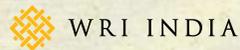
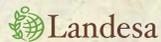


Renewable Energy to Responsible Energy: A Call to Action

Executive summary



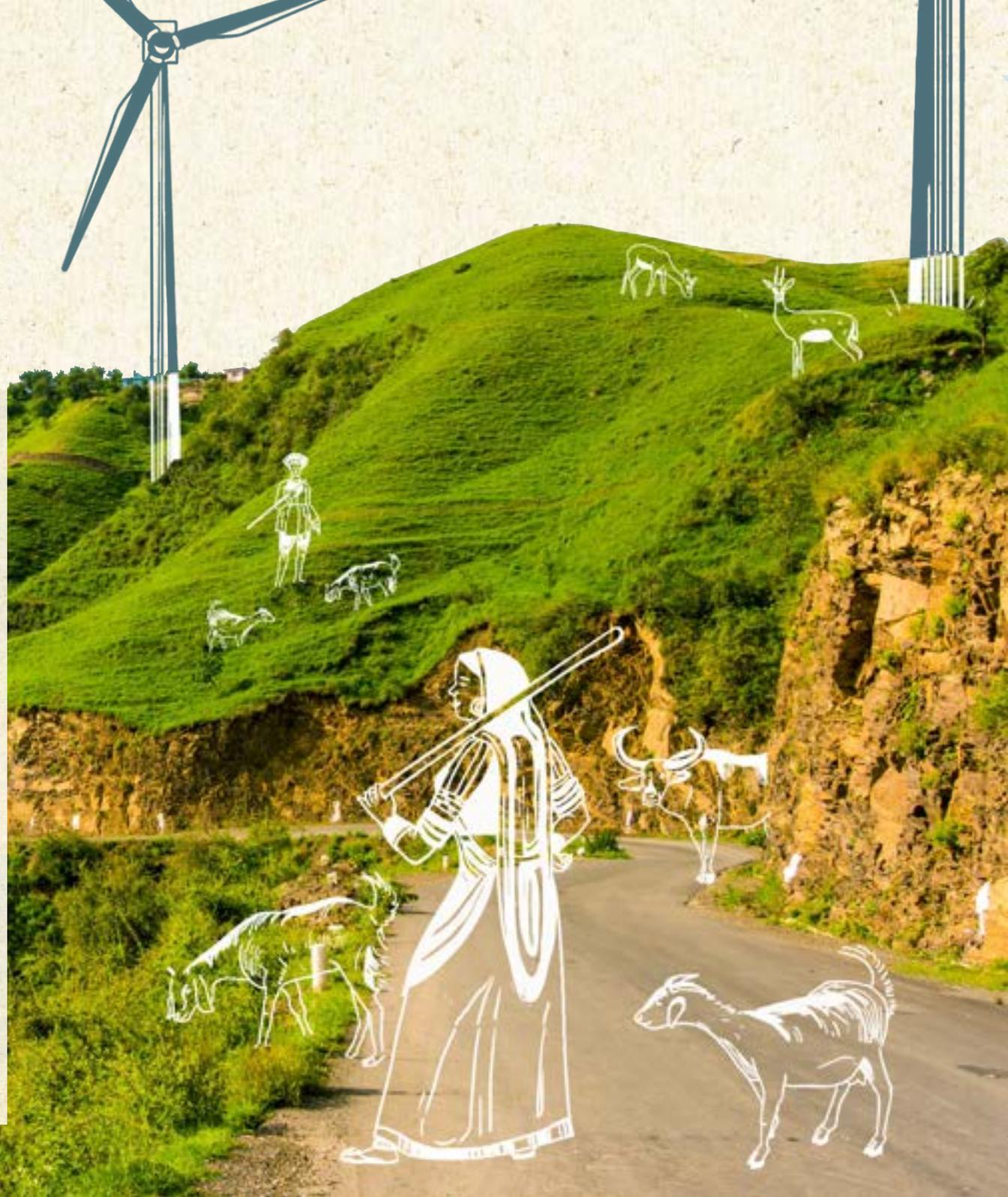
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Foreword

India has set ambitious targets for renewable energy (RE) capacity and has demonstrated strong growth in the deployment of RE technologies. The sector is key to the reduction of carbon dioxide emissions and delivers a range of other benefits spanning energy security, opportunities for greater energy access, jobs and livelihood opportunities, as well as reduced or no pollution from electricity generation, among others.

Though these benefits are substantial, virtually no sector is yet universally sustainable in its impact. As the RE sector continues to grow and evolve, it will need to be increasingly mindful of the need to ensure that adverse impacts on the environment, communities and human rights do not arise from its value chain and operations. This is particularly so as the relative positive and adverse impacts across RE value chains will only amplify as deployment scales.

