high-risk investment, especially in emerging green technologies.

Climate change implications for India are evident, with losses of nearly US\$ 69 billion in 2019, contrasting sharply with US\$ 79.5 billion over 1998-2017 (UNISDR, 2018). Floods in 2019 affected 14 states, displacing 1.8 million and causing 1800 deaths. Socio-economic impacts include heightened rehabilitation costs. Indirect risks emerge as global capital diminishes for India's thermal power projects due to climate change concerns.

While various sectors acknowledge the need for structural adjustments in lending and investment for green financing, the RBI survey reveals the Indian financial sector is largely unprepared to assess climate change impacts on portfolios.

Shakti is dedicated to transforming climate finance in India, fostering investor confidence and interest in climate investments. The programme aims to boost capital flows towards India's NDC and net zero targets for a fair transition to low-carbon, resilient economies, minimising socio-economic impact. Implemented across national, Sub-national, and market levels, Shakti's programme unfolds strategically.

Greening of Finance

Barriers to increasing climate investment, such as policy uncertainty, high capital costs, and limited resources, are addressed by Shakti's Greening of Finance sub-programme. It aims to enhance investor interest in climate investments, fostering a climate-sensitive financial ecosystem.

Despite financial institutions pledging commitment through the Green of Indian Financial System (GIFS) charter, adoption challenges persist due to data gaps. Shakti facilitates dialogues through GIFS, fostering collaboration among regulators, financial institutions, policymakers, and civil society. Efforts include the Indian Banks' Association formulating guidelines for underwriting climate risk and the RBI releasing anticipated guidelines on climate disclosures and stress testing.

Shakti supports mainstreaming climate considerations in financial decision-making, informing policy evolution, and contributing to sustainable taxonomy development. Ongoing initiatives include monitoring the Carbon Border Adjustment Mechanism (CBAM) discourse and supporting green & climate budgets in states like Bihar, Tamil Nadu and Pondicherry, highlighting Shakti's comprehensive approach to greening the financial system.

Greening of finance by Women (GroW)

GroW (Greening of finance by Women) Network, founded by Shakti, Small Industries Development Bank of India (SIDBI), and Agence Française de Développement (AFD), To take the mandate forward in 2023, hosted two impactful events that have made significant contributions to the fields of sustainable entrepreneurship and gender-inclusive finance. The first event in July 2023, marked GroW Network's inaugural Virtual Meet-up tailored for its members and the second event in September 2023 was the GroW Investor-Entrepreneur Matchmaking series that provided a unique platform for high-potential women entrepreneurs in the climate solutions sector to connect with capital providers.

Climate and Business

As India works towards its net zero target and 2030 climate goals, businesses play a crucial role in achieving these targets. Market-led action is vital for fostering green finance dialogue and transitioning financial portfolios. Businesses are key in driving national priorities and channelling financial intermediation into green activities.

To enhance data quality and transparency in capital markets, the Securities and Exchange Board of India (SEBI) mandated phased ESG disclosures and assurance under the Business Responsibility and Sustainability Reporting (BRSR) framework for the top 1000 listed entities. Shakti supports policy actors like SEBI in addressing gaps between BRSR and international standards, particularly in transitioning sectors like steel, cement, and fertilizer.

Shakti also aids Indian businesses in formulating climate pledges aligned with recognised standards like Science Based Targets initiative (SBTi), elevating climate ambition among corporates.

Financing Green

As India's renewables market matures, Shakti aims to boost other 'green' sectors by creating sector-

specific business models and facilitating fund flow through initiatives like a project preparation facility for Indian cities.

Efforts include developing tools to reduce financing costs and integrate social costs into transition projects. Ongoing initiatives focus on enhancing transition finance, ensuring the widespread benefits of the green transition.

Carbon Pricing

India's climate commitments necessitate costeffective emission reduction mechanisms. Marketbased approaches, like a national carbon pricing mechanism, are viewed as efficient for a flexible, leastcost decarbonisation path. Shakti works to ensure the functioning of the Indian carbon market, inform policy for international participation, and execute Article 6 of the Paris Agreement.

Shakti's activities include supporting the design of the domestic carbon market, convening experts, researching the Indian emission trading system, and



creating Article 6.2 approach papers for bilateral carbon trading.

Shakti is also involved in designing the unique Green Credit Programme (GCP) which aims to transfer financial benefits to underserved communities by pricing environmental attributes or nature pricing mechanism, aligning with the LiFE mission. Shakti played a crucial role in collaboration with MoEFCC for GCP's conceptualisation, operationalisation, and approach papers for Water Harvesting and Afforestation-based green credits. The programme was officially launched by Prime Minister Narendra Modi during COP28.

Paper by Shakti: Published by Singapore Management University

The Paper presented at the 12th Annual SKBI Conference and first SGFC Regional Conference on Greening Energy Infrastructure, 'Supporting Climate Moonshot Technology Development for Innovation' was co-authored by Kruthika Jerome, Programme Manager, Climate Finance, and Shubhashis Dey, Director, Climate Policy and Climate Finance, along with other authors, was published by Singapore Management University website.

Cross-Cutting Support

Operationalising Green Hydrogen

Shakti helped create evidence and provided technical assistance which informed the current design of the Green Hydrogen Mission. It actively works on standards for safety, quality, and regulatory compliance in production, storage, transport, and application. Shakti is also involved in establishing green hydrogen hubs in various states.

Organisation of Events under G20 and COP28

Shakti has hosted events at multilateral forums like G20 and COP28 on topics including operationalising India's carbon market, Sub-national engagement on climate change, green hydrogen, and the carbon border adjustment mechanism.



Shubhasis Dey (3rd from left) at the 3rd World Hydrogen Energy Summit 2023.

Sustainable Agriculture



Cultivating Climate-Resilience: India's Agricultural Transformation in the Climate Action Era

Overview

In the landscape of Indian agriculture, 2023 was marked by a significant paradigm shift towards sustainability and climate resilience. This transformative journey, guided by the principles of awareness, innovation, and collaboration, laid the foundation for a more resilient and environmentally conscious agricultural sector.

One of the pivotal moments in this journey was the declaration of 2023 as the International Year of Millets by the United Nations, in collaboration with the Government of India. Millets, being primarily a kharif crop, emerged as a beacon of hope in a climate-challenged world. These hardy crops, requiring minimal water and agricultural inputs, became the focal point of discussions not only within India but also on the global stage. As India assumed the G20 presidency, millets took center stage at all G20 meeting venues, garnering attention and appreciation for their potential in addressing food and nutrition security challenges.

In alignment with the global discourse on climate action, the Indian government embarked on a journey to promote climate-resilient agriculture and sustainable land use. The 2023 budget announcements reflected a commitment to natural farming, allocating a substantial Rs 459 crore to make it a mass movement. Over the next three years, 1 crore farmers are set to benefit from this initiative, with the establishment of 10,000 Bio Input Research Centers further bolstering the cause of sustainable agriculture.

A key highlight of the Union Budget 2023-24 was the emphasis on regenerative agriculture. The introduction of the PM-PRANAM scheme aimed to incentivise states to promote alternative fertilizers, fostering a shift towards more sustainable and soilfriendly practices. This, coupled with the provision for bio-input resources, created a comprehensive strategy to balance chemical fertilizers with organic alternatives. The implications for climate action were profound, as this approach not only improved soil health but also reduced emissions, contributing to the long-term resilience of farming communities.

Understanding that policy realignment is crucial for achieving sustainability, climate resilience, and farmer welfare, India continued to make strides in this direction. The importance of improving adaptive capacities of agriculture-dependent communities became evident, as initiatives like the Green Credit scheme were introduced in 2023. This scheme, with its focus on incentivising farmers for the ecosystem benefits of their sustainable practices, not only empowered farmers but also paved the way for a more economically viable and environmentally conscious agriculture sector.

2023: Efforts and Initiatives

In this transformative year, Shakti played a pivotal role in fostering dialogues and convenings on climate-resilient and sustainable agriculture. Our efforts have encompassed various convenings and dialogues, exploring pathways to achieve climateresilient, sustainable agriculture while positively impacting farmer incomes and livelihoods.



Vidvatta Sharma at the Shakti organised event – Sustainable climate-resilient low carbon pathway for Indian agriculture and land.

Convening: Sustainable and Climate-resilient Practices in Agriculture and Land Use Within India

On September 13, 2023, Shakti conducted a convening that aimed to pave the way for sustainable and climate-resilient practices in agriculture and land use within India. This convening brought together a diverse array of experts representing prominent civil society organisations, creating a dynamic and insightful platform for dialogue.

The convening fostered robust discussions among participants, all of whom shared the common objective of finding effective strategies to bolster sustainable agriculture and land use across the country. The exchange of ideas was both illuminating and constructive, reflecting the urgency of addressing environmental challenges in the agricultural sector. Key topics on the agenda included enhancing soil health, fertilizer optimisation, enhancing livestock productivity, restoring forests and wetlands, and promoting other sustainable practices rooted in agroecological approaches at the grassroots level in a manner that enables climate-resilience for the communities. The engagement of experts from various sectors added depth and breadth to the conversations, ensuring a comprehensive exploration of solutions.

The discussion was well-received, highlighting the importance of collaboration and knowledge sharing in tackling India's agricultural and land use challenges.

With a commitment to sustainable and climateresilient pathways, this event set a positive precedent for future endeavours aimed at transforming India's agriculture into a model of environmental stewardship and economic viability.

COP28: Unlocking Financing Opportunities for Climate-Resilient, Sustainable Agriculture in India and the Global South

Shakti's engagement extended to the global stage, notably at COP28 in Dubai, where dialogues centered around increasing finance for sustainable agriculture in the Global South. Representatives from India and Brazil shared insights into their respective initiatives, emphasising the importance of sustainable agriculture and ecosystem restoration for sustained impact. The collaborative spirit between nations highlighted the potential for mutual learning and collective action in the pursuit of a sustainable future.

