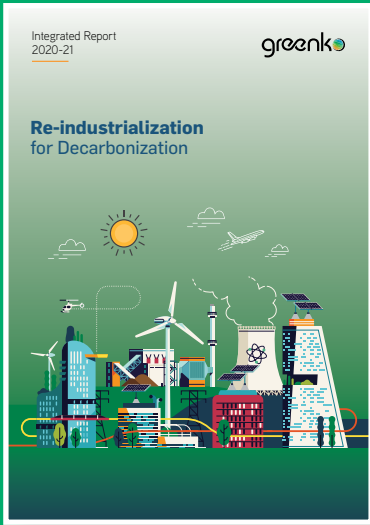


Re-industrialization for Decarbonization





About the Cover

Harnessing sun, wind, hydrological and biological systems in nature and their regenerative capacity is critical in decarbonizing electricity system and going further much of industrial energy and chemistry. Deploying decarbonized electrons and molecules in Industrial ecosystem will be the Re-industrialization.





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01

About the Report

Purpose

Content Orientation

Reporting Boundaries

Reporting Guidelines and Standards

Connectivity







Purpose¹

This is Greenko's fourth consecutive Integrated Report, prepared with an intention to provide the readers a comprehensive view of Greenko's sustainable value creation potential by accounting for the financial and non-financial value derived from and delivered to various stakeholders. To protect and enhance value creation in the face of disruptions, a structured effort in the form of internal reflection for mapping the value creation factors and assessing the adequacy of strategy was involved while preparing this report. Further, Greenko seeks to transform into a utility of the future by deploying the measures based on the 3Ds of the energy sector i.e., digitalization, decentralization, and decarbonization, thus making its contribution towards clean, reliable, dispatchable and affordable power generation in India. This would also help in contributing towards India's energy security and economic stability to meet deeper decarbonization goals.

This report links Greenko's efforts to transform from GKO 3.0 to GKO 4.0 and beyond and its concurrent value creation and distribution journey. Greenko's position and performance on the material aspects relevant to its value creation viz., generating, retaining, distributing, protecting, and enhancing sustainable value, especially the tenacity and determination in carrying out the business during FY 2020-21 have been presented herewith.

Content Orientation

This report is drawn on the basis of global trends in the energy sector and the technology, taking into account several challenges and its impact on value creation especially in the face of the pandemic. A multi-disciplinary team was created to provide a comprehensive view of the group, its business model, the challenges and risks it faces, and its social, environmental, financial, and governance performance. Greenko's future vision for deeper decarbonization has also been shared in alignment with ESG aspects.

The Indian Renewable Energy sector is experiencing tremendous pressure due to challenges of increased share of renewables in the grid and distribution utilities, competitive bidding mechanism, falling tariffs, and other policy related changes that have slowed the industry's growth. Greenko has significantly contributed to public policy advocacy to bring visible changes to the ecosystem and has been stewarding solutions and special targets pertaining to build and operate multiple IRESPs with storage capacity up to 48.98 GWh. All such snapshots have been captured in the present report.

This report intends to communicate Greenko's effective transition from GKO 3.0 to 4.0 and ahead in the face of evolving contours of regulations, technology, ecosystems and the pandemic. The report details Greenko's continuing pursuit of Integrated Renewable Energy Storage Projects and digital transformation across operations including the development of an Integrated Energy Platform to make 24x7 power a near-future reality. To reinforce agility, Greenko has set in motion People, Process, and Systems across all operations and implemented

¹(GRI 102-51)



Reporting Guidelines and Standards³

The structure of the report is prepared in line with the framework established by the International Integrated Reporting Council (IIRC). The data is reported in accordance with the GRI Sustainability Reporting Standards given by the GRI (Global Reporting Initiative).

The report also captures Greenko's contribution towards achieving the objectives of the sustainable development goals (SDGs) adopted by the United Nations member states in 2015. In addition to that, Greenko's performance is also measured as per the World Economic Forum's stakeholder capitalism indices.

Connectivity⁴

The content of this report is complemented by other corporate documents and information on the group's website. In specific cases, the reference to such information is mentioned.

the 'ownership model' of organization development. The essence of which has been captured and presented throughout this report.

This report is organized into five core sections to enable the stakeholders to make an informed assessment of Greenko's ability to create sustainable value.

- The outline of Greenko's performance in the year 2020-21 is presented in Chapter 3, Performance Highlights.
- An overview of the Greenko group, its Vision, Mission, Values, diverse portfolio, current projects, future projects, pan India presence, and journey so far are presented in chapter 4, Greenko Today.
- How Greenko's strong leadership and ESG framework is guiding the group to positioning itself for long-term value creation, its risk management approach towards climate change are explained in chapter 5, Delivering Value – Purpose & Principles.
- Chapter 5 also elaborates on business continuity during the pandemic highlighting best practices to maximize business output.
- An overview of Greenko's external and internal operating environment, Greenko's value creation model, strategic value creation framework and new energy value pools are presented in chapter 6, Creation of Sustainable Value.

- Chapter 6 also mentions Greenko's contribution towards the three thematic areas of New Energy, linking ESG issues across its value chain and journey towards achieving the goal of Net-Zero by 2040.

- Finally, chapter 7, Performance-Based Value Creation explains how Greenko creates value across the six capitals to satisfy stakeholders.

Reporting Boundaries²

The information and data in the report correspond to the progress made by all the entities within the Greenko Group during the period 1st April 2020 to 31st March 2021.

To offer a clear perspective of the data being reported, the figures and events from the past are also included in the relevant sections of the report. The forward-looking statements contained in this report are based on the analysis of the current context, its expected outcomes are susceptible to change. Wherever, in the report, information relating to beyond reporting period is mentioned, the same is specified. There has been no significant change from the previous year's reporting period or in the list of material topics and topic boundaries.

For any queries and suggestions on the data and information please write to sustainability@greenkogroup.com

²(GRI 102-1, 102-45, 102-46, 102-48, 102-49, 102-50, 102-52)

³(GRI 102-54)

⁴(GRI 102-53)

02

Leadership Speaks

Chairman's Message

CEO & MD's Message





Chairman's Message¹

Dear Stakeholders,

Recent global events, both related to the pandemic and climate change, have exposed chinks in our present development model and brought to the fore an urgent need to address the United Nations Sustainable Development Goals. We believe that a sustainable energy system is a sine qua non of sustainable development and that India has made significant progress in increasing the share of renewable energy sources in the country's energy portfolio. India is also aware that further increase in the share of renewables in the electricity mix, requires deep structural changes in regulation and policy, in technology and finance, in skills and in grid management and a general all-round improvement in the entire related ecosystem.



¹(GRI 102-23)

Deep Decarbonization to Net Zero

If global warming is to be limited to 1.5 degrees centigrade, by 2050, carbon emissions have to come down drastically. To achieve the objective of a sustainable future, every organization must reach net zero, by either curtailing their emissions or by actively removing carbon from the atmosphere or doing a combination of both. Greenko has been a votary of sustainable development and climate action. It has recently committed to Climate Pledge and will be a 'Net Zero' company by 2040. Greenko also facilitates a smoother and effective transition of other businesses in India towards its 'Race to Zero'. Greenko's business philosophy has been to lead 'Decarbonization, Digitalization, and Decentralization' of India's Energy Sector. Towards this end, Greenko has made a strategic shift from being a mere renewable energy producer to being able to address the challenges of delivering reliable renewable power, on demand, through a balanced combination of Intelligent Energy Platforms and Pumped Storage Systems (PSP). This will result in deeper decarbonization, leading to long-term energy security and economic stability for all stakeholders. Greenko is growing its portfolio of energy sources through PSP systems and investing in zero-carbon molecules, leading the momentum towards decarbonization of 'hard-to-abate' industrial sectors. We believe that this transition is a major route to build an Energy Independent India by 2047.

Global annual investment in clean energy infrastructure is expected to increase from around 290 billion USD over the past five years to about 880 billion USD in 2030. Annual investment in low-carbon technologies in end-use sectors rises from 530 billion USD in recent years to 1.7 trillion USD in 2030. The energy and industry transition to Net Zero is very capital intensive and requires large patient capital. For emerging and developing economies to attract international finance

will require improvements in regulatory and policy frameworks that facilitate the international flow of long-term capital to support the development of both new and existing clean energy technologies.