Now, in 2021, the sector has the opportunity to take proactive action - a step that is essential to avoid and mitigate risks to its progress. It is also critical in enabling sustainable growth for itself and for serving as a model for other growth sectors. We believe this is the moment for the RE sector in India to take steps to better understand its impacts more holistically and commit to mitigating action.

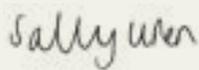
The collective challenges we face require all sectors to take urgent and ambitious action towards a just and regenerative future. Now is the time for the renewable energy sector in India to transform itself into a responsible energy sector and take the lead in initiating the action towards the transition.

Signed

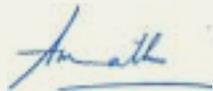
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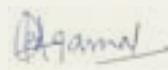
Chris Jochnick
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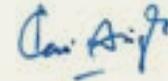
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Executive summary

Overview

The rapid rise of renewable energy (RE) is a keystone element of our transition to a low carbon economy in India and globally. RE has the potential to dramatically cut greenhouse gas emissions, expand access to affordable, clean energy for all, create jobs and help economies and societies thrive in the long term.. However, all new technologies bring both potential upsides and downsides, and RE is no exception.

The rapid scaling of RE in many parts of the world, including India, is placing increasing pressure on natural resources, albeit on a relatively lower scale than conventional systems. These pressures include mineral use for equipment manufacture, land used for siting large-scale projects, water used for the operation and maintenance of certain technologies, and the challenge of sustainably managing technologies at their end-of-life. In some cases these pressures cause adverse environmental impacts and are also driving social inequities and human rights abuses.¹ **Yet, the well-recognised positive impacts of RE mean that the deployment of the technology is often viewed as inherently good, and these environmental and social risks may not be adequately recognised.**

¹ See for instance BHRRC, "Renewable Energy & Human Rights Benchmark Key Findings from the Wind & Solar Sectors", 2020, available at https://media.business-humanrights.org/media/documents/files/Renewable_Energy_Benchmark_Key_Findings_Report.pdf (accessed January 2021)

Avoiding these adverse impacts will be critical in ensuring that the sector does operate in a sustainable fashion and avoids damaging investor and other stakeholders' confidence in ways that may ultimately hamper the uptake and growth of RE in India.

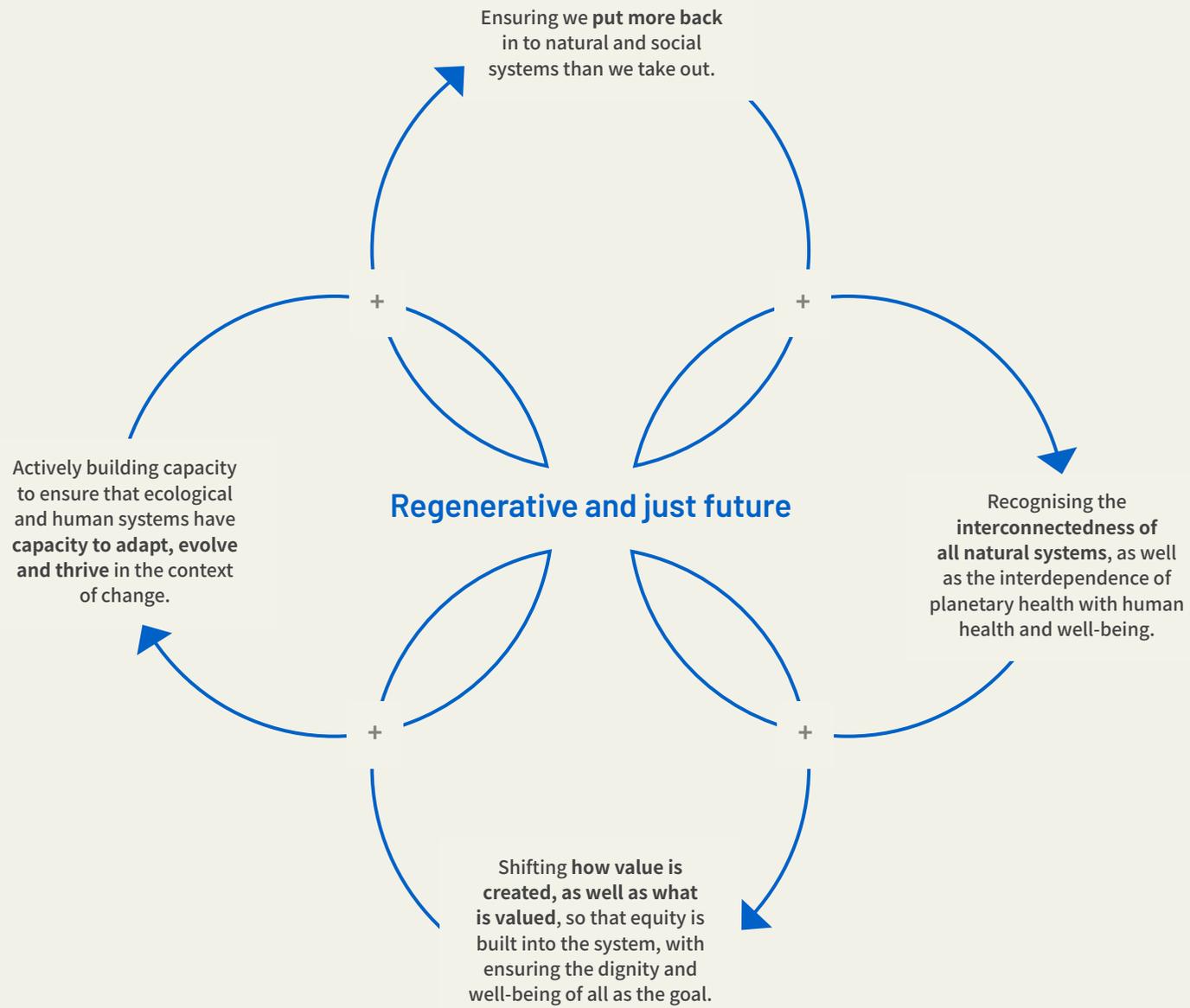
At the same time, the RE sector is uniquely poised to accelerate the country's just and fair transition to low carbon energy, and to lead the way in addressing challenges that have plagued the broader infrastructure sector and others for decades.