Knowledge Sharing

In an effort to broaden agriculture valuation beyond economic metrics, Shakti has championed the quantification of the socio-cultural benefits of sustainable land management practices by participating in knowledge-sharing discussions on the subject. By attempting to make the invisible visible, Shakti aimed to contribute to the broader understanding of the holistic impact of sustainable agriculture and land management practices and therefore make a stronger economic case for their adoption.

Looking Ahead

As we reflect on the state of Indian agriculture in the context of climate action in 2023, it is evident that the landscape is evolving towards a more sustainable and resilient future. The synergy between government initiatives, global partnerships, and philanthropic initiatives have laid the groundwork for a more sustainable, climate-resilient, and farmer-centric future and positioned India at the forefront of the movement towards climate-resilient agriculture, ensuring a prosperous and sustainable future for generations to come.

Electric Mobility Initiative



AT COP26 IN GLASGOW, AND AS PART OF THE PANCHAMIT, INDIA ANNOUNCED ITS TARGET TO ACHIEVE NET ZERO CARBON EMISSIONS BY 2070. PRESENTLY, THE TRANSPORTATION SECTOR IS RESPONSIBLE FOR ABOUT 14%OF INDIA'S TOTAL GREENHOUSE GAS EMISSIONS OF WHICH THE ROAD SECTOR ACCOUNTS FOR OVER 90% OF THE TOTAL TRANSPORT EMISSIONS.

The passenger transport contributes to about 45% as compared to 55 per cent emissions generated by freight vehicles. Though HGVs account for merely 2% of the total vehicle population, they contribute to nearly 43% of the CO_2 emissions annually. Whereas, while two-wheelers account for 77% of the total vehicle population, they are responsible only for about 11% of the total CO_2 emissions from road transport.

Given this background, electric mobility has been globally seen as one of the key measures to reduce transport-related emissions. The Government of India (GoI) has played a pivotal role in driving electric mobility through a series of proactive policies aimed at increasing the adoption of EVs and encouraging manufacturers to invest in EV research and development – FAME 1 & 2, PLI Scheme, State EV policies, Battery Swapping Policy, incentives like tax reductions, etc. The Faster Adoption of Manufacturing of Electric Vehicles Scheme – II (FAME – II) provides financial incentives to manufacturers and buyers of EVs and encourages the development of charging infrastructure in the country. Production Linked Incentive Scheme (PLI) with a budgetary outlay of INR 25,938 crore targets and encourages domestic manufacturing of electric vehicles.

Another boost to the EV sector was given by the Union Budget 2023-24 which extended the customs duty exemption to the import of capital goods and machinery required for the manufacture of lithium-ion cells for batteries used in electric vehicles that would lead to a switch to domestically manufactured parts.

Electric mobility in India is fuelled by environmental concerns, particularly the need to combat air pollution and reduce carbon emissions. Major metropolitan areas in India, such as Delhi, Mumbai, etc. grapple with severe air quality issues, making the transition to electric vehicles crucial intervention to mitigate pollution.

India experienced an exponential growth in electric vehicle (EV) adoption since 2021. This trend is still constant with 157% increase in EV sales from FY2022 to FY2023. This increase resulted in the overall share of EVs in India's auto sales to 6.38% in 2023 from 1.75% in 2021¹³. According to a Bain & Company report, EVs could reach more than 40% penetration by 2030¹⁴. This is driven by strong adoption in both two-wheeler and three-wheeler categories. According to category-wise data, twowheelers (2W) and three-wheelers (3W) experienced growth of 37% and 66%, respectively.

Domestic automakers, including industry giants such as Tata Motors and Mahindra & Mahindra, have actively invested in research and development to introduce a range of electric vehicles suited for diverse consumer segments. Simultaneously, international automakers such as Hyundai and MG Motor have entered the Indian market with electric vehicle offerings, contributing to the diversification of the electric vehicle landscape. Original equipment manufacturers (OEMs) are now coming up with multiple variants of electric vehicles based on target consumers like affordable models, high end models, high range models, etc. This will definitely increase the EV adoption across multiple segments and boost the overall EV market.

Remarkable strides have been made by states in advancing e-mobility within the country. 24 states and 3 Union territories (UTs) have notified electric vehicle policies aimed at fostering the growth of EV adoption and supporting the manufacturing of electric vehicles and their components. These policies provide a spectrum of incentives to stimulate EV demand, boost manufacturing, and develop charging infrastructure.

The year 2023 was a productive one for the Electric Mobility team at Shakti, especially in terms of government's promotion of Electric Mobility towards its net zero commitment. Shakti made some significant contributions at the Sub-national



level, which included technical expertise for EV acceleration to Andhra Pradesh, Gujarat, Delhi, Uttar Pradesh, Bihar, Madhya Pradesh, Telangana, Leh-Ladakh and the North-east region in collaboration with our partners to work with the state authorities to revive their EV policies, develop key interventions, and plan policy actions for boosting adoption, manufacturing, charging infra, freight as a multi-state multi-faceted effort.

Apart from the Sub-national engagement, Shakti also supported multiple National level interventions that included:

(i) E-FAST Platform: Electric Freight Accelerator for Sustainable Transport, India is a cross-learning and knowledge sharing platform for shippers and carriers to shape strategies and actions that support freight electrification at scale and is anchored by NITI Aayog

(ii) Launch of EV-as-a-service to aggregate demand at Govt and Quasi Govt institutions in India to encourage EV uptake in passenger segments

(iii) India Electric Mobility Index (IEMI): This index evaluates the EV related performance of 28 states and 8 union territories in India on 30+ different parameters

(iv) National Electric Vehicle Charging Infrastructure (EVCI) roadmap

(v) Introduction of low emission zones in India: The LEZs are more of a demand side regulation for clean vehicles and an impactful step towards improved air quality by restricting use of polluting vehicles

(vi) National e-bus karo: This initiative provides support to state transport utilities across various states to introduce electric vehicles smoothly

(vii) Demonstration of electric trucks in different industrial corridors and across various use-cases" electrifying transportation in Dairy, Mining, Cement, and Refinery sectors (viii) Introducing e-Bikes/ e-2W in Department of Post, Government of India.

An important initiative by the Electric Mobility team at Shakti in 2023 was a month-long campaign on World EV Day to promote awareness and adoption of EVs. Shakti aided the signing of important Memorandums of Understanding (MoUs) that included MoU with Chennai Port, MoU to support National Highways for Electric Vehicles (NHEV) and MoUs with Energy Efficiency Services Limited (EESL) and Convergence Energy Services Limited (CESL). Shakti provided knowledge and expertise, built the capacity of government and partner organisations as well as convened stakeholders and experts at national and global platforms. At COP28, the electric mobility team convened events at the Regional Foundations Pavilion.

We were also invited to participate in discussions on 'Towards Sustainable Growth through Green Transformation', 'Making India's Public Transport Efficient, Electric and Equitable', and 'Carbon Neutral Transport in Ladakh and Women Eco-Warrior (Tamil Nadu)' at the India and the Japan Pavilions.

As we look ahead, the future of EVs in India seems bright with the government's commitment to promoting the use of EVs, increasing consumer awareness and acceptance, and advancements in technology that will drive growth in the coming years. As a next step, India needs to put forth a quantitative target for EV adoption, a directive from the centre and actual segment-wise targets included in the state EV policies. Shakti ambitiously looks at a scenario to achieve 100% freedom from polluting vehicles while India celebrates its 100th Independence Day in 2047 through interventions such as Zero Emission Vehicles (ZEV) mandates, fuel economy norms, and market-based mechanisms.

Shakti is looking forward to being part of the growth in the EV sector that is anticipated to remain robust in the coming times.

UPDATE: ELECTRIC MOBILITY INITIATIVE



Collaborations

Indo-US joint Statement

The EMI team, in collaboration with GEAPP, worked on the payment security mechanism and its inclusion in the Joint Statement in 2023. The Indo-US joint statement on payment security mechanism was an indication of success for the EMI team. The United States and India also announced plans to create a payment security mechanism that will facilitate the deployment of 10,000 made-in-India electric buses in India, augmenting India's focused efforts in reducing greenhouse gas emissions, improving public health, and diversifying the global supply chain.

MoU with Chennai Port

Shakti collaborated, towards the implementation of 'Harit Sagar', Green Port Guidelines, at Chennai Port. The aim is to support this policy in its implementation through a strategic roadmap for the port towards decarbonisation of its transport and handling operations. The aim is to enable: (i) Visibility to Transporters, OEMs, regulators, authorities and operators for adaptableness of deploying zero emission trucks for port, porthinterland movements and capability of available energy management solutions

(ii) Development in the BETs service delivery models adoptions for port-based operations and

(iii) Availability of a roadmap for promoting ecosystem of BETs and to help the stakeholders assess their achievements leading to continuous recalibration.

MoU to Support National Highways for Electric Vehicles (NHEV)

Shakti signed an MoU to support NHEV to assess and suggest the power availability along the National Highway, for setting up charging infrastructure for Electric Vehicles. National Highways for Electric Vehicles is the first intercity E-mobility pilot programme under Transformative Mobility and Battery Storage Mission through Ease of Doing Business(EODB) division of 'Advance Services for Social and Administrative Reforms' based on licensing remodelling for the setup of Charging Stations on National Highways under Ministry of Power. Two out of twelve National Highways (Delhi-Jaipur, Delhi-Agra) would be converted into E-Highways which are being prototyped on Annuity Hybrid E-Mobility (AHEM) financial model to fund economical EV charging infra on these highways. The goal of the NHEV pilot is to create Ease of Doing Business in E-mobility by making it feasible to licence, design, commission, install, electrify, certify, and finance charging and green energy stations for Public Private Partnership (PPP) models among diverse institutional, geographical, and community levels.