Paris Climate Agreement and the Market Mechanisms under Articles 6.2 and 4 may support a carbon price that enables this transition to begin and scale up. Countries that speed up the processes to harness the opportunity in Paris Climate Agreement and channel the investments to right transition projects may garner early capital and build momentum.

New Normal of Stakeholder Trust

One constant at Greenko has been its adherence to a code of conduct and foundational values on which Greenko's edifice has been built. This unwavering commitment to values in the evolution of Greenko's business activities and its business model has been a source of continued stakeholder trust in Greenko.

Last year, a Dutch court order required Royal Dutch Shell to cut its emissions including from its use of products by 45% by 2030 from 2019 levels and Chevron shareholders, with the support of worlds' largest investment fund manager, approved a resolution requiring the company to curb the emissions created using the company's products. It is now clear that the judiciary, investors, and others are demanding 'extended producer responsibility' beyond applicable regulations. Such instances are not limited to climate change only and are increasingly covering other ESG factors such as Circular Economy, Diversity, Equity and Inclusion, Agility and Innovation, Digital and Cyber Security, etc, that have a linkage to the company's ability to sustainably create value.

Our main shareholders, GIC, ADIA and ORIX, view Environmental, Social, and Governance (ESG) factors, as central to their core tenets



Greenko has articulated its ESG framework and augmented its ESG risk management. Greenko has internalized ESG and 'Integrated Thinking', centered around multi-capital value-creation model. Internally, progress is measured through KPIs depicting the achievement of ESG objectives.



and believe that companies with innovative, creative mindset and good sustainability practices are more likely to perform well in the long term. Greenko has articulated its ESG framework and augmented its ESG risk management. Greenko has internalized ESG and 'Integrated Thinking', centered around multi-capital value-creation model. Internally, progress is measured through KPIs depicting the achievement of ESG objectives. Going forward, Greenko will link the ESG performance to the remuneration of its leadership.

Good Governance

During 2020-21, the Board and its committees have been active, despite the challenges posed by the pandemic, in guiding the management to face new challenges of growth and transformation. Mutual respect, trust, and candor have always been core to the Board function. The Board has been apprised of the SoPs that are being followed in operations during the pandemic. The Board continued its deliberations on the company's transformational strategy to harness the opportunities arising out of 'Energy Transition in India' and regularly reviewed strategy and capex deployment. As the company is trading into innovative technologies, novel partnerships, and new markets, the risks are diligently identified, mitigated and appropriate provisions made for residual risk.

Greenko's value creation story, delineated in this report, is about opportunity for India to harness new energy transition to Make India 'Energy-Independent' by 2047 and build 'AatmaNirbhar Bharat'. The company is excited about the congruence of opportunity for India and itself and will be keen to listen to stakeholders' concerns and suggestions.

Om Prakash Bhatt
Chairman

CEO & MD's Message¹

Dear Stakeholders,

I am delighted to share with you, Greenko's fourth Integrated Report delineating our IR journey pursuing decarbonization, digitalization and decentralization. In this report, we present our performance on financial and non-financial aspects during the reporting period FY 2020-21. The year gone by has been disruptive due to the pandemic and Greenko has been working tirelessly with all the stakeholders and critical services to ensure uninterrupted business operations.



¹(GRI 102-14)

As you are aware, Greenko is a leading Renewable Energy company with an operational portfolio of ~7.5 GW and pipeline of 93 GWh IRESP projects across different states in India. Parallel to being "large Scale Clean-Tech IPP" we are today "Intelligent Energy Market Specialist" and "Deep-Decarbonization Specialist". Developing "globally competitive long duration energy storage" and "engineering green molecules" is congruent with our transition to becoming "deep capabilities machine" and "innovation engine". We are building world's largest energy storage cloud Platform to RE-Industrialise for transitioning to Low Carbon Economy.

Keeping with the UNFCCC's Race-To-Zero commitment, Greenko has signed 'The Climate Pledge' to achieve Net Zero, 10 years earlier, by 2040. Our business model is aligned to be a trusted partner of businesses, cities, regions and countries that 'Race-to-Zero'.

Energy Transition in India

"Enormous challenge of rapidly transitioning to a net zero energy system is also a huge opportunity for our economies" is the conclusion of International Energy Agency's report. IMF and IEA jointly estimate that the total annual energy investment will surge to 5 trillion USD by 2030 in the net zero pathway, adding an extra 0.4 percentage points a year to global GDP growth and millions of jobs in clean energy, including energy efficiency, as well as in the engineering, manufacturing and construction industries. All of this puts global GDP 4% higher in 2030 than it would reach based on current trends. This compulsive positive economic outcome will surely drive nations to adopt the Net Zero Pathway. However, this opportunity does not impact the actors in the power sector equally. The companies in the right position to harness the opportunity have to be agile and innovative to transform and prudently manage the risks. In case of India, Energy independence by 2047 through initiatives in long duration energy storage and hydrogen is congruent with the Race -to-Zero ambition. The National Hydrogen Mission and

other such initiatives have potential to make India a global hub for production and export of Green Hydrogen, creating opportunities for green growth and green jobs.

Greenko believes in solving the challenges of accelerating energy transition and sustainable growth. We have architected our business to add value in the Complex and Mid-Stream segment of the Energy Transition. By transforming Renewable Energy to a Firm, Reliable and On-Demand Energy we are capable of deeper industrial de-carbonization.

India's Solar and Wind generation capacity and its cost effectiveness is amongst the top in the globe. In contrast, the present electricity architecture in India, about 375 GW installed capacity to meet 180 GW peak demand, is characterized by low flexibility and high cost, due to the dominant share of coal and in-firm renewables. This amongst other factors pulls down India's competitiveness as a manufacturing destination. To improve the electricity generation-supply flexibility and to generate power at a lower cost, it is imperative that the country installs Stand-Alone, Make-In-India, Long Duration Storage capacity and morph the Renewable Power to Round-The-Clock. Further, to attain the target of 500 GW of Non-Fossil fuel-based generation by 2030 and to deliver lower cost of power, it is imminent to establish a storage capacity of 30-50 GW, well before 2030. The new flexible electricity architecture –Low-Cost Storage in sync with RE, drives the cost of power down by 20% in the next few years. Availability of low-cost decarbonized power will

1. Position India as the destination for responsible global supply chains

The Global Supply Chains with 'Net Zero' goals will prefer 'Make-In-India' due to low cost and low-carbon electricity amongst other factors

2. Catalyze the manufacturing of cost effective Zero Carbon molecules in India (hydrogen, ammonia etc.) for variety of use cases in industry and transportation in India and outside

The cost effective Zero Carbon Molecules will not only substitute imports to support an 'Energy Independent India' but also could power the decarbonization of many OECD countries who have declared Net Zero ambition.

Greenko envisions India as a powerhouse for global decarbonization through transformation of its energy architecture from



and to catapult 'Aatma Nirbhar Bharat' to

5 trillion USD economy.

To achieve the transformation of the energy architecture, we have identified projects and investments that include:

1. About 15 billion USD investment over the next 3 – 5 years in Integrated Renewable Energy Storage Projects by combining multiple RE resources (Solar & Wind) with Long-Duration, Stand-Alone, Off-Stream, Closed Loop Pumped Storage Projects capable of delivering 'Firm, Schedulable & Dispatchable RE power to meet the long-term Energy & Climate goals of India and its neighbours.
2. About ~ 5 billion USD to produce Zero Carbon molecules at scale through electrolysis of water (including sea water) and other supplemental processes; and supply to industry, gas utilities and transportation sectors in India and outside.

These projects contribute to significant reduction in Greenhouse Gases (more than 25 million tonnes of CO₂e per year) and pave the way for India's transition to low carbon pathway beyond NDCs and ensure sustainable socio-economic development. These initiatives deploy investments and technologies for clean, reliable and affordable energy and steward the transition of the energy architecture to become a powerhouse for global decarbonization through export of RTC RE to the neighbours and Zero Carbon molecules to the globe. Further, these projects contribute significantly to the socio-economic growth by delivering clean, reliable and affordable power and generating fair, safe and healthy employment.