Awareness is growing amongst the different stakeholders of both the risks and the opportunities, and the Indian RE sector is beginning to respond to the emerging challenges. However, a number of critical gaps remain as Environmental, Social and Governance (ESG) practices take time to mature, and legal and corporate accountability mechanisms remain light.

To facilitate the rapid scaling of the RE sector in India, there is support across government and the private sector to expand the domestic supply chain, diversify sources of finance and position India as a leader in deployment. **It is a timely opportunity for collective action by key stakeholders to take a deeper look into the holistic ESG risks and impact of the RE sector in India - and globally - across the value chain** to ensure that it develops in ways that will drive just and regenerative outcomes for society and environment.



What is a 'regenerative and just' future?



Report scope and purpose

This report is the outcome of the first stage of the *Renewable Energy to Responsible Energy Initiative* - a collaboration between World Resources Institute India (WRI India); The Energy and Resources Institute (TERI); Landesa; World Wildlife Fund for Nature, India (WWF-India) and; Forum for the Future.

The initiative has been established to support the RE sector in fulfilling its full potential in driving a just and regenerative future, providing the insights and the space for key stakeholders to collaborate and take forward practical collective action towards this end.

The purpose of this report is to set the stage and establish a compelling case for action by providing:

- an overview of the landscape for RE in India;
- a broad understanding of the environmental and social risks and impacts being generated by the Indian RE sector across the value chains;
- insights into the extent to which these impacts are currently being governed, managed and mitigated; and
- a call to stakeholders - RE developers, investors, financiers, procurers, policy makers and civil society actors - to collaborate on tangible and transformative solutions for scaling the production and deployment of RE in a just and regenerative manner.

The findings presented within this report are the result of a literature review; semi-structured interviews with industry, investors, civil society and government experts; as well as on-site visits. We are grateful to our expert panel of reviewers for their inputs.

Key findings

Rapid scaling and investment

The RE market landscape is developing at a fast pace in India. The government's 450 GW target² sets the scene for what has become the fourth most attractive RE market in the world.³ With over 90 GW installed capacity at the end of 2020,⁴ renewable energy accounts for approximately 24% of India's total installed capacity⁵.

2 Ministry of Renewable Energy, "Renewable Energy Sector Makes rapid Strides in 2019 Installed Re Capacity Crosses 84GW; Nearly 1o GW Re Capacity Added in 2019"; 9 January 2020 (posted by PIB Delhi), <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1598948>

3 Koundal, A, "India's renewable power capacity is the fourth largest in the world, says PM Modi", ET EnergyWorld, 26 November 2020, <https://energy.economictimes.indiatimes.com/news/renewable/indias-renewable-power-capacity-is-the-fourth-largest-in-the-world-says-pm-modi/79430910>

4 Please note this excludes large hydro power. Source: CEA Dashboard Installed Capacity Composition December 2020, accessed February 2021, <https://cea.nic.in/dashboard/?lang=en>.

5 This figure does not include large hydro power.

In addition to strong government support, increasing flows of investment are a key driver of this growth. The methods of financing have significantly shifted over the last decade. Initially primed by foreign sources such as concessional loans from multilateral agencies and development banks including the World Bank and Asian Development Bank,⁶ the landscape is now more commercially led with many local players at the helm. These flows of finance will need to diversify⁷ and accelerate in order to provide the estimated US\$500 billion⁸ required to meet the 450 GW target.