MoUs with Energy Efficiency Services Limited (EESL) and Convergence Energy Services Limited (CESL)



Shakti signs MoUs with EESL and CESL for developing strategic partnerships.

Energy Efficiency Services Limited (EESL) launched the National Energy Efficient Fan Programme, which aimed to deploy 10 million energy-efficient fans within an aggressive timeline of 12 months. On July 22, 2023, EESL organised a side event 'Accelerating India's transition towards net zero through Energy Efficiency, Sustainable Cooling & Mobility' at the 14th Clean Energy Ministerial (CEM14) in Goa, wherein EESL and its subsidiary Convergence Energy Services Limited (CESL) forged multiple partnerships across the energy sector.

During the side event, a Memorandum of Understanding (MoU), signed between Shakti and EESL was exchanged between Shri Vishal Kapoor, MD and CEO, EESL and Shakti Chief of Programmes, to mark the collaboration in developing a strategic partnership aimed at driving the market transformation towards energy-efficient fans. Shakti's engagement focuses on a broad set of activities, including the preparation of programme design documents, business models, financial models, and the development of Digital Management IT tool linked with the state energy efficiency index. An MoU between Shakti and CESL was also exchanged with the intent to develop a strategic partnership to jointly work and collaborate to increase the adoption of sustainable mobility technologies in the areas of electric mobility. The MoU aims to identify and facilitate the implementation of policy, regulatory, financial, technology, training, and capacity-building solutions to support the country's sustainable mobility ambitions, with a focus on the area of electric mobility.

Technical and Knowledge Support

e-FAST - Electric Freight Accelerator for Sustainable Transport in India

Shakti assisted NITI Aayog in developing a collaborative platform in the form of the e-FAST website. The platform hosts information about the philosophy of e-FAST, its vast and diverse network, literature on freight decarbonisation, archives of past events and much more. The e-FAST website was launched during Clean Energy Ministerial (CEM) and was made available for the ecosystem. During CEM, an aggregated demand for 7,750 electric vehicles across different freight categories was announced. The demand was consolidated from 16 industry participants and was the first signalling exercise to indicate existing and impending investments in decarbonising freight. The portal is constantly being improved for better value to the ecosystem. As a part of the outreach and communication effort, a video demonstrating the impact electric freight can have on the environment and the well-being of the driver community was launched at the G20 event in Goa and was very positively received by all stakeholders.

The e-FAST website is accessible on this link: *https://efastindia.org*

e-FAST identifies and addresses significant barriers through the programme -information gaps and absence of guidance on fleet electrification, information percolation in the highly fragmented trucking sector, and insufficient information on optimal business models to achieve risk mitigation as well as assistance from financing agents. The programme envisions solutions to these challenges by co-creating a conducive environment for truck electrification through strategic incentivisation, infrastructural and knowledge support for first movers, and enabling cost parity in the acquisition, ownership, running servicing, and resale values. These will be critical factors determining the industry's viability of shifting from ICE-based freight to E-freight. The programme aims to develop industry and peer-tested planning and evaluation tools, capacity-building workshops, masterclasses, webinars, and hands-on workshops to foster a conducive environment for ground-up transition in the freight ecosystem. Bridging the current gaps in the ecosystem can be done through scalable pilots that will help build momentum by creating a larger community of potential first-movers of transporters, financiers, regulators, government agencies, carriers, and more.

EV-as-a-Service (EVaaS) Initiative

Electrification of public transport is a major is extremely relevant as we continue to work towards reducing emissions from the transport sector. The introduction of electric vehicles in fleets has often been the first step to overcoming challenges and barriers to e-mobility and is considered critical to its wider adoption. In this stead, the Government of India has undertaken an initiative to replace the existing fleet of petrol and diesel vehicles of the Central and State Governments with electric vehicles with an intent to provide an impetus to the EV ecosystem in India and encourage uptake among retail consumers.

Shakti, under the MoU signed with Convergence Energy Services Limited (CESL), has been a knowledge partner towards the development of the EV-as-a-Service (EVaaS) Initiative. The initiative aims to assist the Central and State Governments to electrify their respective fleet by aggregating the demand for electric 4-wheelers for government use across India. Under the proposed new business model, CESL shall act as a demand aggregator entity and "Service Providers" (Vehicle Leasing Companies) shall be investing in the upfront procurement and end-toend managed services, during the lease period.

The initiative was formally launched by CESL during a side event scheduled during the CEM14/MI-8 alongside the G20 Energy Transitions Ministerial in Goa in July 2023. CESL has been working to aggregate demand for electric 4-wheelers from various Government entities across India in the form of nonbinding MoUs. Since the launch of the initiative in July 2023, CESL has already signed MoUs for approx. 877 no. of electric 4-wheelers. CESL has released the tender for the deployment of 2000 electric 4-wheelers as a part of its new business model under the EV-as-a-Service Initiative.

Electric Vehicle Charging Infrastructure (EVCI) Planning Tool Support Freight Electrification

Shakti has contributed towards the development of an Electric Vehicle Charging Infrastructure (EVCI) Planning Tool for Cities and Highways. The siting tool for EVCI has been envisaged to provide evidencebacked valuable insights for stakeholders to make informed decisions about setting up charging stations in a city. Moreover, the tool can help in determining the appropriate type of charger, and the potential for revenue generation through advertisements. With the help of this tool, stakeholders can make datadriven decisions to optimise the usage of charging stations and increase their financial viability.

Shakti has also been involved in the capacity development of city officials towards the utilisation

of the Tool as a part of their day-to-day activities as they continue to support the development of an enabling ecosystem and infrastructure for advancing the e-mobility transition. To date, capacity building has been carried out for local government officials across 9 cities, wherein a positive response and appreciation have been gathered during the workshops organised.

Initiatives at Sub-national Level



Shakti collaborates with Rang De, IPBP & TERI for last mile connectivity with gramin dak sevaks.





Delhi Fleet Aggregator Scheme

Shakti provided knowledge inputs to the Department of Transport, Government of Delhi, for its initiatives to increase EV adoption in the state. During this period, Delhi notified Delhi Motor Vehicle Aggregator and Delivery Service Provider Scheme, 2023. The scheme established a timeline for both fleet aggregators and delivery service providers, mandating a phased transition to electric mobility by 2030.

Freight Electrification in Leh-Ladakh





Shakti provides support to EVfying Last Mile Freight in Ladakh.

As part of IIEC's 'Technical Assistance for Identification of Opportunities and Challenges in Freight Electrification in Leh-Ladakh', members of EMI team at Shakti participated in the flag-off event for 'EVfying last mile freight in the UT of Ladakh'. The team was also part of the session on 'Technical Assistance for Identification of Opportunities and Challenges in Freight Electrification'. This was featured in the India pavilion during COP28, UAE.

India Electric Mobility Index (IEMI)

India Electric Mobility Index (IEMI) 2022-23 evaluates the performance of 28 states and 8 union territories in India regarding their ambition and progress in advancing the e-mobility transition. This initiative is directed at addressing systemic challenges in monitoring and evaluation of the efforts and performance of states for e-mobility development. Shakti provided inputs towards the design of the Index along with its partner WRI to NITI Aayog.

The IEMI will tackle challenges of information availability and low capacity among implementing agencies, by creating a feedback loop that gathers and analyses data and provides insights to government and non-government officials on effective and impactful initiatives and policies for e-mobility development. This, in turn, is expected to inform states in shaping more high-impact e-mobility implementation roadmaps. It also provides information to non-government stakeholders on which states are performing well, and which states are making the efforts that are likely to yield results in the future, to inform decisions on investments, business development, and partnerships.

Low Emission Zones (LEZ)

Shakti is engaged in the introduction of Low Emission Zones (LEZ) to selected cities through comprehensive stakeholder consultations with transport authorities, city and respective state transport departments. The primary objective of this initiative is to identify distinct zones in these cities based on key factors such as air quality index, population size, existing traffic modal split, and other relevant indicators. This process involves an in-depth examination of the existing policy frameworks at both the State and City levels, the current transport scenario, and the stakeholders associated with the chosen zones. Additionally, the initiative seeks to develop a LEZ tool, which may take the form of a policy framework or guidelines, tailored to the specific needs of each city.

Furthermore, our efforts extended to the cities in the practical implementation of various LEZ components within the identified zones. This includes the establishment of restrictions, regulations, and awareness campaigns, with a keen sensitivity to public acceptance and the perspectives of city and transport authorities. The aim is to meticulously document the interventions implemented in the form of regulations or policies within the selected zones and set a use case to replicate this initiative in the sensitive & highpollution zones across the country.

Feasibility of Electric Trucks in Dairy, Cement, Mining and Refinery Sectors

Shakti is part of developing an initiative to explore the feasibility of electric trucks in the Dairy, Cement, Mining and Refinery Sectors. The primary objective of this initiative is to study the feasibility of transitioning the current transport of products with a climatefriendly and sustainable mode of transport to expand the industry's scope of sustainability in these sectors. This initiative will investigate the feasibility of electric trucks in place of operating carbon-intensive internal combustion engine (ICE) vehicles and profitable business operations. Overall, an overview of the technical and financial viability of logistics without interfering with the operation of the business will be the output of this initiative. The coverage includes industries in states including Andhra Pradesh, Chhattisgarh, Karnataka, Gujarat, Uttar Pradesh..

Under this initiative, an actual EV will be tested on the ground, depending on its availability, and compared to its conventional counterpart. Further, based on measurement and verification, recommendations to be made to concerned Governments regarding the short-, medium-, and long-term prospects of such an electrification. Route assessment and consultations with various stakeholders in the EV ecosystems are part of the implementation process.