At Greenko, our focus is to generate more value and then share the value with all stakeholders. Through sharing value, we contribute to the sustainable development of India and the Globe. Our business has been aligned to contribute to UNSDG 7- affordable and clean energy and UNSDG 13-climate action. Further, our circular economic approaches to contribute to UNSDG 12-responsible production and consumption.

CEO & MD's Message



Parallel to being “large Scale Clean-Tech IPP” we are today “Intelligent Energy Market Specialist” and “Deep-Decarbonization Specialist”. Developing “globally competitive long duration energy storage” and “engineering green molecules” is congruent with our transition to becoming “deep capabilities machine” and “innovation engine”. We are building world’s largest energy storage cloud Platform to RE-Industrialise for transitioning to Low Carbon Economy.



Stakeholder Trust

Infusion of 20 % of equity investment and subscription to Green Bonds of 4.5 Billion USD gives us the confidence that the investors trust the company and its business model. Going further, we will be offering and partnering with global upstream clean energy investors and accelerate the energy transition. We are thankful to all partners who joined us in our challenging endeavour in Pumped Storage and Energy Storage Cloud. In the coming year, we will be actively executing the pumped storage project at Pinnapuram and begin execution at a few other sites. Our employees and communities have been on our side through this journey, despite weather and health emergencies. The regulators and policymakers have given us a patient hearing, understood our concerns, and responded very positively. Further, I place my gratitude to the businesses and industry that have made us partners in their climate stewardship journey. Many of them are eagerly looking forward to our firm renewable energy generation to twine us in their NET ZERO EMISSION plans.

Our new ESG Framework

The transition of environmental, social, and governance (ESG) factors from concept and investor preference to regulatory requirements e.g., EU Taxonomy Regulation, is happening and is a welcome development. We understand the import of “extended producer responsibility” of Dutch court ordering Shell to cut its emissions by 45% from 2019 levels by 2030 and not “act in conflict with what is generally accepted according to unwritten law” and “must observe the due care exercised in society.”

At Greenko, we have been always addressing ESG aspects diligently, not just limiting to operations in our control but, the activities along the value chain. During the reporting period, we initiated deployment of a structured ESG framework. We will continue to address the risks and opportunities presented by

climate change mitigation and adaptation; and circular economic approaches. On Social aspects, we will improve diversity, equity and inclusion; and practice innovation across our businesses. Our new products and services improve the sustainability of energy and industrial systems and services. We are curating our customer relationship commensurate to the changing profile. On governance aspect, we will continue to reinforce digital and cyber security and deploy enterprise risk management to address the uncertainties and challenges in energy transition. Many a times, the imperative of ESG is recognized and appreciated at the highest level but, the action and momentum is conspicuously absent. At the level of senior management, incentives linked to ESG performance will drive long-term momentum.

New Energy- Engine for Deep Decarbonization and Decentralization

New Energy dovetails RE generation with storage and digital technologies to offer multiple energy plus services. New Energy also heralds viable decentralized energy models. The green hydrogen and zero carbon molecules production will be significantly decentralized and would move closer to the use. Such decentralized energy system supported by well distributed water, wind, sun across the Indian sub-continent would offer significant advantages to India in self-reliance, cost-reduction and equitable distribution of wealth. Further, these can be harnessed by growing entrepreneurship in India. With this decentralized green hydrogen and zero carbon molecule business models, we are exploring elements of Greenko 4.0 that we envisioned to reach by 2025.

Progress against Commitments

We, at Greenko, realize that we are a salient part of electricity sector transformation that makes clean, reliable, and affordable

electricity and reinforces #Atmanirbharbharat with #EnergySecurity and #EconomicStability. New Energy solutions would drive 50% of our long-term investments in the next years and contribute to 50% of our revenues thereafter. New Energy solutions will be customer focused and add value to market to bring cost of energy down by 20% nationally from the current level. Keeping with our commitments, around 30% of our long-term investments during 2020-21, are in the new energy solutions viz pumped storage projects and intelligent energy platforms.

We are committed to circular economic approaches. Our business model of pumped storage combined with an intelligent energy platform has been deployed as a sharing platform for storage and energy management. It would offer energy and energy plus services to multiple customer groups viz., distribution companies, RE generators, Grid, and Industry.

We have been diligently picking organic and inorganic growth opportunities Strategically, we have improved our access to hydro power in different geographies of India. Our equity stake in Teesta Urja Limited with an underlying asset of 1,200 MW of Hydropower project in North Sikkim and acquisition of assets of 121 MW is a part of our transformation. Besides pursuing inorganic opportunities, we continue our pursuit of developing greenfield projects.

We continue our focus on high capital productivity and accordingly, we made investments in operation and maintenance through intense deployment of digitalization. We have been improving our Asset performance and reducing the O&M costs of our wind generation under the WINSOM program. Besides significant investment focus on Integrated Renewable Energy Projects, we have continued with the renovation and modernization of some of our wind assets. During the reporting period, we sold 7.19% of our power to the B2B segment and this demonstrates our ability to access energy users directly, which will be a salient feature in our transition to Greenko 4.0.

Our commitment to complete the IRESP in 36 months is based on a solid edifice of PPP- employee commitment, peoples' cooperation and support of the government. Despite the delays in regulatory clearances and disruption due to the pandemic, we are confident to achieve the target and complete our first IRESP by FY 22-23.

During the reporting period, we have spread Integrated Thinking across the organization. Across the enterprise, we held more than 4 formal IR conclaves, certificated around 250 Sustainability Practitioners. I am excited by this groundswell of alignment with the company's strategic goals.

In the reporting period, we achieved per capita training hours of 43.06 and retention rate of 99% and we strive to maintain and enhance the same in the future. This, in combination with innovation hub activities, goes a long way in upskilling and aligning the organization to be "High capabilities Machine" and "Innovation Engine". The number of hours devoted to the safety training has significantly increased over the previous year. We continue to achieve zero fatalities in this reporting period. Moving forward, we will focus on improving retention in the age group of 30-40 years.

We owe our success to our external stakeholders, including suppliers and customers. More than 80 % of our suppliers have been working with us for more than three years. As the new initiatives that we are undertaking are technology-intensive and require deep expertise and experience, we are joined by many new partners. We are happy to realize that the satisfaction indices of our suppliers and customers are 80% and 95% respectively.

Our Commitment to Community

During the pandemic, harnessing the global supply chains, Greenko procured much-needed oxygen cylinders, oxygen



Greenko believes in solving the challenges of accelerating energy transition and sustainable growth. We have architected our business to add value in the Complex and Mid-Stream segment of the Energy Transition. By transforming Renewable Energy to a Firm, Reliable and On-Demand Energy we are capable of deeper industrial de-carbonization.



CEO & MD's Message



we will be offering and partnering with global upstream clean energy investors and accelerate the energy transition. We are thankful to all partners who joined us in our challenging endeavour in Pumped Storage and Energy Storage Cloud



concentrators, medical grade liquid oxygen plants and cryogenic oxygen containers for urban as well as rural hospitals in coordination with the state government. The group also airlifted over 1200 medical grade 10 liters Per Minute Oxygen Concentrators and created over 1200 oxygen beds in remote locations and saved thousands of lives. Greenko has assisted the revival of a defunct 60 TPD medical oxygen plant in Hyderabad to produce over 45 tons of medical oxygen and this has added to the capacity of Telangana by 40%.

The company paid attention to mental and physical well-being of employees, their families and communities to deal with the challenges posed by the pandemic and also for building resilience. Covid protocols and safety measures were diligently followed, including minimising contact, social distancing and work from home.

Our community development initiatives are impacted and also are realigned due to the pandemic. The number of beneficiaries reached to 4,42,080. Such an increase has become possible by strategic targeting and effective investment. Going forward, we would measure both number of beneficiaries and the benefit delivered.

We contributed to sustainable development goal- UNSDG 17 by partnering with WWF to conserve the threatened species of Olive Ridley Turtles and with the Government of India for conserving the Great Indian Bustard. We have committed to add one threatened species to conserve each year, recognizing the pace at which the earth is losing its biodiversity. We have initiated plans

to conserve Red Panda in coordination with the Government of Sikkim and have begun its implementation by 2021-22.