An evolving governance structure

Multiple actors play a role in governing the RE sector. Public structures and regulatory mechanisms operating at both national and state levels are the primary means of governance. These mechanisms are also supported by the judiciary, some corporate governance initiatives and by civil society, with a long history of advocacy around infrastructure projects.

6 Alok Raj Gupta, "Financing India's renewable energy vision", ORF Issue Brief No. 336, January 2020, Observer Research Foundation, citing Ministry of Finance, Government of India, "Strategic Investment to Drive India's Renewable Energy Revolution", May 21, 2018

7 Bloomberg NEF, "India's 2030 RE Goals", 26 June 2020, https://data.bloomberglp.com/professional/sites/24/2020-06-26-Indias-Clean-Power-Revolution_Final.pdf

8 Tim Buckley and Saurabh Trivedi, IEEFA, "Capital Flows Underpinning India's Energy Transformation", 2021 http://ieefa.org/wp-content/uploads/2021/02/Capital-Flows-Underpinning-Indias-Energy-Transformation_February-2021.pdf (accessed February 2021)

Governance at all levels is helping to ensure increased participation and consideration of environmental and social impacts in RE projects. However, emerging evidence regarding the environmental and social impacts associated with the production and deployment of RE suggests a need to understand how existing governance mechanisms can better support the sector in having just and regenerative impacts, securing its ability to thrive into the future.

Emerging environmental and social impacts

Both the positive and adverse impacts across RE value chains are expected to amplify with the scaling of deployment. To date, the focus has been on accounting for the benefits of RE - namely, the significant contribution that it makes to reducing greenhouse gas emissions, as well as to reducing India's energy import bills. A rapid scaling of such RE-related benefits is critical to meeting Paris Agreement objectives.

In India, the sector also delivers a wide range of benefits beyond emissions reductions, ranging from reductions in air, sound, soil and water pollution to greater opportunities for energy access in remote locations, the generation of green jobs and a significant contribution to the national economy and GDP.⁹

Ensuring the sector fulfils its potential to deliver truly positive impact will require taking into account a number of critical concerns, including:

- Increased ecological and social vulnerabilities resulting from land-use changes;
- Labour and human rights abuses - particularly in locations where raw material extraction / mining, production and end-of life-stages of RE technologies take place, especially in the informal sector;
- Impacts on local and regional biodiversity during the construction and operation phases of the value chain in particular;
- Water-related competition and conflict arising from intensive water use associated with solar panel operation and maintenance;
- Energy justice concerns in instances where communities near project sites are not prioritised for improved access to electricity and other benefits.

There are signs that some of the negative impacts **disproportionately affect vulnerable segments of society** - most notably women and marginalised communities - driving further inequity and hampering a broad range of socio-economic agendas.

A number of these impacts are observed in countries outside of India, through international supply chain relationships. Whilst the RE sector in India is neither the sole, nor at this point in time, the most significant contributor to these impacts, a more direct correlation might emerge for India and globally as the sector continues to grow rapidly. India is in a pole position to take the lead in forming an alliance of countries to reduce any negative impact from the supply chain and contribute to the sustainable growth of the sector.

It is important to acknowledge that not all of the adverse impacts outlined in this report are unique to the RE sector. Some are common across the energy system, including in relation to fossil fuel sources. Others span multiple sectors.

We have employed a 'Finitude, Fragility and Fairness' framework to provide an overview of the impacts and risks that need to be addressed in each of the key RE technology value chains in order for the sector to be regenerative and just.

⁹ Aaditya Ranjan Srivastava et al., "Role of Renewable Energy in Indian Economy" IOP Conf. Ser.: Mater. Sci. Eng. 404 012046 (2018)



Summary of key risks and adverse impacts posed by the RE sector on Finitude, Fragility and Fairness



Finitude¹⁰

Fragility

Fairness

Increase in extraction and mining of non-renewable minerals for components (solar, wind, lithium-ion batteries, SHP)
 High GHG emissions in aluminium manufacture (solar), steel and cement (wind and SHP), materials processing (lithium-ion batteries) and direct energy use (Grey and Blue hydrogen)
 All impacts of RE technology used (green hydrogen)

Threat to forests and biodiversity, water, air and soil pollution (solar, wind, SHP, lithium ion batteries, hydrogen)

Significant human rights risks such as abuse of labour rights, rights of indigenous people, right to health, children's rights, environmental rights (related to land and water) and risk of modern slavery - particularly in mining and processing (solar, wind, lithium ion batteries, hydrogen, SHP)

GHG emissions (lithium ion batteries)

Risk of labour rights abuse, e.g. OHS risks related to exposure to hazardous chemicals (solar) and in storage and transportation (hydrogen)