Electrifying Trucks Along Industrial Corridors

Shakti provided technical expertise to an initiative to explore the feasibility of running electric trucks along dedicated routes in north, south, east and west industrial corridors. The routes have been selected after much research and analysis, in association with a leading vehicle manufacturer, and vehicles will be used to conduct a proof of concept. The aim is to develop and deploy an on-ground assessment framework-based pathways for prioritisation of corridors to electrify and deployment of pilot interventions. The initiative focuses on strategies for highway electrification with a special focus on charging infrastructure, based on learnings and findings from the assessments and also helps to create a complementary ecosystem for fostering pilots, enabling the freight electrification transition.

As part of this initiative, coordination with DPIIT for the following aspects:

- Active engagement with the Department for Promotion of Industry and Internal Trade (DPIIT) and demonstrated our approach to developing a charging infrastructure
- Submitted a proposal to DPIIT to develop a framework for planning a network of charging infrastructure at port catchments of select ports and port-linked corridors
- Sought support from DPIIT to be the central convening agency for central and state-level departments

Knowledge Sharing, Convenings and Workshops



Dr Pramod Sawant, CM of Goa, at the 14th Clean Energy Ministerial Innovation where Shakti was key partner.

Clean Energy Ministerial (CEM) Event

The ZEV Technology Showcase of the 14th Clean Energy Ministerial/8th Mission Innovation was inaugurated at Goa in 2023. The technology display, which took place concurrently with the #G20 Energy Transition Ministerial Meeting (ETMM)was a key element of the Clean Energy Ministerial & Mission Innovation meetings. The technology showcased new and emerging technologies like Electric Vehicle, hydrogen, and other clean fuel technologies across the globe in various sectors and provide unique experience.

Shakti was one of the key partners (knowledge partner) involved in organising the Technology Showcase along with Department of Science and Technology, Clean Energy Ministerial Drive to Zero Campaign, SIAM, CALSTART and TERI.



Shakti EMI team at 4th Electric Mobility Workshop at Jaipur.

WRI India conducted Bus Karo Capacity Building Workshop 2023 in collaboration with Brihanmumbai Electric Supply and Transport (BEST), Delhi Transport Department and the Association of State Road Transport Undertakings (ASRTU) in March 2023 at Mumbai. The purpose of this workshop was to support public transport authorities and cities in planning and strengthening the urban bus services in the backdrop of changing travel patterns and demand. Shakti's EMI team provided valuable inputs and expertise at the workshop that was geared towards knowledge sharing through peer-to-peer engagements.

4th Annual Electric Mobility Workshop

Shakti EMI team was involved in designing the contours and content of the 4th Annual Electric Mobility workshop on March 23 and 24, 2023 at Jaipur. The workshop focused on policy and regulations necessary for a Zero Emission Vehicle (ZEV) transition along cross cutting themes such as financing, awareness across four vehicle segments – 3Wheelers, 4 Wheelers, Trucks and Buses. The workshop brought together key partners in the Electric Mobility ecosystem as well as stakeholders from government, academia, think tanks, civil society organisations and industry.

Bus Karo – Capacity Building Workshop

Campaign for World EV Day

As part of World EV Day 2023, Shakti launched a month-long initiative where the EMI team embarked on an electrifying journey to promote sustainable transportation and debunk myths surrounding electric vehicles.

A hashtag, #jointheEVolution was created which saw major adoption across social media platforms. This hashtag became a unifying force, bringing together individuals and organisations committed to accelerating the transition to electric mobility.



EMI team conducted activity on World EV Day.

The campaign also included a **Did You Know** series on Shakti's social media platforms; **Fascinating Facts and Figures** and a series of EV characters to share information about electric vehicles were also shared to dispel common misconceptions. Also, as part of this engagement, viewers were asked **Riddles** related to EVs. This entire series was an effort to make EVs relatable and exciting, The aim was to enlighten the audience on the benefits and potential of EVs paving the way for a greener future. Office activities included a **Treasure Hunt** and an art and craft activity allowed us to sculpt our vision of a cleaner, electric future.

New Initiatives

Shakti is working towards enabling four states to conduct feasibility study for e-tractors and also assisting them to include e-tractors in a village as a demonstration. This also includes developing financial model for farmers/industries to deploy e-tractors and nudge the relevant policies to include e-tractors. Shakti has also begun work on developing and designing innovative financial models for different segments in EV.


Clean Power



SHAPING A RESILIENT AND SUSTAINABLE RENEWABLE ENERGY ECOSYSTEM

BY AMIT KUMAR PARIHAR Director, Clean Energy

A TIMELY TRANSITION TO CLEAN ENERGY IS CRITICAL TO MAINTAINING GLOBAL ATMOSPHERIC TEMPERATURES WITHIN THE **PRESCRIBED LIMIT OF 1.5 DEGREES CELSIUS.** THE POWER SECTOR, CONTRIBUTING **APPROXIMATELY 40% OF TOTAL GREENHOUSE** GAS EMISSIONS WORLDWIDE¹⁵, HOLDS A HIGH POTENTIAL FOR EMISSION REDUCTIONS THROUGH THE ADOPTION OF RENEWABLE AND CLEANER ENERGY SOURCES. IN INDIA. THE POWER SECTOR ALONE ACCOUNTS FOR **37% OF THE COUNTRY'S TOTAL GREENHOUSE GAS EMISSIONS¹⁶. RENEWABLE ENERGY** SOURCES CAN HELP THE GOVERNMENT ADDRESS THE DUAL CHALLENGE OF MEETING THE GROWING ENERGY NEEDS WITH REDUCED CARBON EMISSIONS.

To spearhead efforts against climate change while fulfilling the country's economic growth objectives, the Honourable Prime Minister of India unveiled the Panchamrit action plan. This comprehensive initiative includes targets such as achieving a nonfossil fuel energy capacity of 500 GW, meeting 50% of energy needs through renewable energy sources, reducing CO_2 emissions by 1 billion tons, lowering carbon intensity to below 45% by 2030, and ultimately attaining a net zero emission target by 2070.

These targets have provided a focused impetus to the initiatives undertaken by both Central and State authorities in propelling their endeavours towards a transition to clean energy. As of December 2023, India has successfully installed 187 GW of renewable energy, constituting 43% of the total installed capacity, with solar at 72 GW, wind at 44 GW, and hydropower at 52 GW in the overall renewable energy portfolio¹⁷. The country is the fourth largest globally in renewable energy installed capacity, with notable growth in wind and solar additions witnessed this year. However, to achieve 500 GW of non-fossil capacity by 2030, there is a need to ramp up efforts to increase annual RE additions to 35-40 GW as against the average annual addition of around 17 GW of overall capacity addition for the past three years¹⁸.

^{15.} World Nuclear Association (2022): https://world-nuclear.org/information-library/energy-and-the-environment/carbondioxide-emissions-from-electricity.aspx

^{16.} J Chateau, et. al. · International Monetary Fund (2023): https://www.imf.org/-/media/Files/Publications/WP/2023/English/ wpiea2023218-print-pdf.ashx

^{17.} CEA (2023): Installed Capacity Report - https://cea.nic.in/installed-capacity-report/?lang=en

^{18.} CEA (2023): Installed Capacity Report - https://cea.nic.in/installed-capacity-report/?lang=en

Increasing the adoption of renewable energy in India requires a comprehensive approach that addresses both supply-side and demand-side barriers. These include capacity-related constraints at the state level, poor financial conditions of the DISCOMs, transmission-related constraints, land availability, delays in approval. Moreover, the intermittency of renewable energy sources poses a challenge to grid stability and reliability, necessitating the development of energy storage solutions and flexible demandside management strategies. To achieve the 500 GW target, India must adopt a multifaceted approach that encompasses policy reforms, technological innovation, mobilise investment and financing for RE projects, , and grid infrastructure development to make it more flexible and resilience.

In 2023, the government took proactive steps to address some of these key challenges through policy interventions, including amendments to RPO regulations, the introduction of the VGF scheme for energy storage, the Sauryodaya Yojna announcement, the revision of the wind repowering policy and plan for building a transmission system for evacuating 500 gigawatts (GW) of non-fossil-based energy.

What the Ecosystem Needs to Ensure 500 GW Capacity Addition

To achieve 500 GW of non-fossil capacity addition, there is a need for a range of interventions on both the supply-side and demand-side, as well as to make the ecosystem conducive for high RE deployment. On the supply side, concerns related to land availability and power evacuation must be addressed by state authorities to achieve fast solar and wind energy deployment. The recent inclusion of specific Distributed Renewable Energy (DRE) components in the revised Renewable Purchase Obligation (RPO) trajectory is expected to create momentum for the DRE technologies. Innovative approaches and business models need to be developed to accelerate the adoption of these systems. Accelerating the adoption of the DRE systems in the rural context requires interventions to address challenges related to its limited visibility, limited access to affordable finance, absence of well-established business models, and limited capacity and awareness of relevant stakeholders. To tab the overall potential of 25 GW through repowering the old wind turbines of capacity less than 2 MW, MNRE recently revised the National Repowering Policy and has also formulated a monitoring and advisory committee to assist in implementation of the repowering policy. However, issues related to land and turbine ownership, power evacuation, off-taker arrangements, tariffs, and incentives must be addressed through state-specific policy interventions to realise actual deployment on the ground. Further, there is a need to strengthen the supply chain of RE systems to ensure long-term energy security. MNRE launched viability gap funding for battery energy storage and suggested a framework for pumped storage projects in the country to pave the way forward for large-scale adoption of storage technologies. This further needs to be supplemented with on-ground efforts to facilitate the deployment of energy storage technologies.