Greenko is excited that its business is congruent with UNSDGs and the socio-economic progress of India. We seek active engagement of all stakeholders in our progress and your suggestions & views are valuable to us in further improving our performance and contribution.

Mr. Anil Kumar Chalamalasetty
Chief Executive and Managing Director



03

Performance Highlights

Greenko at a glance

FY 2020-21 Performance Glimpses and Contribution to UNSDGs

Awards and Recognition





Greenko at a Glance

Greenko is a leading clean technology and energy storage player in India and is amongst the global top 5 players in intelligent clean energy solutions. As of today, the Greenko Group has an annual generation capacity of 40.4 TWh, including the existing, under development, and secured capacity. The Company's project portfolio consists of Solar, Wind, and Hydro-based power generation plants.

Greenko with diversified renewable portfolio managing 17.6 TWh renewable energy is complementing its present generation asset base with storage capacity of 22 GWh and become Intelligent Energy Utility Platform.

Diversified Renewable Portfolio

17,603 GWh

Of Energy Under Management



Solar

~2.2 GWp



Wind

~3.2 GW



Hydro

~1.8 GW

~7.5 GW
Operational Portfolio



Intelligent Energy Utility Platform

Under Construction of 2 IRESPs with a total pumped storage of **2,460 MW**

Creation of **~22Gwh** storage Capacity

Supported by RE Generation Assets



- Projects Under Development are integrated with renewables to provide Schedulable Power on demand ("SPOD")^(c)
- Availability/Tolling based contracts
- Energy contracts
- Partnership with NTPC for storage solutions

¹(GRI 102-2, 102-6)

FY 2020-21 Performance Glimpses and Contribution to UNSDGs



Financial Capital



A+
(CE) Financial Rating

980 million USD
investment inflows

940 million USD
of Corporate Green Bond offering

15%
of assets are covered by the climate-proofing plan



Manufactured Capital



0.95 GW
Capacity addition

7.19%
power sold in open access (B2B segment)

9745 GWh
of total electricity generated

Reduction in losses due to External Grid Failure by
42%
as compared to FY 2019-20

Wind In-Source of Operation and Maintenance for
560.5 MW
capacity



Intellectual Capital



462
continual improvement programs

100%
real-time monitoring of assets

26
certified IMS auditors added

209
Innovation ideas generated through knowledge sharing Innovation hub

250
Greenko Certified Sustainability practitioners developed

107
Value creation success stories presented in IR conclave





Human Capital



99%
Staff retention rate

18%
increase in per capita training hours from 2019-20

Zero fatalities

Attrition rate reduced to just

1%
as compared to 11% in 2019-20



Natural Capital



12.47 Mt CO₂
Direct & Indirect GHG emissions avoided

18,262 kL
Wastewater treated and reused for gardening, plantation, etc.,

75,100.94 kL
of Water used for operations

1,67,610 kL
of rainwater harvested

10%
of assets covered under LCA and Life Cycle Management Plan



Social & Relationship Capital



95%
of Contractors are being awarded repeat orders

10%
increase in Strategic Contracts and Procurement

80%
of suppliers/contractors retained beyond 3 years

Internal customer satisfaction index is
4.5 on a 5 point scale

17.07 crores
invested in community development

285
community development programs

442080
people benefited from community social investment

3959
people benefitted from voluntary community work by Greenko's employees

95%
Satisfaction with Covid-19 mitigation measures

95%
Satisfaction with the Skill development program in Solar Energy



Awards and Recognition

Greenko's seamless efforts in transforming the energy landscape of India, being a great employer, and a respected corporate citizen has been significantly appreciated through numerous awards and accolades. Some of the significant awards received in the reporting period are presented below:

Asian Power Awards

The Asian Power Awards 2020, the region's most prestigious award also known as the 'Oscars of the Power Industry' has awarded Greenko Group in the following two categories:



Greenko Budhil Hydro Power Private Limited has won the award under Power plant upgrade of the year category for upgrading its operations by digitalization using state-of-the-art technology.

Corporate Social Responsibility Initiative



Greenko has emerged as a winner of the above award in the first year of inclusion - Asia Power Awards in recognition of its efforts towards conservation of biodiversity and specifically for the program on Conservation of Great Indian Bustard (GIB) at Rollapadu Wildlife Sanctuary at the group's Kurnool Ultra Mega Solar Park, Andhra Pradesh.

Swachh Changers Award

Greenko has been awarded as 'Swachh Changers' as part of the Swachh Survekshan 2021 by the Kurnool Municipal Corporation, Kurnool District, Andhra Pradesh. The above program is part of an annual survey of cleanliness, hygiene, and sanitation in cities and towns across India, launched as part of the Swachh Bharat Abhiyan. Greenko has received the above award in recognition of its efforts towards COVID-19 mitigation measures such as providing disinfection tunnels to Government Offices and public areas, supporting frontline warriors, sanitation measures at public places, and distribution of essential commodities to the needy.

Greentech Safety Award

Greenko has received awards during the "19th Annual Greentech Safety Award 2020" from Greentech Foundation on the 12th of February 2021 for the below plants respectively.

Greenko Sneha Kinetic Power Projects Pvt. Ltd. was awarded as **WINNER** for outstanding achievements in the 'Industry Sector Safety Excellence' category.



Greenko Rayala Wind Power Pvt. Ltd. was awarded as **WINNER** for outstanding achievements in the 'Leadership in Innovative Safety Practices' category.



SEI Aditi Power Pvt. Ltd. was awarded as **WINNER** for outstanding achievements in the 'Safety Team of the Year' category.



IPPAI Power Awards

In recognition of Greenko's efforts in the fields of Solar, Hydro, and Wind Energy, Greenko Group has received the following four awards from the Independent Power Producers Association of India (IPPAI) for the year 2020:

SEI Phoebus Private Limited (Greenko) was awarded as **WINNER** for the 'Best Solar PV Power Plant'.



Greenko Group was awarded as **WINNER** for the 'Best Hydro Power Plant – Output < 25MW'.



Greenko Group was awarded as **1st RUNNER UP** for the 'Best Solar PV Developer'.



Greenko Group was awarded as **RUNNER UP** for the 'Best Wind Generator'.



CII Leadership Excellence Awards

Greenko has been applying for CII Awards consistently for the past 3 years in Wind and Solar divisions. The CII awards includes two categories, Leadership in Performance (highest dignitary) and Performance Excellence and this year Greenko has received Leadership in Performance award for four of the nominated sites.

Leadership in Performance - Poly solar park Pvt Ltd (Wind)



Leadership in Performance - Pratyash (Solar)



Leadership in Performance - Orange Mamathkheda (Wind)



Leadership in Performance - SEI Phoebus (Solar)



Additionally a special award for:

Most Useful Presentation award - Pratyash (Solar)

Greenko sponsored Awards

Greenko as a group understands the significance of rewards and recognition and contributes to this by sponsoring few significant awards. The details are presented below:

Telangana Green Future Leadership Awards

Greenko co-sponsored the Telangana Green Future Leadership Awards in 2020 as the organization believes in encouraging leaders to come forward and contribute towards creating a sustainable and brighter future.

Telangana CMO Asia is a premium forum that brings together various marketing/creative communities under one roof. It runs Telangana Green Future Leadership Awards in recognition of excellence in sustainable business management.

The Sanctuary Wildlife Service Awards

Greenko's belief in supporting localized projects and community programs to promote education, public health, environmental stewardship, and rural infrastructure was reflected in co-sponsoring the Sanctuary Wildlife Service Awards 2020.

The Sanctuary Wildlife Photography Awards were instituted to showcase the contributions of India's best wildlife photographers. Conservation photography is an art form that has helped protect wildernesses virtually from the time cameras were invented. It is a blend of technical skills, natural history knowledge, field experience, and an innate desire to protect nature.