Decisions made at this stage determine many later risks and impacts

Land-use change impacts: ecosystems services such as water recharge, soil nutrient cycling (solar and wind)
 Risk to sensitive marine and terrestrial biodiversity from site and infrastructure construction (wind)
 Risk of loss of water flow impacting irrigation and drinking water (SHP)

Labour rights in construction and earthworks risks especially with regard to OHS (SHP).
 Risk to livelihoods and culture of local communities reliant on land, forests or fisheries, particularly for vulnerable groups e.g. non-landowners (solar, wind)

Greater water stress due to onsite cleaning (particularly groundwater) (solar)

Risk to sensitive avian biodiversity (wind)
 Risk of wildlife disturbance from noise (wind)
 Risk of silting impacting downstream aquatic life (SHP)

Right to food and water related risks due to competition for water and land with agriculture and other local needs (solar) and impact on fish (SHP)

Risk to biodiversity from transmission lines (all grid-connected technologies)

Energy justice concerns if local communities not prioritised for electricity (solar, wind, SHP)
 Noise pollution (wind)

Massive volumes of unrecyclable or hard to recycle waste (panels and blades in particular) risk overwhelming landfill (solar, wind)
 Many components of fuel cells currently unrecyclable (hydrogen)

Decommissioning infrastructure poses risk to local ecology, particularly in marine environments (wind)
 Risk of pollution from hazardous substances (solar, lithium-ion batteries)

Right to health related risks due to panel and battery waste. Labour rights, particularly OHS risk to workers engaged in recycling particularly in informal sector (solar, lithium-ion batteries)

Stages of value chain



1. RAW MATERIAL EXTRACTION, SOURCING & PROCESSING



2. EQUIPMENT MANUFACTURE



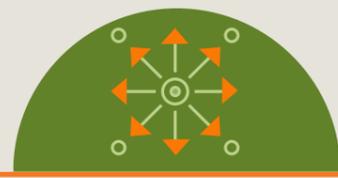
3. PROJECT PLANNING & SITE SELECTION



4. INSTALLATION & ASSEMBLY



5. ELECTRICITY GENERATION, OPERATION & MAINTENANCE



6. TRANSMISSION & DISTRIBUTION



7. END-OF-LIFE DISPOSAL

Sector responses

An important step in moving to a just and regenerative RE sector is establishing robust accountability frameworks for RE projects and organisations. A wide variety of approaches are currently being employed to varied standards across the different actors, from the RE companies that operate within legal and voluntary frameworks, to financiers who stipulate varying levels of standards and scrutiny, to industry associations raising awareness, to large buyers of RE who practice sustainable procurement.

RE developers in India demonstrate a wide range of responses to their environmental and social responsibilities, from deeming their CSR programmes or philanthropic activities as a sufficient response, to those that are conducting Environmental and Social Impact Assessments (ESIAs) as a matter of policy, imposing ESG requirements on their contractors or suppliers, and directing R&D to critical challenges.

India has a number of corporate governance mechanisms that can be applied in ways that will encourage the RE sector to address its environmental and social impacts. However, there is currently a nascent narrative on the specific applicability of these mechanisms to the RE sector and a general lack of evidence of their usage by different stakeholders.

Financial actors have played a key role in influencing the uptake of ESG, but could be using their leverage to push for a greater level of environmental responsibility and respect for human rights across the life cycles and

value chains of RE developers in India. One of the strongest drivers of change appears to be the World Bank and International Finance Corporation (IFC) Performance Standards and similar compliance provisions from other international financial institutions, such as the Asian Development Bank and the Asia Infrastructure and Investment Bank. Other financial actors investing in RE in India are beginning to apply ESG frameworks, but this is not yet the norm. **There can be a misinformed perception that there is no need to manage environmental and social risks in the value chain, because the generation of RE is inherently sustainable.**

At present, it is the large foreign private equity investors that are more likely to demand effective due diligence, especially at the pre-investment stage and early stages of deployment. The extent to which they continue to monitor ESG impacts throughout the project lifecycle is not always clear, and less attention is being paid to the ESG impacts of value chain activities outside of India, such as those relating to the sourcing of minerals or the production of the solar panels or wind turbines.

ESG investing does present a clear opportunity to catalyse more concerted action on the part of RE developers. The increase in the number of ESG funds in India and growing numbers of signatories to the UN-supported Principles for Responsible Investment (PRI) bodes well in this regard. The challenge ahead though is in deepening investors' understanding of the potential that the RE sector

holds to holistically contribute towards a just and regenerative future through its value chain. This extends beyond both the supply of green energy and foundational compliance with ESG standards.