On the demand side, approaches ensuring effective enforcement of the RPOs, improving the technical and financial performance of the DISCOMs, and streamlining the green energy open access rules, are crucial to enabling demand for RE by DISCOMs and the C&I segment. Adoption of resource adequacy framework by DISCOMs, development of solutions such as solarisation of the agricultural feeders, which creates a win-win proposition for consumers, DISCOMS, and developers, is critical to improving the technical and financial performance of DISCOMs. Additionally, initiatives on making the ecosystem conducive for high RE penetration need to be explored and implemented. These include (i) strengthening the power markets, (ii) exploring new technologies interventions such as virtual power plant, Distribution system operators (DSOs) (iii) mainstreaming demand flexibility and ancillary service markets (iv) exploring innovative market mechanisms like CFD/ VPPA/Green Tariff.

Strategic Interventions by Shakti

The strategic interventions by the clean power vertical

to support the 500 GW target include (i) actionoriented research to support evidence-backed policy interventions, (ii) engagement with policy and business stakeholders to develop the solution framework for large-scale deployment, and (iii) collaboration with relevant stakeholders for institutional capacity building, awareness creation, and technical assistance.

In 2023, Shakti, through the Research & Innovation Shakti Expertise (RISE) Programme, has been supporting Ministry of New and Renewable Energy (MNRE). This initiative, with an overall goal of supporting the 500 GW target, serves as a comprehensive platform to assist MNRE across diverse themes such as Data Analytics, Domestic Manufacturing, International Relations, Technology, and Innovation. Shakti is collaborating with ecosystem players to advance the deployment of offshore wind in India through research and technical assistance to assist MNRE and NIWE.

Recognising the vital role of the States in realising the 500 GW target, Shakti is closely engaged with the key states to support them in achieving their clean energy aspirations. The RE policy of Odisha and Bihar was developed with our inputs. Facilitating knowledge exchange and consultations amongst the power sector ecosystem stakeholders to bring convergence and complementarity in the efforts is critical. Some of the key convenings facilitated by Shakti in 2023 include (i) national convenings on Global Wind Day along with MNRE and NIWE, (ii) R&D conclave along with MNRE, (iii) Odisha Energy Transition Workshop with the state of Odisha, (iv) Stakeholder Consultation on Pathways for India's Power Sector, (v) Solar World Congress 2023: Moving the World Toward 100% Renewable Energy and (vi) side event at COP28 on women empowerment through Decentralised Renewable Energy (DRE) solutions.

Looking Ahead

As we step into 2024, we look forward to continuing and expanding our efforts as an ecosystem enabler to achieve the 500 GW target with a holistic approach to address the critical challenges by leveraging the power of collective action and facilitating collaboration among all the stakeholders. As India anticipates a cleaner and greener future by 2030, concerted efforts across research, capacity building, regulatory frameworks, and technological advancements are poised to shape a resilient and sustainable renewable energy ecosystem.





Technical and Knowledge Support

Research & Innovation Shakti Expertise (RISE) Programme

Shakti has consistently extended its technical support to the Ministry of New and Renewable Energy (MNRE) through the Research & Innovation Shakti Expertise (RISE) Programme. This initiative serves as a comprehensive platform to assist MNRE across diverse themes such as Data Analytics, Domestic Manufacturing, International Relations, Technology, and Innovation.

Offshore Wind Development Cell

Recognising the pivotal role of Offshore Wind in bolstering Renewable Energy capacities, Shakti and MNRE collaborated to explore avenues for strengthening the 'Offshore Wind Development Cell' within the MNRE. This collaborative effort reflects a commitment to advancing sustainable energy solutions and harnessing the full potential of offshore wind resources.

Methodology for Computing Green Tariff

The Ministry of Power (MoP) notified the Green Open Access Rules in June 2022. The rules mandated that the State Electricity Regulatory Commissions (SERCs) notify the Green Tariff for their respective States. Shakti provided inputs for developing methodology for computing Green Tariff by the SERCs. The methodology was developed after analysing data from four States namely, Gujarat, Maharashtra, Uttar Pradesh and Delhi. The findings from the analysis were shared with the respective SERCs, CERC and CEA.

Time of Use Tariff Design

The Time of Use (TOU) tariff is a dynamic pricing strategy in the energy sector, where electricity rates vary based on the time of day and corresponding

demand levels. By encouraging consumers to shift their energy consumption to off-peak hours when electricity is more abundant, TOU tariffs contribute to more efficient grid management, reduced peak demand stress, and overall cost savings. This pricing structure aligns with sustainable energy goals, promotes resource optimisation, and empowers consumers to make informed choices about when to use electricity, ultimately fostering a more resilient and environmentally conscious energy landscape. Shakti helped in developing the contours of Time of Use Tariff under Regulatory Sandbox approach for the State of Uttar Pradesh.

A Study: Advanced Grid-scale Energy Storage Technologies

Amit Kumar Parihar, Director and Siddharth Arora, Associate Director of Clean Power team of Shakti represented the Technical Review Committee as formed by IIT- Roorkee on a study titled 'Advanced Grid-scale Energy Storage Technologies'. The research delved into various grid-scale energy storage options that are vital for India's sustainable energy trajectory, underscoring the importance of establishing a robust and eco-friendly energy infrastructure in the country. The study presents practical suggestions aimed at bolstering the integration of renewable energy and refining the efficiency of grid-scale energy storage, representing a notable stride towards realising India's objectives in the realm of renewable energy.

The Study report was launched by Secretary, MNRE on November 30, 2023.

Convenings and Workshops

Global Wind Day Celebration by MNRE in Association with Shakti and NIWE

The Ministry of New and Renewable Energy (MNRE) celebrated 'Global Wind Day' on June 15, 2023, with the central theme of 'Pawan–Urja: Powering the Future of India' in association with Shakti and National Institute of Wind Energy (NIWE).

During the Global Wind Day event, the states of Rajasthan, Gujarat and Tamil Nadu were felicitated



Global Wind Day celebrations by MNRE in association with Shakti.

for achieving highest wind capacity addition, highest wind capacity addition through open access and initiating repowering of wind turbines, respectively, during FY 2022-23.

The 'Wind Atlas' at the 150 meter above ground level prepared by National Institute of Wind Energy (NIWE) was launched at the event. The Clean Power Team of Shakti created an interesting Photo Exhibition depicting development in Wind Power Sector.

The event was attended by sectorial experts spanning across CSO's Consulting, Industry, Academia, and Government.

Solar World Congress 2023: Moving the World Toward 100% Renewable Energy

Solar World Congress 2023 was held in New Delhi, from October 30 to November 4, 2023. This was jointly organised by ISA, Ministry of New and Renewable Energy (MNRE), ADB, and International Solar Energy Society. Dr Ashvini Kumar, Technical Advisor at Shakti, was a member of the International Organising Committee and co-chair of the Scientific Committee for the Congress. He spoke during the opening of the Congress and Concluding sessions and moderated a special session featuring keynote speeches on innovative solar thermal technologies. Amit Kumar Singh Parihar, presented a keynote address regarding Distribution Renewable Energy Sources.

COP28: Women Empowerment through Decentralised Renewable Energy (DRE) Solutions

The event took place on side-line of COP28 held in Dubai in December 2023. The event sought to navigate the dynamic intersection of women's empowerment and decentralised renewable energy. By convening experts, practitioners, and advocates, the discussion shared success stories, facilitated knowledge exchange, and explored collective recommendations to enhance women's empowerment through decentralised renewable energy solutions within the context of sustainable development. An insightful panel discussion at COP28 in the UAE, moderated by Dr Amit Kumar Singh Parihar spoke on the crucial theme of "Women Empowerment through Decentralised Renewable Energy (DRE) Solutions.

The event delved into critical aspects of achieving women's empowerment through decentralised renewable energy (DRE), addressing key points such as:

- Success stories, best practices, and learnings on women's empowerment through decentralised renewable energy solutions.
- Barriers and challenges limiting women's empowerment through DRE solutions
- Identification of a set of recommendations/ strategies related to policy advocacy, project implementation, and community engagement for enhancing women's roles in the renewable energy sector.

R&D Conclave on Renewable Energy

Research and Development in the Renewable Energy (RE) sector have been primarily pursued by various leading academic institutions in India. Successful R&D models throughout the world show a consistent trend of the close-knit industry–academia–financegovernment collaboration.

In association with Shakti, MNRE organised the R&D Conclave, to bring together a diverse set of stakeholders representing academia, research institutions, industry, funding agencies, start-ups, as well as policymakers to discuss catalysing the RE ecosystem in the country, highlight the latest R&D developments, scale up adoption of industry-ready technologies, and collaborative R&D efforts between different stakeholders.

The discussions brought out challenges such as limited investors/venture capitalists for technical

solutions because of lack of understanding, inability to evaluate scalability potential of clean technologies and long gestation periods associated with such solutions and lab support needs for deep technologies also differ which is often difficult for incubators to identify and provide.

Offshore Wind Projects in Gujarat



Dr Ashvini Kumar, Advisor to Shakti, at the Solar World Congress.

Gujarat Urja Vikas Nigam Limited (GUVNL) and Gujarat Power Corporation Limited (GPCL) jointly conducted a seminar cum stakeholder consultation meeting on May 8, 2023, at Gandhinagar to facilitate dialogue and collaboration among stakeholders and to discuss opportunities and preparedness for Offshore Wind Projects in Gujarat.

Shakti, as part of its Sub-national initiatives, was part of this seminar where Siddharth Arora, Associate Director at Shakti provided expert inputs on De-risking, Investing and Financing of Offshore Wind Projects' regarding learnings form European experience of mitigating risks.

Role of Energy Storage System for Renewable Energy Integration in India

Shakti convened a Stakeholder Consultation on the 'Role of Energy Storage System for Renewable Energy Integration in India'. The consultation was convened at Shakti's office on August 23, 2023. The discussion centred around the topics - need for energy storage for flexibility in the greener grid; policy and regulatory framework; storage applications; financing needs; and key implementation challenges and barriers in India.



Stakeholder consultation by Shakti on 'Role of Energy Storage Systems for Energy Integration in India'.