04

Greenko Today

Message from CFO

Message from COO-GAM

Foundation and Motivation

Business Overview

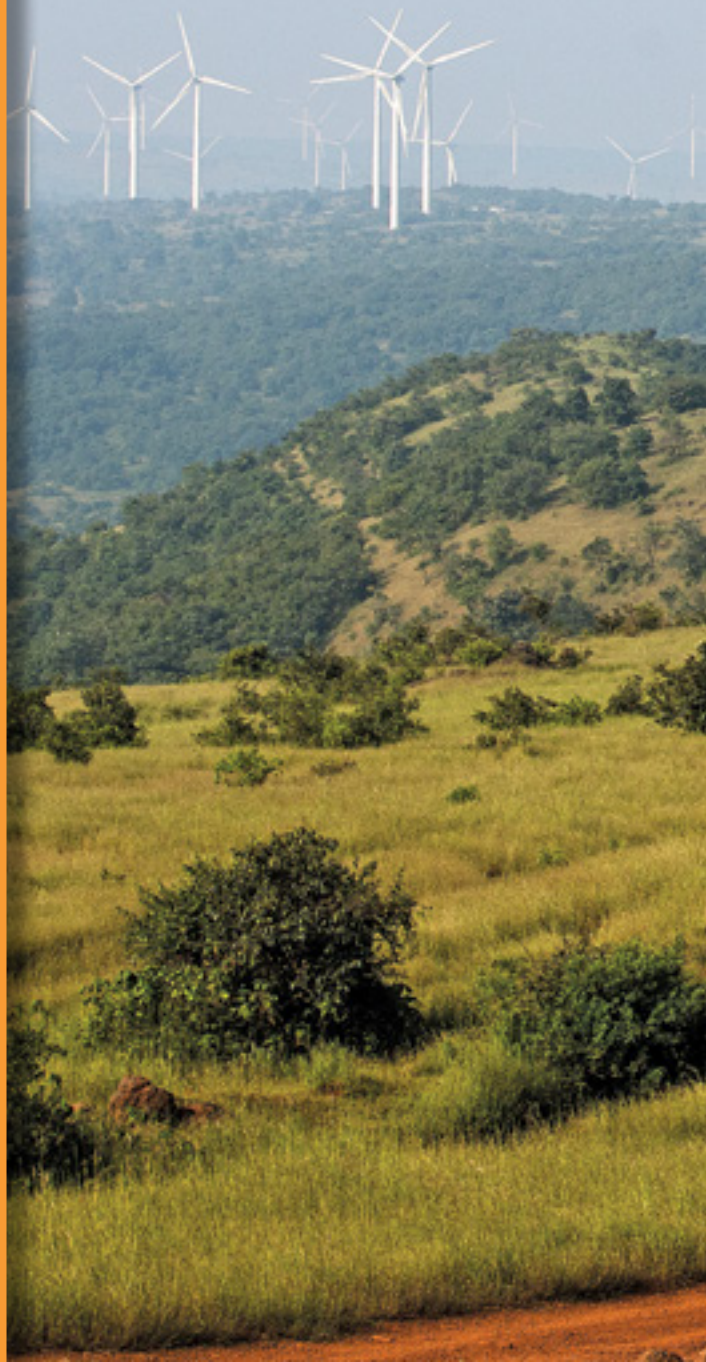
<IR> Conclave

Diverse Portfolio

Future Projects

Pan India Presence

Journey so far





Message from CFO

Dear Stakeholders,

Our annual integrated report is to give you accounts of our progress both- financial and non-financial performance and outlook. As we progress, the intertwining of performance across capitals is visible. Our efforts in improving efficiency of operations, empowering employees and public-private-people partnerships are now evident and will continue to reinforce our financial performance.



Greenko has a vision of 'Powering India with decarbonized, digitalized and decentralized energy assets' and its mission is 'building, owning and operating high-quality renewable energy assets by leveraging leading edge technologies for a stable and inclusive future', and the same is resonating its businesses.

We are now exploring pathways to achieve deep decarbonization to 'Race to Zero'- an initiative of the UNFCCC in keeping with the ambition of the Paris Climate Agreement. Engaging and partnering with the businesses and city governments to provide solutions towards NetZero would not only deliver sustainable returns on invested capital but positively contribute to the achievement of UN Sustainable Development Goals 7 and 13. Most of our investors are excited about the social and environmental outcomes that our business delivers besides sustainable financial returns.

Green investments by way of Green bonds at Greenko will help in transition to low carbon economy and on a greener more sustainable path.

Financial Instruments issued by Greenko continued to be rated A+ and Greenko continued to be the top destination for overseas funds in the sector with 2,294 million USD investment flows, more than double of its closest competitor in India. Further, Greenko accesses diverse sources of capital to meet its growth targets. Besides harnessing Green Bond markets, Greenko has been successful in raising finance through domestic bonds. Infusion of equity capital of 980 million USD by Japanese financial services group ORIX reaffirms the trust that the global investors repose in the business model of Greenko. With the integration of wind generation assets of ORIX in India, the asset base has significantly expanded, taking the total capitalised equity to approximately 2.26 billion USD as on March 2021. Additionally, there is an equity commitment of 1 billion USD by GIC, ADIA and promoters.

Most of the investments that we raise are deployed for the execution of Integrated Renewable Energy Storage projects that can morph in-firm variable renewable energy into reliable, schedulable, and flexible renewable energy and further to harness multiple value pools in the electricity system of India. Our colleagues engage with the public authorities through appropriate forums to shape the public policy and align it in the interests of an effective electricity system, which in turn will deliver additional returns on our investments.

We fund our operations and capital requirements primarily through cash flows from operations and borrowings under credit facilities from banks and other financial institutions as well as from equity. We evaluate our funding requirements periodically considering our net cash flow from operating activities, the progress of our various under-construction and under-active development projects, acquisition opportunities, and market conditions. To harness the opportunities, we have incurred significant capital expenditure most of it in New Energy Intelligent solutions.

In FY2021, our net cash used in investing activities primarily consisted of

- (i) 77.4 million USD used in purchase of property, plant and equipment, capital expenditure ,
- (ii) consideration of 33.2 million USD paid for acquisitions,
- (iii) consideration for acquisition of Orix Wind projects and MP Solar entities, net of cash and cash equivalents of 323.5 million USD,
- (iv) consideration for acquisition of 30.16% shareholding of Teesta Urja Limited with 112.1 million USD.

We witnessed an operating profit of 235.93 Million USD.

Operational improvement and value maximisation programmes carried out at many sites across technologies and continuing and extending Greenko operation



We have identified key Environmental, Social and Governance factors for our business activities based on its relevance to business, investor interest and peer practices.



and maintenance has yielded excellent financial outcomes. Besides, these measures are addressed to make the asset and the associated systems resilient to adapt to changing patterns of resources. Further, the procurement of equipment and services for new and challenging Integrated Renewable Energy Projects followed International Competitive Bidding procedures and the Project Management included numerous built-in checks and balances. The risks in these complex projects are diligently identified and mitigated to a large extent and provisions are made for residual issues.

We have identified key Environmental, Social and Governance factors for our business activities based on its relevance to business, investor interest and peer practices. The EHS, Governance and Risk management systems are aligned to address these ESG factors. You would find in this report our performance being reported against the ESG factors.

The continuing COVID pandemic globally and in India, despite logistic and other disruptions, have not negatively impacted our generation and demand. During the pandemic, our uninterrupted economic activity has been of immense help in our communities. Our experience over a period indicates that renewable generation is increasing significantly even during the uncertain times, moreover Government initiatives further is placing the renewable agenda as the top concern, this scenario looks exciting creating the possibility of additional employment as well. We are confident that this New Energy will offer India an opportunity to Decarbonize the grid, the industry and the chemistry.

With our steadfast approach, we will continue to pursue our transformational journey to effect decarbonization, digitalization, and decentralization. We will be keen to listen to you and engage with you throughout this journey.

Vasudeva Rao Kaipa
Chief Financial Officer

Message from COO-GAM



2020-21, despite being a challenging year due to Covid-19 pandemic, Greenko has sustained its operational excellence while increasing its asset capacity by 15%, adopting excellent pandemic management systems across the company and managed reduction in grid restriction by up to 46% y-o-y. Under WINSOM implementation, the in-house O&M of wind assets increased by 382 MW, over 214% increase from 178 MW to 560 MW.



Dear Stakeholders,

Businesswise IR conclaves, innovation hub and PPS have been the levers of Integrated Thinking through this reporting period. We continue to focus on improvement in asset performance across the asset life and post asset retirement. Accordingly, this activity has become an integral part of our design & engineering. We continue to explore how we can adapt to the changing climate and make our assets climate resilient.