Generally, banks and Non-Banking Financial Companies lending to the RE sector are not recognising the full extent of ESG risks across the value chain. As an example, IREDA¹¹ notes in its Annual Report that it views "RE projects as the most environmentally benign and socially acceptable projects"¹² and even though it does apply its Environmental and Social Management System (ESMS) to these projects, it sees them as having relatively "minimal impacts."¹³

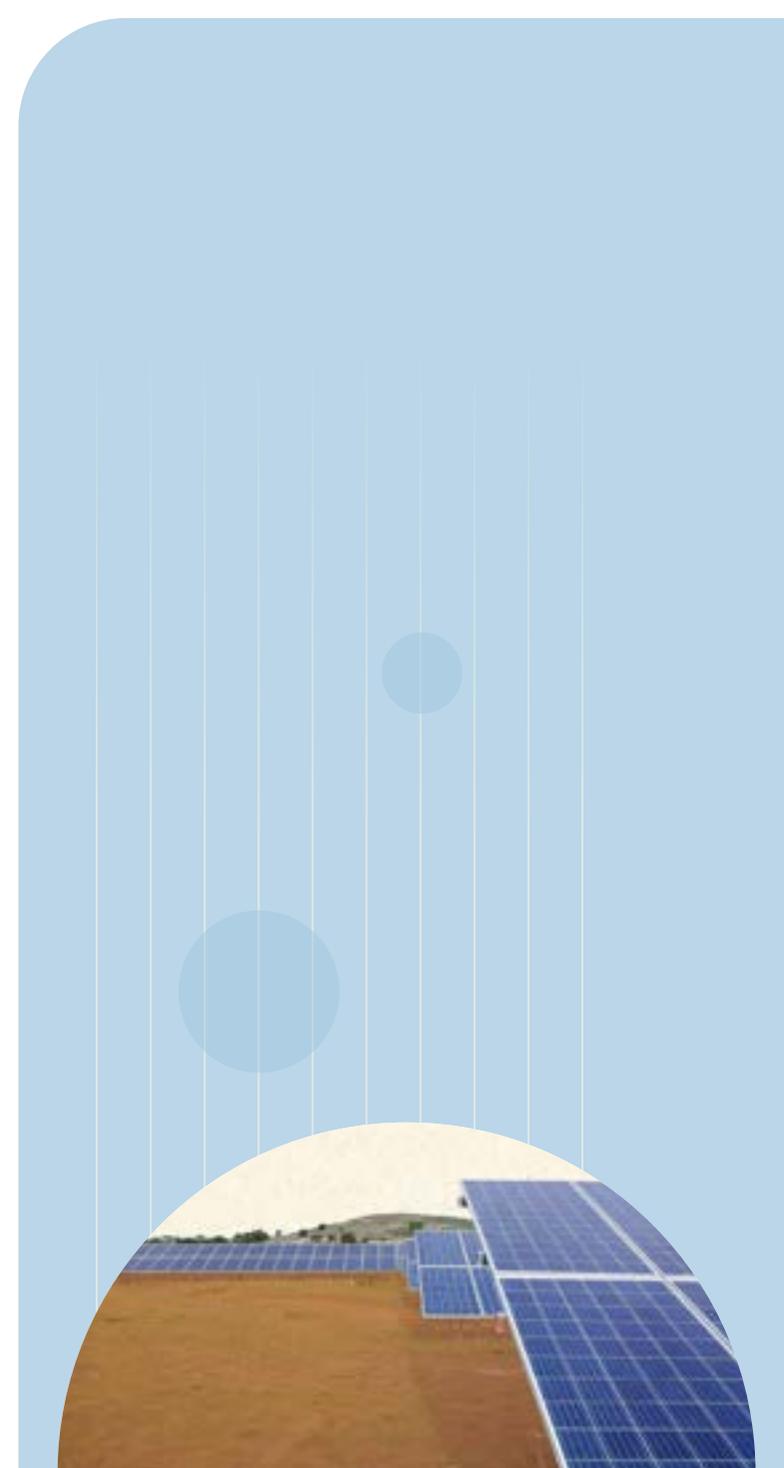


10 The 3-F Framework, shared in online course by Azim Premji University, 'Exploring Sustainability in the Indian Context', <https://www.youtube.com/watch?v=YsjMYrkW4DY> (accessed January 2021)

11 The Indian Renewable Energy Development Agency Ltd ('IREDA') is a state-owned non-financial banking company currently under the mandate of the Ministry of New and Renewable Energy. During 2018/19 it dispersed loans amounting to 93.8 billion to RE projects including small hydro power; medium to large hydro projects above 25 MW, wind energy, bio-energy, solar energy, biofuel and alternative fuels.