Shakti also made a presentation on the key national energy storage regulations, policies, and guidelines as well as Shakti's work and initiatives related to energy storage.

The bringing together of various stakeholders on a common platform was an important initiative by Shakti to deliberate and discourse on a relevant and key subject.

Odisha Energy Transition Workshop

The GRIDCO Limited organised the 'Odisha Energy Transition Workshop' on October 17, 2023 in Bhubaneswar, with the guidance of the Energy Department of Odisha for deliberation and on the draft energy transition plans. The objective of the workshop was to gather focused inputs from sector experts and industry leaders that will help the state departments and organisations in the effective rollout of their respective energy transition visions.

Shakti provided inputs to GRIDCO Limited for developing the contours of the workshop along with iFOREST.

Key Interventions

Role of State Nodal Agencies in India's Clean Energy Transition

Shakti provided expertise and inputs towards strengthening State Nodal Agencies (SNAs) for their role in guiding and supporting India's transition to a high renewable energy-based future.

The aim was to identify and address challenges at the state-level in better aligning state needs and priorities with India's national high RE targets. This included collating experiences of the SNAs on the AREAS platform created by the MNRE, for sharing of learning and lessons with other SNAs. Providing knowledge support to help SNAs appreciate new and emerging RE technologies, as well as improvements in performance of existing RE technologies was another area of focus. The projects aimed to The objective was to develop a Strategy document for the SNAs to strengthen the state-level RE programme as well as identify and prioritise thematic areas for SNAs that will help them align with the high RE targets and exploring potential means/models for the AREAS network to promote the identified themes within the SNAs.

Collaboration with Goa Energy Development Agency (GEDA)

Shakti collaborated with GEDA to advance the large-scale deployment of Rooftop Solar PV, develop a framework and roadmap for PM-KUSUM implementation, green the fishery sector in the state, and prepare a renewable energy policy for the state of Goa. The plan is to assist GEDA in developing tools and frameworks, building the capacity of stakeholders, and providing technical and analytical support. The collaboration incorporates strategic interventions for achieving 100% Renewable Energy by 2050, a target set in the roadmap for the State of Goa.

Roadmap for Offshore Wind Power Development in Gujarat and Tamil Nadu

Shakti provided expertise towards the adoption of a guiding roadmap by Tamil Nadu & Gujarat to steer

and support successful early-stage development of Offshore Wind (OSW) energy in the state. The development of the OSW roadmap is aimed towards establishing a business case for offshore wind development and facilitating successful sustained development and offtake through an enabling ecosystem - instating policy, regulations, processes, and interlinkages with the state's ambitions for increasing RE generation.

Evidence-based Solution for Transformation of Tamil Nadu Energy Sector

Shakti provided expertise and inputs towards identifying evidence-based solution towards transformation of Tamil Nadu energy sector through regulatory and contracting reforms with an intent to grow authentic knowledge about local conditions and offer novel ideas on how best the energy transition there can take place. The focus was on two major work streams: i) on investability (the role of the price system, and formal agreement with policy stakeholders), and ii) on political economy of Tamil Nadu.

Bihar - Low Carbon Power Sector Model and Transition Roadmap

Shakti began State level collaborations with Bihar to develop short, medium, and long-term strategy to facilitate deployment of low carbon energy infrastructure sector through renewable energy Interventions, Distribution efficacy & energy efficiency solutions for making Bihar carbon neutral from power perspective.

Accelerated Development of RE in North-Eastern Region

Shakti provided expert inputs for a study by ISGF on harnessing the RE potential of NER states. The study aims to review energy policies, regulatory support for RE and ongoing RE programmes and projects in NER region.

Enhancing Visibility and Accelerating Deployment

Shakti began working on various initiatives on large scale deployment of DRE in India and those that

can pave way for a faster RE capacity addition in the country that include solar rooftop, battery storage, repowering of wind projects etc. These initiatives are based on the understanding that diverse array of rapidly advancing Distributed Renewable Energy (DRE) technologies, encompassing mini-grids, appliances, cooking energy solutions, and green fuels derived from renewable sources, holds immense promise for creating livelihoods and enhancing welfare, particularly as India endeavours to expand its Renewable Energy (RE) capacity. Further, Shakti realises the imperative to have a faster RE capacity addition and innovative approaches to accentuate the rate of RE installation to achieve India's clean energy targets.

Offshore Wind Capacity

Shakti began contributing towards developing a domestic supply chain and effective business models is pre-requisite to meet offshore wind targets and ensure a seamless flow of operations, while also maximising the benefits for the Indian industry. India has outlined an ambitious trajectory, setting a target of reaching 30 GW of offshore wind capacity by 2030. Initial estimates suggest a potential of approximately 71 GW off the coasts of Tamil Nadu (35 GW) and Gujarat (36 GW), identified as primary zones for the development of offshore wind projects.

Utility Reforms and Power Markets

The financial stability of Distribution Companies (DISCOMs) is crucial for the country to achieve its sustainable economic growth goals and uphold universal supply obligations. There is a pressing requirement for a mechanism to implement and monitor the adequacy of supply managed by state utilities, integrating the availability of resources across different states and regions. In addition to this, several innovations in power markets are also required. The important areas that Shakti planned to focus on are State level Resource Adequacy framework, Derivatives for power markets, Virtual Power Plant (VPP), Virtual Power Purchase Agreement (VPPA) which will strengthen the Discoms and power markets holistically.

7 | CORPORATE AND PHILANTHROPIC ENGAGEMENT ANTHROPIC ENGAG

CORPORATE AND PHIL

ENT



CRAFTING A PHILANTHROPIC PIVOT FOR SUSTAINABLE DEVELOPMENT

BY MANU MAUDGAL Head, Corporate and Philanthropic Engagement

THE DECADE OF 2020s HAS SEEN A DECIDED SHIFT IN INDIA'S PHILANTHROPIC SECTOR TOWARDS PRIORITISING CLIMATE ACTION. DOMESTIC PHILANTHROPIC FUNDS TRADITIONALLY FOCUSED ON EDUCATION AND HEALTH BECAUSE CLIMATE CHANGE WAS NOT VIEWED AS A PROBLEM ALIGNED TO THE SOCIAL AGENDA. THIS IS NOW CHANGING AND THERE IS INCREASING RECOGNITION REGARDING THE POTENTIAL ROLE OF PHILANTHROPY IN MAKING A MEANINGFUL CLIMATE IMPACT. IN THE COMING YEARS, WE HOPE FOR A RAMPING UP OF DOMESTIC PHILANTHROPIC INVESTMENTS ON CLIMATE AT THE SCALE INDIA NEEDS.

The year 2023 saw the emergence of the Social Stock Exchange, a new segment under the existing Stock Exchange's (BSE and NSE), that shall register social enterprises. This SEBI regulated mechanism seeks to allow list fund raising instruments that build transparency, time and cost efficiency in-between funders and social enterprises.

While the Government is expected to develop policies that enable and facilitate the flow of investments towards climate change and sustainability, the private sector is also expected to shoulder the responsibility and deliver on the ambitious investment pipeline for this cause. Collectively, domestic philanthropy stands for INR 98,000 crore¹⁹ in FY 2022 and is expected to grow at in double digits over the next five years. More (pooledin) philanthropic capital needs to be brought onboard and directed towards strengthening institutional research capacities for evidence-based analyses. Going forward, these institutional capacities can be nurtured and grown into credible knowledge providers.

Domestic philanthropic allocations can also facilitate India's sustainable transition by focussing on innovation at scale and speed. Alongside policy support, domestic philanthropy can direct capital to support multiple ideas and solutions that can shape net zero led development ideas.

In view of this active shift, Shakti hopes to establish long term collaboration with domestic philanthropy to support a sustainable future for India. Starting 2022, Shakti registered with the Ministry of Corporate Affairs to take up CSR initiatives and Shakti's in-house team for Corporate and Philanthropic Engagement began its efforts towards understanding and developing the value proposition that Shakti can offer to domestic philanthropy. We took significant steps to actively engage and discuss opportunities with the Indian philanthropic sector to harness diverse resources and networks that strengthen greater climate learning, innovation, and collaboration.

^{19.}

As of 2023, CSR spending constitutes INR 27,830 crore, UHNI/HNI giving INR 33,880 Crore, Retail giving INR 36,300 crore. In addition, Foreign grant contributions are INR 23,000 Crore. https://www.bain.com/insights/india-philanthropy-report-2024/

In 2023, Shakti also engaged with domestic philanthropies to understand the value proposition domestic philanthropy requires towards building a narrative to catalyse thought leadership and ecosystem towards India's climate/clean energy transition.

Conscious outreach engagements with family and CSR philanthropies were initiated. The meetings were useful in developing a perspective of domestic philanthropic landscape. Two things became apparent through such interactions. One, domestic philanthropy seeks to develop a climate perspective. Second, currently their focus has been on initiatives on ecology and development.

Further, we also became aware that most domestic entities seek segregated services. This information resulted in Shakti working towards developing bespoke climate aligned actions suited to relevant themes in 2023.

Shakti made efforts towards creating convenient frameworks that can be executed through domestic philanthropic forays. Shakti's initiatives in the year, that formed the foundation for further positive action, were aimed at building bridges by working at the intersection of government, businesses, foundations, civil society, and communities.

As we move forward into 2024, Shakti hopes to build on this foundation and continue its efforts towards fostering an environment conducive to shared resources, knowledge exchange, and collaborative strategies with a hope to encourage domestic philanthropy towards climate action and sustainable future for India.





Making India's Intellectual Infrastructure (MITTI)

Shakti's focus is on building narratives to catalyse thought leadership and ecosystem capacity towards India's climate/clean energy transition, through frameworks, instruments and platforms for convergence and collaboration. A significant initiative towards this was the conceptualisation of 'Making India's Intellectual Infrastructure' (MITTI) - a unique public-philanthropic platform to augment climate aligned development policy research in India.