Our assets have grown to 7.5 GW capacity as the operational sites increased from 112 to 133 on account of ORIX assets integration during the reporting period, which has resulted in an increase in the length of our transmission lines, which nearly doubled and the number of wind turbines have substantially increased. Our portfolio of assets is diversified by asset type, geography, off-takers, and technology. Our assets are strategically located across geographies with a favorable history of hydrology, wind, and solar conditions, though some of these are impacted by climate change induced by global warming, which gives an edge in optimising the generation. Greenko's assets in solar, hydro and wind are spread across 15 states of India.

While continuing the passion and dedication towards in-house asset management of Hydro and Solar, we continue to pursue additional opportunities for enhancing wind assets under WINSOM and implemented additional 382 MW of wind assets to reach total in-house O&M of 560 MW. Across the sites, where we have implemented WINSOM, an improvement in energy-based availability by 1-3 % is witnessed, thereby reducing the O&M costs by 0.17 to 0.25 INR/kWh.

Recent addition of wind assets enhanced our diversity in technologies and geographies resulting in our ability to generate power that is more evenly spread out through the year. During the year FY 20-21, the Plant Load Factor has been negatively impacted due to unanticipated climate changes. In spite of disruption due to covid & force majeure events, the Plant Availability remains stable at very high level. But amidst this, the Grid

Availability across the businesses have improved. Despite the pandemic, our O&M practices have been improved, as evidenced by decrease in Mean Time Between Failures and Number of equipment failures. We also have initiated circular thinking which involves planning for second life and end of life of assets. We have been deploying advanced analytics across our operations to predict the possible failures and initiate preventive actions. Our forecasting and scheduling are improving year on year in both solar and wind assets. This year, we have been able to deliver 98 % generation within permissible deviation of 15%. This ability stands amongst good performance in the sector and demonstrates our honing of skills in energy management.

The asset management teams at all locations are adept at balancing long term and short-term performance of the assets, to deliver positive contribution to multi-capitals. Our unique innovation hub has served as an instrument to catalyse the ideas to drive transformation and ownership culture among the key stakeholders. In the reporting year, over 209 ideas were generated during 40 hours of interactions between GAM, Projects, Engineering, C&P, QA/QC and QSD. This is amply demonstrated by the success stories presented in this report. The sense of ownership of Greenko employees emanate from the realization that they are contributing to the vision of decarbonization, digitalization and decentralization of the energy system presents enormous opportunities of growth for India and the company. Our people see their bright future in

- a) potential for growth of the firm and schedulable renewables and zero carbon molecules
- b) the agility of Greenko to grow and offer solutions to meet the energy and decarbonization challenge and
- c) Greenko's continued commitment to its employees.

The enthusiastic deliberations in the

IR conclaves and readiness of each employee to align their role and activities to the company's strategic objectives have been very encouraging. Our suppliers and communities find in us a reliable and agile partner to engage and commit for a long-term association. Ownership of outcomes by each employee; readiness to share gain and pain by suppliers and vendors and the trust reposed by the community are the assets of the company and will continue to be factors for the company's improved performance, in the face of disruptions and challenges.

We have witnessed multiple operational disruptions due to unanticipated extreme weather events as also chronic physical changes in wind patterns. Our emergency preparedness plans and our team members' readiness to go beyond the call of duty in the face of adversity ensured that the disruptions due to extreme weather events are addressed immediately. Going further, we have understood and are taking mitigative actions and building resilience, to address the changing pattern of extreme weather events and chronic pattern shifts due to global warming induced climate change. Our initiative of associating with leading global predictive analytics and engineering firms, to modernize 500 wind turbines and adopt the latest predictive analytics could improve resilience of assets. We will be installing sensing equipment across the 500 direct-drive and geared turbines to monitor its condition. The data generated will be used to identify machinery failures and provide longer lead times of 6 – 12 months to plan for corrective measures through replacement.

At the scale and size of ambition, it is necessary to move towards sustainable self-reliant operations and maintenance strategies. This will maximize efficiency, reduce costs, and retain investor confidence over the lifespan of the project. Digitalization and predictive maintenance will be the lynchpin to streamline asset operations and improve resilience.

Our employees weathered the COVID risk to maintain operations and generated uninterrupted power through the pandemic. Due to the pandemic, prolonged operation of business continuity plans have been a challenge. We have efficiently and effectively handled the movement of people, mobilisation of resources and equipment to the sites during the lockdown in and through hotspots, while normal transport operations and local supply chains have been disrupted. During the pandemic, ability to restore the disruption of extreme weather events have tested the agility and resilience of our organization. Further, we have contributed to healthcare and to communities through health authorities across India, in and around our asset locations, during this health emergency. Greenko Group conducted 191 EHS audits across our business portfolios in light of the pandemic to generate increased awareness among our employees. A dedicated COVID-19 committee led by our MD and CEO and equipped with a 24/7 COVID helpline served the Greenko family in uncertain times. Greenko has taken complete care of its employees and their families by providing medical/ hospitalization and all required support to them. Additionally, on-site employees were empowered with decision-making powers for timely actions during the pandemic.

To generate firm power, our new assets would combine stand-alone RE assets with long duration, utility scale storage and intelligent energy platforms. This would significantly alter the Greenko Asset Management challenges and we have begun preparing for the same. Further, as green hydrogen and zero carbon molecule assets at multiple decentralized locations would present new challenges and require new Organizational structures for asset management. Greenko is turning each challenge into an opportunity and marching ahead. In this journey, we are together with all our stakeholders.

Co-creative engagement with all key stakeholders is critical to our success. We are keen to listen to your feedback and engage with you to take this journey forward.

Mr. Venugopala Rao Naredla

Chief Operating Officer-Greenko Asset Management

Foundation and Motivation

Greenko Group is a committed and leading renewable energy generation and energy storage player in India creating **#MoreSmilesPerWatt**. The group aims to transform renewable energy from real-time energy to a dispatchable and controlled medium through digitalization and storage solutions to support the economy-wide drive for deeper decarbonization across sectors in the country with a total capitalized equity of **2.26 billion USD** as of March 2021.




Vision

To lead Decarbonization, Digitalization and Decentralization of India's Energy Sector.

Mission

- Build and Operate flexible utility scale energy assets to deliver demand driven solutions
- Continuously innovate to deliver best-in-class solutions with life-cycle focus.
- Manage all assets sustainably, leveraging leading-edge technologies.
- Build public-private people alliances for sustainable development.

Values SEEDIT

- | | | | |
|--|---------------------------|---|------------|
|  | Stakeholder Inclusiveness |  | Discipline |
|  | Excellence |  | Innovate |
|  | Ethical |  | Teamwork |



Stakeholder Inclusiveness

Engage with all the Greenko stakeholders in an inclusive manner for sustainable development of the organization.



Excellence

Striving for excellence to deliver roles and responsibilities to achieve measurable results in developing, owning and operating world class assets.



Ethical

Conduct action with fairness, integrity and honesty with Greenko stakeholders.



Discipline

Adherence to company policies and GIMS with a sense of ownership.



Innovate

Adopt and encourage use of technology and innovative approaches to deliver breakthrough business results.



Teamwork

Achieve organizational objectives with respect and dignity towards all participants of Greenko in a positive and collaborative work environment.



“At Greenko we faced the challenges of the pandemic with agility, responsibility & compassion. The welfare of our employees and their families is a top priority and we ensured continuous communication flow by using digital tools to keep them informed & address their concerns. Adhering to core values & discipline helped us to support each other as we continue to work our way through the pandemic.”

- Swathi Reddy, VP- Corporate Communications



Business Overview



Greenko was founded in 2004 and is headquartered in Hyderabad, India. Greenko Group comprising of Greenko Energy Holdings together with its subsidiaries is one of the largest renewable energy companies with a power generation capacity of 7.5 GW and a pipeline of 15 GW of wind, solar, hydro, and energy storage assets spread across 15 states in India. In addition, Greenko has also invested in natural gas and biomass assets in India. Through these assets, the group generates and sells electricity to state utilities, private customers, and other electricity transmission and trading companies.