12 IREDA, Environmental and Social Management System (Version 2.0). Available at: <https://www.ireda.in/doc/csr/IREDAESMS.pdf>

13 *ibid.*



There is emerging evidence that some industry associations are playing an important role in proactively identifying current and future challenges for their parts of the sector and establishing task forces to shape a response. For instance, the National Solar Energy Federation of India is in the process of examining the issue of solar panel waste on behalf of its members. There are lessons to be learnt from associations in other countries in order to ensure the scope of attention is broadened.¹⁴

Sustainable procurement of RE is not playing as substantial a role as it is in other sectors. Whereas sustainable procurement is now an established practice with companies accounting for the social and environmental impacts of their suppliers, its implementation with regard to suppliers of RE is still minimal.

¹⁴ For an example, see the US Solar Energy Industries Association's (SEIA) pledge to eliminate forced labour in solar technology value chains

Towards a just and regenerative RE sector

The research conducted for this report reveals an RE sector that cannot be assumed to be inherently sustainable despite the key contributions it is making to a low carbon future. A complex mix of factors mean that there are still critical gaps when it comes to the implementation of ESG approaches by the RE sector.

During the course of this research, several sector leaders, large procurers and investors shared their recognition that now is the time to move to a more proactive approach, one that systematically manages impacts whilst seeking a holistic just and regenerative effect throughout the lifecycle and value chain. They recognise that because some of the challenges are also shared with other sectors, they have the opportunity to lead and collaborate.

Recognition and identification of environmental and social implications, and correspondingly implementing robust ESG approaches is a necessary first step on the journey towards ensuring a just and regenerative trajectory for the sector. From this first step, there is a real opportunity to move beyond doing less harm, to enabling social justice and economic resilience, as well as regenerating ecosystems. It demonstrates the possibility that efforts to achieve a 'just transition' towards a low carbon future can, and should, go far beyond traditional definitions to also look at the impacts of what is transitioned to, and how.

Key forces affecting the adoption of just and regenerative RE in India

LANDSCAPE:
The big picture 'operating context' of long term megatrends and shared social values

Significant surge in uptake of ESG in investment and finance community globally

Companies recognising those with good ESG practice are proving more resilient to economic downturn

India's low per capita electricity consumption is seen as a sign of its low growth, creating a perverse incentive to consume more power

Increasing recognition across multiple stakeholders of lighthouse issues e.g. solar panel waste

Increasing domestic manufacturing and finance means greater local control and influence

Shrinking civil society space with minimal avenues for redress

REGIME:
The mainstream, day to day business as usual

Price / tariff pressures lead to a focus on short-term cost cutting and a lack of resources

Lack of incentives through public governance to take responsibility for value chain impacts

Assumption from investors, procurers and policy makers that the RE value chain is inherently sustainable

Tendency to emphasise CSR activities over preventing or mitigating environmental and social impacts emanating from core business operations and the value chain

Pressure from investors upon developers to implement ESG compliance

Tick box attitude to E/SIAs, rather than seeing them as means of identifying opportunities to create more value

Cycle of blame between stakeholders, as each control different impact determinants (e.g. siting decisions)

Lack of nuanced narrative in media and research on value chain impacts of RE

Narrow definition of *Just Transition* means efforts focus on supporting people moving from fossil fuel sectors, and don't consider people affected by what we transition to, and how

NICHE:
The margins of the mainstream - social & technical innovations

Partnerships with civil society as providers of enabling solutions and tools e.g. Site Right

Recognition of need for new paradigm in ESG frameworks: assessment of impacts over time and meaningful stakeholder engagement

Pioneer procurers are basing their RE choice on environmental and social impact

Industry associations convening on lighthouse issues, e.g. solar panel waste

Pioneer developers being recognised for demonstrating responsibility for supply chain and siting impacts



ACTIVATING FORCE:
moving the sector towards a just and regenerative approach



RESISTING FORCE:
hindering the sector becoming more just and regenerative

Next steps

The Renewable Energy to Responsible Energy report sets out priority recommendations for immediate action by different types of stakeholders. In general it is important that two actions are taken urgently:

- **Challenge the notion that because the energy production itself is sustainable, the RE value chain is inherently sustainable:** The sector and supporting ecosystem of actors raise their awareness of the importance of looking beyond and beneath the positive credentials associated with the production of low carbon energy. In doing so, they recognise the need to better understand and to address the ESG impacts and risks throughout the RE value chains;
- **Build a deeper understanding and take collective action on the sector impacts:** Actors collaborate to map out and take action on mitigating the emerging adverse impacts, before they become a risk to the pace of the sector's growth.

Read the full report here:

<https://www.forumforthefuture.org/renewable-energy-responsible-energy-initiative>



Join us in creating lasting systemic change

Many of the actions needed are known by the ecosystem players, and some are indicating a shared intention to do more. However, there are structural and systemic reasons and barriers that cannot be tackled or solved by one organisation or even community on their own. They require a type of collaboration and collective action across stakeholders that has so far not occurred.