To augment policy research in India this unique public-philanthropic platform has been conceptualised which seeks to develop a pooled philanthropic platform that incubates research institutions especially at the Sub-national level. Oneon-one interactions with multiple philanthropies have been carried out to gauge interest.

The public anchoring of the platform is envisaged with the National Institute of Advanced Studies (NIAS). As we move into 2024, the essential contours of MITTI shall be worked out.

Addressing Climate Change in Urban Centres



Manu Maudgal at the Cities and Climate Action workshop by Shakti and BIOCON Foundation at Bengaluru.



Shakti and BIOCON Foundation teams.

Our cities are impacted by poor air quality, and extreme weather events linked to climate change. Shakti collaborated with the Biocon Foundation to curate a convening in Bengaluru with like-minded philanthropies to explore partnership opportunities and deliberate on strategies and techniques for taking concerted action to address climate change in urban centres.

The convening, curated by Shakti, aimed to develop a framework to enable philanthropies to collaborate and scale actions with stakeholders at the city, state, and national level is being explored, with the intent to:

- Build leadership and unlock institutional mandates for climate action in cities.
- Build and implement ambitious sectoral climate policy/strategy, climate action plans.

Roundtable: Bringing Together Key Philanthropy

Philanthropies in Tier 2 and 3 cities play an important role in climate action, but they are often underrepresented in philanthropic actions. Along with AVPN and in collaboration with Dasra and India Climate Collaborative, Shakti conducted a roundtable session that brought together key philanthropic ecosystem builders to brainstorm opportunities to scale climate philanthropy in India. Some of the pointers that emerged from the discussion included:

- How can philanthropy reinvent its role beyond giving and look at how they can lend their voice and influence towards enabling climate resilience in India?
- What strategies are useful when it comes to advising and influencing HNI's and Corporate philanthropic outlays what are their needs and approaches to climate investing?

New Grant Commitments

HSBC Grant for Green Hydrogen

A proposal to research on policy, technological, and financial solutions relevant for real-world application of Green Hydrogen in industrial facilities across key states was accepted by HSBC through a three-year grant. Over the three years of the grant support, the initiative shall build support and strategy that offer solutions to on-ground barriers, help increase enduse obligation, build confidence of investors to help the country gain momentum towards the promise of greener economy through Green Hydrogen.

Rainmatter Grant for Research

India faces the dual challenge of mitigating greenhouse gas emissions while navigating through the multifaceted issues of biodiversity loss, land degradation, and an increasing vulnerability to climate change. These environmental challenges are further complicated by the pressing needs for improved incomes, equitable development, poverty alleviation, and inclusive decision-making processes. The disparity in resource endowment and opportunities across different regions of the country underscores the importance of a nuanced understanding of the interplay between climate action, environment, ecology, and sustainable development to address these objectives effectively.

Shakti was awarded a grant from the Rainmatter Foundation for research by the Climate Insights Unit. This grant will support the identification of emerging climate change issues and their intersection with the environment, ecology, and sustainable development. It will enable Shakti to pursue important questions and explore solutions related to climate action.

This initiative is poised to play a pivotal role in identifying transformative areas of work that intersect with local environmental, ecological, and sustainable development needs. Moreover, it aims to act as a conduit between national and state-level policies and community-level actions, fostering a cohesive approach to climate resilience and sustainable growth.

The core focus will be on understanding the dynamics of the existing governance system's engagement with climate and sustainable development objectives to achieve goals at a local level. By examining objective-based policymaking approaches and the impact of decentralised decision-making and resource allocation, the research intends to illuminate pathways that could significantly influence regional and communitylevel outcomes. Furthermore, it seeks to uncover approaches and mechanisms that could mainstream solutions tailored to the specific needs and circumstances of different regions and communities. This marks a critical step forward in our collective journey towards a sustainable future. By bridging the gap between high-level policy frameworks and grassroots implementation, it holds the promise of catalysing place-appropriate, sustainable solutions that are both effective and inclusive. Shakti is committed to leveraging this opportunity to contribute meaningfully to India's climate action and sustainable development journey, ensuring a resilient and equitable future for all its citizens.

Event - One Earth, One Family, One Future: Resilience for All

Shakti co-curated and co-hosted the annual flagship event of Foundations 20 (F20) under India's G20 Presidency that focused on the theme of 'One Earth, One Family, One Future: Resilience for All.' The convening organised in New Delhi on June 8, 2023, facilitated constructive contributions highlighting key priorities, challenges, and opportunities in global trade and climate action as an input for the G20 summit.

The aim was to stimulate debate in the context of the upcoming G20 summit in New Delhi and showcase priorities, challenges, and opportunities to help build global momentum in climate action. Shakti's contribution was to design two sessions:

- How trade and mechanisms like Carbon Border Adjustment Mechanism (CBAM) promote a climate responsible economy. The session It shed light on the larger macroeconomic effects of CBAM, effects on emerging economies and how are they protecting themselves from unfavourable trade shifts. It also gave us insights on the Indian steel industry and their response to these developments along with how the European Union evaluates the move.
- Enabling Lifestyles for Environment (LiFE) -Accelerating green trade and investments- the session gave us insights on how customer demand influencers such as shifts in local practices, aspiration for more sustainable lifestyle can accelerate green trade, thus promoting Lifestyle for Environment (LiFE).

Outreach

As part of its outreach, an informative brochure was developed. Manu Maudgal, a regular contributor to the in-house periodical 'Energy Matters' on the emerging net zero transition and implications for industry, raised visibility for the need to corporate philanthropy for climate action through his writings.

A select set of research outcomes are being curated to build a narrative, inviting domestic philanthropies to consider supporting India's net zero transition. The narrative envisioned as a handbook of Shakti's work and impact.

Knowledge Sharing

To support dissipation of knowledge in the ecosystem, in partnership with CSRBOX, a Masterclass was organised on the topic, 'Accelerating Climate Action with Financial Innovation: Opportunities and Challenges' by subject expert from Shakti, Shubhashis Dey.

Summary

The year 2023 saw the corporate and philanthropic team engaging with corporate and philanthropic actors. Multiple approaches were adopted that included the following:

- Development of frameworks, instruments and platforms around which convergence and collaboration can be built.
- Direct engagement with domestic philanthropies.
- Interactions via public forums and one-onone interactions which have resulted in a few exclusive convenings being planned in the coming year for establishing Shakti as the goto platform for efficient programme design and management.
- Outreach to corporate philanthropy to contribute to climate action.

8 | COMMUNICATIONS

R



SPREADING AWARENESS, CREATING IMPACT AND VISIBILITY

BY ATIMA MANKOTIA Director Communications

"COMMUNICATION IS A CRITICAL ASPECT FOR SPREADING INFORMATION AND FOSTERING SUPPORT FOR CLIMATE ACTION."

The Paris Agreement flagged effective communication of climate change information as one of the critical issues. Also, the Sustainable Development Goal 13 (SDG 13) is a goal to limit and adapt to climate change. The official mission statement "take urgent action to combat climate change and its impacts" recognises that addressing and minimising the risks posed by climate change is integral in today's world. However, the crucial fact is that climate action requires changes in public policy, corporate policy, citizen behaviour, and cooperation among science, policy and civil society. These are the building blocks of Shakti's efforts as an organisation and this is what we showcase to our stakeholders through our communication strategy.

Our endeavour has been to disseminate relevant information and build a successful network of supporters by communicating consistently with all our stakeholders using a unique voice that matches the image of Shakti.

In recent years, communication activities and initiatives at Shakti have seen an expansion and upsurge. The changes began in 2022 with the establishment of a strong and unique brand identity by changing Shakti's visual identity that is more in sync with the changing times and better represents Shakti's expanded vision and values. In 2023, communication efforts made notable progress by leveraging communication platforms to facilitate interactions with stakeholders, disseminating information and positioning Shakti as a thought leader in the sector with expertise and knowledge in providing solutions on climate change issues.

In today's digital age, communication is about a continuous dialogue with stakeholders and social media channels enable continuous content delivery, allowing stakeholders to consistently receive relevant information, fostering stronger support and visibility in the process. Acknowledged the role of social media as a key tool to create brand visibility, significant steps were taken in 2023 for creating bustling and engaging social media platforms.

Our communication messaging focuses on sharing Shakti's initiatives, convenings, knowledge documents and achievements. Further, there was an emphasis on developing communication collaterals for building and positioning the Shakti brand. The collaterals include Shakti's Annual Report; a detailed, welldesigned Quarterly Newsletter; blogs and articles by team members and a plethora of video content. Participation of Shakti in COP28 was captured and highlighted on our website in a webpage that had video content, photos from events and detailed information on sessions organised by Shakti.

Regular tracking of key performance metrics is part of Shakti's communication strategy where quantifiable measures provide valuable insights into audience engagement and also inform about gaps that need to be rectified. By keeping an eye on these metrics, we have identified our successes and failures and are now in a position to repeat our successes and plug gaps in the coming year.

As we move into 2024, Shakti hopes to continue its journey to accelerate awareness and information dissemination for enabling new channels of collaboration between disparate stakeholders, and to drive climate solutions efforts by our team members and extensive network of partners.





Social Media and Website

Social media is one of the key tools to create positive visibility and outreach for Shakti to help increase brand awareness. Shakti's vigorous Communication Strategy that involved identification of target audience and relevant channels of communication is a multi-pronged, multi-platform approach where social media platforms Facebook, LinkedIn, X, Instagram were activated and boosted for wider outreach. The Social Media strategy was planned to showcase Shakti and its team members through creative and engaging content with a focus on Convenings, Shakti Team Members as Experts; Shakti's MoUs, Organisational Events and Celebrations; Important Days and Video-content.