The power sector has undergone a challenging era in the past few years globally, mainly due to climate considerations. Greenko has understood the need for climate resilience early on and is developing multiple utility-scale, long-duration, and low-cost pumped storage projects across India to deliver cost-effective, inflation-proof, schedulable, and firm renewable power to Businesses and the Government to meet their climate change commitments. By generating this zero-carbon-low-cost firm power, Greenko will offer cost-effective Zero Carbon molecules to power decarbonization of hard-to-abate industrial sectors in India and abroad, thereby meeting the Climate Challenge and becoming a contributor to the Net-Zero race.

With a core belief in sustainable development, Greenko is actively involved in local projects and community programs that cater to the education, environment, rural infrastructure, health & well-being of the public. The hallmark of Greenko Group's environmental stewardship is GHG mitigation, climate risk management, nature conservation, and circular economic approaches.

The company since inception has invested around 7 billion USD in developing the cleanest, environment-friendly renewable energy assets in India and has ambitious plans to invest 20 billion USD in the coming 3-5 years to match the pace and requirements of energy transition interventions crafted for India.

India is recognized worldwide for its solar and wind generation capacity as also its cost-effectiveness being top-most globally. However, currently, India's electricity architecture is about 375 GW installed capacity and 180 GW peak demand, which is characterized by low flexibility and high cost, due to the dominant share of coal and in-firm renewables. This, amongst other factors, presents a challenge for India to be looked upon as a manufacturing hub. To ensure flexible and round-the-clock renewable electricity generation, it is imperative that the country installs standalone power generation systems combined with long duration storage capacity.

Further, to attain the target of 450 GW of renewables by 2030 (India's commitment exceeding the NDCs -PMs address to G20 in November 2020) to deliver lower cost of power, it is imminent to establish a storage capacity of 30-50 GW, well before 2030. The new flexible electricity architecture – Low-cost storage in sync with RE, will aid in cutting down the power cost by 20% in the next 5 years. The advantages offered by this low-cost decarbonized power will:

1. Position India as the favorable destination for responsible global supply chains

The Global Supply Chains with 'Net-Zero' goals will prefer 'Make – In-India' due to low cost and low-carbon electricity among other factors.

2. Catalyze the manufacture of cost-effective Zero Carbon molecules in India (hydrogen, ammonia, etc.) for a variety of industrial uses and transportation applications locally as also globally.
3. The cost-effective Zero Carbon molecules will not only substitute imports but also power the decarbonization of many OECD (Organization for Economic Co-operation and Development) countries who have declared Net Zero ambition.
4. Greenko envisions India as a powerhouse for global decarbonization through the transformation of its energy architecture from:
 - Standalone Renewable Power to meet India's Energy Demands
 - Round-the-clock Renewable Power supported by long-duration and low-cost storage to bundle up high-cost thermal power with cheaper & Cleaner RE
 - Cost-effective Zero Carbon molecules using the low-cost RTC renewables and to catapult India to 5 trillion USD economy

¹(GRI 102-3, 102-6)

<IR> Conclave

Greenko is passionately implementing sustainability and ESG initiatives and enabling the stakeholders to understand true value; both tangible and intangible. Greenko is ensuring that the key focus is not only on financial capital but also on the material issues of non-financial capitals. To communicate further down and deploy the Business Strategy and Value creation model, the Sustainability team has conducted <IR> Conclaves to leaders of GAM (Greenko Asset Management) & shared functions to create momentum towards the adoption of Greenko's Value creation process and Business strategy across functions and locations.

<IR> Conclaves were conducted at the following four locations:

- **Fortune Five hydel Projects Private Limited (FFHPL, Karnataka)** on 27th and 28th February 2021 for GAM-Wind,
- **Kurnool** on 4th and 5th March 2021 for GAM Solar,
- **Palampur** on 10th and 11th March 2021 for GAM Hydro
- **Head Office (HO)** on 13th August 2021

The teams presented the value creation stories and awards were given under the Diamond, Platinum, Gold category while 200 GAM leaders and 50 business leaders are recognized as Greenko certified sustainability practitioners. This year the conclaves have focused on the following important issues:

- **Integrated Thinking, Reporting & Strategy.**
- **Embedding Integrated thinking in the corporate goals and strategies.**
- **Sustainable Value Creation**
- **New Thinking New Energy**

These <IR> conclaves were conducted on the theme 'Integrated Thinking for Sustainable Value Creation' which provided an opportunity to connect teams across different plants, build a collaborative culture, and engage a broad range of disciplines enabling integrated thinking for the organization's long-term vitality.

In the <IR> Conclaves the following aspects were achieved:

- Exchanging insightful ideas, actionable suggestions through strategic thinking, and innovation.
- Gaining advanced knowledge and learning to use a comprehensive approach to create effective sustainability strategies.
- Understanding the Carbon Footprint and Life Cycle Assessment (LCA) strategy.
- Learning on how Sustainability can form a strong business case through updated and relevant case studies, videos, and exercises

Synopsis of <IR> Conclaves

Indicators	Total	Hydro	Solar	Wind	HO
Participant recognised as: Greenko certified sustainability practitioner	250	77	78	45	50
Number of success stories	107	38	56	13	-
Number of award-winning stories	29	8	10	11	-
Training Manhours on Integrated Thinking, Reporting and Strategy	3600	1232	1248	720	400



As the entire world looks up to the implementation of Integrated Reporting as a path for long term value creation and sustainable living, we at Greenko have in place frameworks and guiding platforms such as our annual IR Conclaves to bring together all the stakeholders on a common platform for effective exchange of ideas and brainstorm on the sustainability focus areas relevant to our business as also to understand and address the stakeholder concerns. We believe that a transparent measurement and disclosure is essential to enhance the sustainability spirit both in the psyche and deeds, such open dialogues help the stakeholders to progressively pave the road ahead on achieving the targeted sustainability goals.



- Vijay Joshi
Senior Manager, GIMS

<IR> Conclave



Diverse Portfolio

Greenko has in total 133 sites across 15 states in India, including both the operational assets as well as the projects that are under construction. During the reporting year FY 2020-21, the total gross generation from the total combined operational assets (Solar, Hydro and Wind) accounted for around 9745 MU. The individual share of power generation from Wind, Hydro, and Solar are presented below in terms of percentage:



Solar

Contributes

32%

of the generation



Operations across

9 States



Hydro

Contributes

19%

of the generation



Operations across

4 States



Wind

Contributes

49%

of the generation



Operations across

7 States

**FY21 Total gross generation
9745 MU (Million Unit)**

Installed Capacity (Solar + Hydro + Wind)	Revenue (Million USD)	Project Sites (in Nos.)	States in India (in Nos.)	Employees (in Nos.)	Turbines (in Nos.)	Solar Modules (in Mn)	Length of the transmission line (in km)	Inverters (in Nos.)
7.5 GW	594.9	133	15	2590	2,234 (Wind – 2170, Hydro – 64)	6.39	4744.88	2789

¹(GRI 102-6, 102-7)

Diverse Portfolio

Overview of the Greenko Group's Assets

Business in Solar Power

In 2015, the Indian government expanded its solar plans, targeting 100 billion USD in investment, intended towards the installation of 100 GW of solar capacity (including 40 GW from rooftop solar) by 2022. Until today, around 34.6 GW of overall solar capacity has been installed in India, out of which Greenko group owns around 2.2 GW of solar PV installations that account for almost 6.35% of the total installed capacity in the country.



Greenko has developed, engineered, and constructed, its solar assets in such a way that they are strategically located across the country's landscape. Greenko can expedite the implementation of solar PV parks efficiently in a short time as it has strong partnerships with tier 1 technology suppliers. Using the best of cutting-edge technologies and benchmark systems, the solar assets established by Greenko yield high energy in real-world conditions with stable grid integration.



Solar Portfolio

Operating Capacity (in GWp)

2.2

Inverter Installed (in No's)

2,789

Number of Solar sites

50

Transmission lines (in km)

305.7

Solar Modules (in Nos.)

63,98,332

Revenue (in USD Mn)

201.6



Ghani Solar Park
Kurnool, Andhra Pradesh



With an increasing focus for higher renewable energy share in business operations, we have scaled up our solar asset management considerably to rapidly address the new climate challenges. We are continuing our pursuit for circularity of our assets and are strengthening it further by enhancing our in-house operation and maintenance capabilities.