WRI India, TERI, Forum for the Future, WWF-India and Landesa would like to invite RE companies, investors, large procurers and other sector stakeholders to join us in an action inquiry programme to better understand these challenges and opportunities. We will set and take practical steps towards a collective vision for a just and regenerative RE sector in India, serving as a model for the global RE ecosystem.

Please contact Saksham Nijhawan at s.nijhawan@forumforthefuture.org to indicate your interest in taking part in the programme.



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About UK's Foreign, Commonwealth & Development Office (FCDO)

The UK Government pursues the national interests of the UK and projects the UK as a force for good in the world. UK Government defends the UK's values, works to reduce poverty and tackle global challenges with international partners.

Disclaimer: This document is an output from a project funded by Foreign Commonwealth & Development Office (FCDO) India, UK Government and implemented by the partners of the *Renewable Energy to Responsible Energy Initiative*, for the benefit of developing countries. The views expressed are not necessarily those of FCDO India.

S&P Global Foundation

About S&P Global Foundation

S&P Global Foundation supports inclusive sustainable economies and thriving global communities. S&P Global Foundation is more than philanthropy—it's making a difference by finding and developing essential connections between the knowledge and skills of S&P Global and the needs of society. We make sure the work we do maximizes opportunities to engage S&P Global's employees and has a genuine impact on the global community. We focus our efforts where we can make a real difference: Bridging the Global Skills Gap, Creating an Inclusive Economy, and Promoting a Sustainable Environment. We also support global disaster relief efforts with a focus on resiliency.

Disclaimer: The views and opinions expressed in this report are those of the research partners and do not necessarily reflect the official policy or position of the S&P Global Foundation or S&P Global.

About the partners



About Forum for the Future

Forum for the Future is a leading international sustainability non-profit with offices in London, New York, Singapore and Mumbai. We specialise in addressing critical global challenges by catalysing change in key systems. For 25 years, we have been working in partnership with business, governments and civil society to accelerate the shift toward a sustainable future. Our expertise in systems change allows us to work with our partners to diagnose problems, understand root causes, and identify how and where to act to create change. Together we are reinventing the way the world works.

Find out more at www.forumforthefuture.org



About WRI India

World Resources Institute (WRI) is an independent, non-profit global research organisation that turns big ideas into action at the nexus of environment, economic opportunity and human well-being. Our work focuses on building sustainable and livable cities and working towards a low carbon economy. Through research, analysis, and recommendations, World Resources Institute puts ideas into action to build transformative solutions to protect the earth, promote livelihoods, and enhance human well-being.

WRI India has the capacity to convene key stakeholders, and forge strategic partnerships with governments, business, foundations, civil society organisations, institutes and NGOs, to scale-up solutions that can bring game-changing results for the sustainable management of natural resources in India.

Find out more at www.wri-india.org



About Landesa

Landesa is an international non-governmental organisation that fights rural poverty and provides opportunity and security for women and men through the power of land rights. Insecure land rights are a leading factor in extreme poverty, food insecurity, gender inequality, conflict, environmental destruction, and sluggish economic growth. With offices in China, India, Liberia, Myanmar, and Tanzania, Landesa's policy advocacy and implementation efforts have helped strengthen land rights for more than 500 million people in more than 50 countries worldwide.

Find out more at www.landesa.org



About WWF-India

WWF-India is one of the country's leading conservation organisations dedicated to delivering sustainable solutions to address challenges at the interface of development and environment conservation. We focus on creating science-based programmes to address India's complex environmental issues and promote science-driven policy design for sustainable development to impact positive change. Working with diverse stakeholders, including governments, corporates and businesses, NGOs, schools, education institutions and civil society, WWF-India is committed to creating and demonstrating practical solutions to conserve India's biodiversity, maintain its ecosystems and contain its ecological footprint.

Find out more at www.wwfindia.org



About The Energy and Resources Institute (TERI)

TERI is an independent, multi-dimensional organisation, with capabilities in research, policy, consultancy and implementation. We are innovators and agents of change in the energy, environment, climate change and sustainability space, having pioneered conversations and action in these areas for over four decades. We believe that resource efficiency and waste management are the keys to smart, sustainable and inclusive development. Our work across sectors is focused on (a) promoting efficient use of resources, (b) Increasing access and uptake of sustainable inputs and practices and (c) reducing the impact on environment and climate.

Our research, and research-based solutions have had a transformative impact on industry as well as communities. We have fostered international collaboration on sustainability action by creating a number of platforms and forums. We do this by translating our research into technology products, technical services, as well as policy advisory and outreach. Headquartered in New Delhi, we have regional centres and campuses in Gurugram, Bengaluru, Guwahati, Mumbai, Panaji, and Nainital. Our 1200-plus team of scientists, sociologists, economists and engineers delivers insightful, high quality action-oriented research and transformative solutions supported by state-of-the-art infrastructure.

Find out more at www.teriin.org