With an average of 5 to 15 posts a week, totalling approximately 230 posts in 2023, our social media platforms garnered interest as well as an increased audience. All our social media posts were designed to drive traffic to the Shakti website to promote more footprints to our website. Continuous monitoring and evaluation of the social media platforms show a slow and steady organic increase in engagement.

Shakti's Instagram platform, that was inactive, was activated in late 2022. LinkedIn is where we see maximum traction and engagement while Facebook and X is slow. To increase the number and pace of followers, Search Engine Optimisation (SEO) intervention is planned in 2024.

Communication Collaterals

There was continuous planning and designing of content and collaterals to increase visibility of Shakti and position it as a thought leader, a respected knowledge partner and a multi-sector expert.

Annual Report

An important communication product 'Energy

Dialogues – Shakti's Annual Report' created annually looks back on the year gone by and informs the readers on the impact and effectiveness of the various activities and initiatives of Shakti as an organisation and as a team of experts. In 2023, the Annual Report 2022 shared the overall picture of Shakti's efforts in 2022 with all its important internal and external stakeholders.

Articles and Blogs

Blogs and articles on current issues – technical and opinion pieces, have resulted in several interesting pieces of writing that have been posted on the website and outreached through social media platforms.

Video Content

A series of short videos were created and posted on Shakti YouTube channel and disseminated through social media. The video content is based on important convenings, COP28, organisational events including EV campaign, Foundation Day, Festivals and National Day celebrations and the Annual Offsite. These are all aimed at improving Employer branding and positioning the organisation as a great place to work.

Quarterly Newsletter - Energy Matters

The quarterly newsletter 'Energy Matters' highlight Shakti's efforts and achievements in a quarter and is disseminated to a updated mailing list of over 800 stakeholders as well as through social media.

COP28 Webpage

A webpage was created on the Shakti website for COP28 that included video content, photo galleries and detailed information on events organised by Shakti as well as those where Shakti team members participated. This successfully showed Shakti's achievements and activities at COP28.

Shakti Website

A detailed study of the website was done in 2023 to identify gaps on the website. To improve the content and engagement of the website, content restructuring and an updated Home Page is planned for 2024.

Internal Communication and Staff Training

There was a boost in Internal Communication through weekly mailers to staff members to update them on social media posts and any other important information. A series of interactive and engaging workshops conducted with Shakti team members to brainstorm on Mission and Vision of Shakti, were aimed at creating a sense of belonging and responsibility towards the organisation's goals and values.

To raise the quality of documents as well as promote uniformity, a customised stylesheet was developed and shared with all team members. As part of best practices, guidelines were also created to guide Shakti team members on Brand identity; Social Media; Participation in Events and Activities; Media Interaction; and Logo Usage. All new team members are provided training on all guidelines during induction. The communication team plans to organise relevant training for Shakti's team members in the coming year.

Annual Report



COP28



Quarterly Newsletter





COT 20 extremel logs performance of decigates from Ghad Sacks, reading India, Thio Chava onlyan well special the Regional Charles Facultations including Bland Interview that the first inter. As Regional Charles Facultations from Glade Sacks, reundly Dakid Neutrain, settable for Charlest and Located (Charlest Totals, Sachab et Charlest and Located (Charlest Article Charles) in an a blackable. Charlest and Mode Total Location and Charlest and Mode Sacks (Charlest Total Charlest) and Blackable Charlest and Mode Sack Program Sacks and CACD and the Internation and Charlest per Registre to base 1.2 COM and the Internation Charlest per Registre to base 1.2 Cold and the Internation and the Internation of Registre to base 1.2 Cold and the Internation and the International Charlest per Registre to base 1.2 Cold and the Internation and the International Charlest per Registre to base 1.2 Cold and the Internation and the International Charlest per Registre to base 1.2 Cold and the Internation and the International Charlest per Registre to Base 1.2 Cold and the Internation and the International Charlest per Registre to Base 1.2 Cold and the International Articlest 1% District Cherrer Transform (DCT) and/or. Subpresent on even in control system share and cardinal member (orange, lashedra, Agric share and card the methe Modella, and the control training teams have Cherr research and Theorematical Cherrer & Main. Stars Arth Alf Nambolic Cherrer & Main. Stars Arth Alf Nambolic Cherrer & Main. Michaels Der Dersten, Cherrer Peller and Michaels Der Dersten, Cherrer Peller and

9 | HUMAN RESOURCES AND ORGANISATIONAL DEVELOPMENT (HR & OD)

БИЕИЦ

ANIS

RX

51



INVEST IN PEOPLE

BY SURENDRA SINGH Head–Human Resources & Organisational Development

IN 2023, SHAKTI CONTINUED TO DELIVER IN THE HR AND OD FUNCTIONS AS PART OF ITS COMMITMENT TO INVEST IN PEOPLE. A PLANNED, BIG-PICTURE PERSPECTIVE AND BEHAVIOURAL SCIENCE-BASED METHODOLOGY HELPED STEER THE ORGANISATION TO MAKE PROGRESS TOWARD ITS SHORT AND LONG-TERM GOALS.



Talent Acquisition

2023 saw some key recruitments, especially in the Programme teams. We recruited and onboarded eight new full time employees. Today, the Shakti team is 53 members strong. We welcome all the new team members and hope to have long and fruitful associations with each of them.

Skill Development

In 2023, Shakti staff including team leads, nonleads and staff members to participated in relevant trainings that included Presentation Skills, Writing Skills, Project Management, Leadership Skills, and Executive Coaching to senior executives. These trainings contributed positively to enhance organisational effectiveness.

Enabling Working Environment

POSH

The year 2023 saw new appointments in the Internal Committee (IC) for Prevention of Sexual Harassment (POSH) due to the exit of a few members and updates in the POSH Act. The updated IC consists of Vatsala Joseph, Chairperson; Surendra Singh, Member; Sachin Kumar, Member; Nidhi Madan, Member; Dr Sarasu Esther Thomas, External / Independent Member. Shakti POSH Policy and IC member detail is now available on the website as required by the POSH Act.

Work From Home (WFH)

Shakti revised the 'Work from Home Policy' in 2023 to meet the new ecosystem requirements while keeping its policy employee-friendly, ensuring work life balance.

Team Building and Engagement

There was robust activity by the HR and OD team in 2023 in terms of team building and engagement activities. An offsite to Aurangabad served as a team building as well as a culturally immersive experience. The offsite used fun activities to help team Shakti create a sense of belonging and forge team spirit through collaboration and teamwork.

Engagement activities included celebration of festivals such as Onam, Diwali, Christmas as well as National Festivals to build a spirit of inclusivity and warmth that is intrinsic to Shakti as an organisation. Shakti has a 'Fun Committee' in place to promote creativity, collaboration, and fun at the work place.













10 | ENGAGE WITH SHAKTI SUSTAINABLE ENERGY FOUNDATION

AGE VVITH SHAK IT SUSTA

WE NEED A REVOLUTION IN ENERGY, TRANSPORTATION, MANUFACTURING, AND THE BUILT ENVIRONMENT TO TACKLE CLIMATE CHANGE. WE NEED BOLD CLIMATE ACTION TO IMPROVE EQUITY AND DRIVE SOCIAL INCLUSION. WE NEED TO BUILD CLIMATE RESILIENCE FOR VULNERABLE COMMUNITIES AND WE NEED A SUSTAINABLE FUTURE FOR OUR PEOPLE, OUR PLANET, AND THE FUTURE GENERATIONS. BUT WE CANNOT TACKLE CLIMATE CHANGE ALONE.

COLLABORATION IS THE KEY TO USHER IN THESE CRITICAL CHANGES.

THEREFORE, SHAKTI INVITES COLLABORATIONS WITH GOVERNMENTS, PHILANTHROPISTS, CIVIL SOCIETY ORGANISATIONS, AND BUSINESSES TO DRIVE THE GLOBAL CLIMATE AGENDA AND HALT THE WORST IMPACTS OF CLIMATE CHANGE.

Why Collaborate with Shakti?

We are at the heart of clean energy and climate change discussions in India.

We support the delivery of the Paris Agreement and net zero pathways.

We are recognised for enabling technical expertise and climate innovation.

We encourage climate action at all levels, including national, local, businesses, academia and civil society.

We enhance knowledge, expertise, access and outreach through our learning forums and dialogues.

Opportunities for Collaboration

Support our programmes.

Create strategic joint initiatives and projects with us.

Showcase thought leadership and action.

Promote social engagement and e-learning.

Be part of our energy and climate dialogues, events and seminars.

Connect With Us

We welcome engagements with government, philanthropists, civil society organisations, and business bilateral and multilateral organisations as well as donors who are aligned with Shakti's mandates to produce lasting results.

For more information, contact us at:

Shakti Sustainable Energy Foundation The Capital Court, 104B/2, 4th Floor, Munirka Phase III, New Delhi – 110067 India

Phone: +91-011-4747400, +91-011-47474043

Website: https://shaktifoundation.in/

Social Media Platforms



11 | AUDITED FINANCIALS FOR FY 2022-23

Balance Sheet as at March 31, 2023

Statement of Income and Expenditure for the Year ended March 31, 2023T

Particulars	Year ended March 31, 2023
	Rs. Lakhs
INCOME	
Revenue from operations	3,327.96
Other income	3.43
Total Income	3,331.39
EXPENSES	
Project / Programme Related Expenditure	2,417.15
Employee benefit expenses	477.24
Depreciation and amortisation expense	53.92
Other expenses	416.08
Total Expenses	3,364.39
Surplus / (Deficit) for the year	(33.00)

Designed by: www.padmasiddhi.com | +91 9810695890



Shakti Sustainable Energy Foundation The Capital Court, 104B/2, 4th Floor, Munirka Phase III, New Delhi 110067, India

+91-011-4747400 www.shaktifoundation.in