- Ramprasad N
AVP, GAM-Solar



The group has been incorporating custom-built solutions to address the operational challenges of our solar assets spread in different topographies and environments. Greenko has taken progressive steps by upskilling ground staff to successfully handle daily disruptions.

- Srinivas Naidu
Sr. GM, GAM-Solar



Diverse Portfolio



Business in Hydro Power

India is blessed with an immense amount of hydroelectric potential to the tune of 148.7 GW of installed capacity and ranks 5th in terms of exploitable hydro-potential in the global scenario, as per Central Electricity Authority of India (CEA).

In addition, 56 pumped storage projects have also been identified with an expected installed capacity of 94 GW. In addition to this, hydro-potential from small, mini & micro schemes have been estimated at 6.8 GW, from 1,512 sites. Thus, in totality, India is endowed with a hydro-potential of about 250 GW. However, exploitation of hydro-potential has not been up to the desired level due to various constraints confronting the sector.

Greenko is leading the Indian Hydro sector in the small and medium hydropower space. With an operating capacity of around 1,789 GW and over 6.42 GW of pumped hydroelectric storage projects in the pipeline, Greenko is looking forward to harnessing the maximum potential of hydropower in India.



Hydro Portfolio

Operating Capacity (in GW)

1.789

Number of Hydro sites

25

Transmission Line (in km)

220.5

Turbines (in No's)

64

Revenue (in USD Mn)

76.6



A still from **96 MW Dikchu** hydro-electric project, Sikkim

“

We've done a lot of thinking about how climate change will affect our business, particularly whether there'll be an impact on the amount and timing of water going into our catchments, which directly affects our financial results. Our modelling shows that the seasonal timing of water is changing. We've incorporated this timing shift into our water modelling so that we can better manage our water resources.

- **Prasada Raju J.V.S.D**
Sr. VP, GAM-Hydro

”

“

By deploying state-of-the-art technologies to store energy, we are planning to harness the dynamic and impressive hydropower potential by integrating with our intelligent energy platform. This will allow us to be resilient and provide reliable power, given the variability in weather conditions and extreme flooding events.

- **Suresh Chand Kalsi**
General Manager,
GAM Hydro

”

Diverse Portfolio



Business in Wind Power

In 2015, India set a target to install 60 GW of Wind power projects by the year 2022. In line with this target, so far 37.7 GW of Wind Energy powered projects are installed according to the Ministry of New and Renewable Energy (MNRE), India. Out of the total installed capacity, Greenko group owns around 3.2 GW of wind farms which account for around 8.48% of the total installed capacity in the country.

Greenko provides robust and future oriented solutions for challenging projects with a gamut of wind power solutions. The engineering of the Group's wind turbines and modules is bespoke and the locations are judiciously selected based on highest wind potential to produce maximum energy. All the wind farms are altered independently to optimize performance. The Group's wind portfolio is spread across the length and breadth of the country with wind energy being the fastest-growing power source in India.



Wind Portfolio

Installed Capacity (in GW)

3.192

The number of Wind Farms
(in Nos.)

58

Transmission Line (in km)

4218.6

Turbines (in No's)

2170

Revenue (in USDMn)

316.1



Rayala Wind Farm,
Ananthapur District,
Andhra Pradesh



This year has tested exceptional resilience in terms of human capabilities and assets to adapt to changing climate by building in-house technologies. Our WINSOM projects have proved effective in O&M excellence, Cost reduction, Revenue enhancement, and Circularity. We are future-ready to face the challenges in guarding the assets and extending its life.

- **Bharath Kumar N**
VP, GAM-Wind



These uncertain times have been a blessing in disguise where we got an opportunity to build the capacities of in-house teams to deal with operational challenges in innovative ways, in the shortest possible time.

- **Mallikarjun U**
DGM, GAM-Wind



Future Projects



Identifying new market technical challenges and potential technological advancements has been Greenko's niche area. This leads to cost optimization as well as better technology solutions. We have managed to incorporate more local elements in our design with in-house innovation from the technical team.

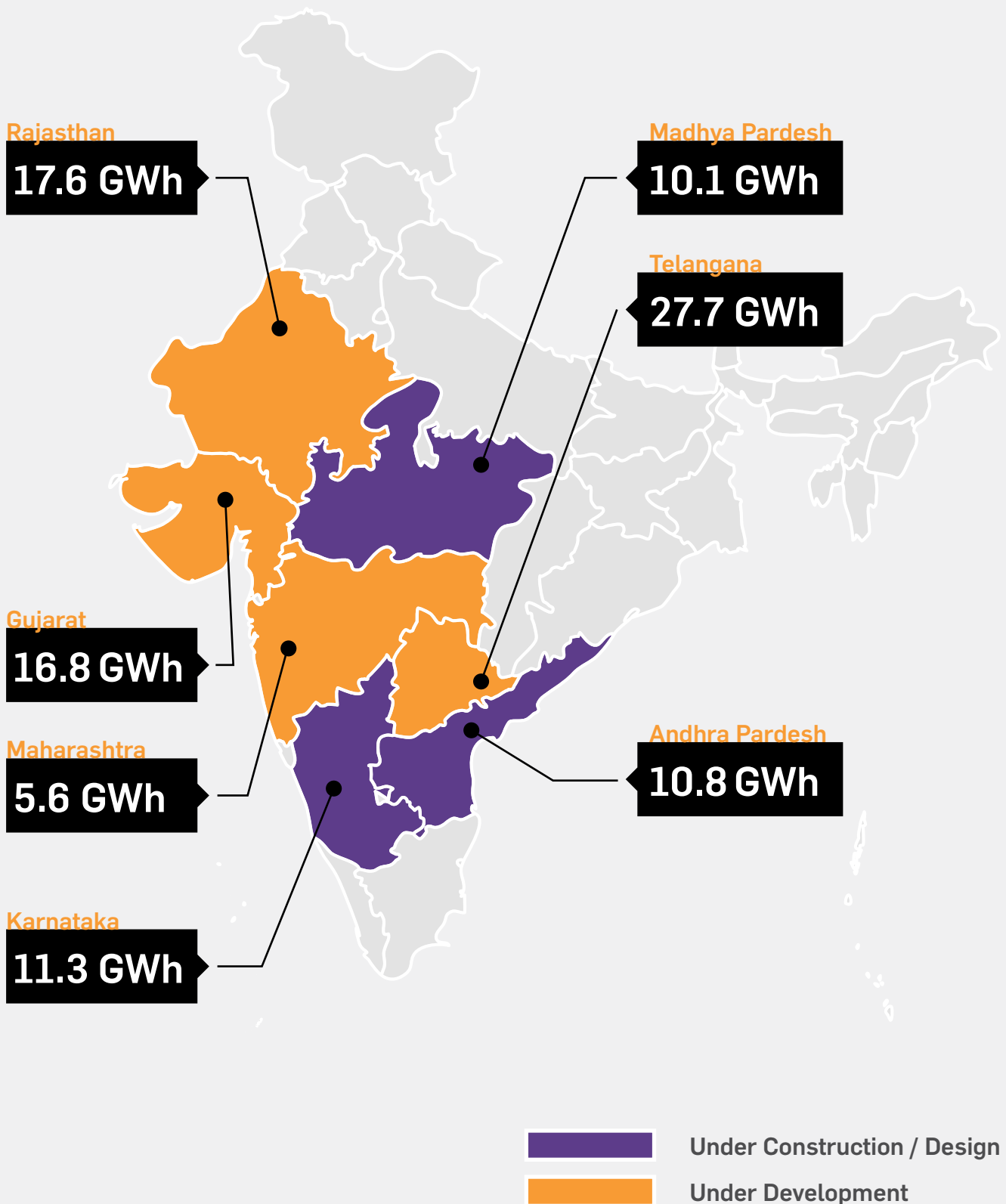
- Deepak Kumar
Gopalani
VP- Designs



Greenko is developing multiple utility-scale, long-duration, and low-cost pumped storage projects across India to deliver cost-effective, inflation-proof, schedulable, dispatchable and firm Renewable Power to Businesses and the Government to meet their climate change commitments. By generating this **zero-carbon-low-cost firm power**, Greenko will offer cost-effective Zero Carbon molecules to power decarbonization of energy intensive Industrial sectors in India and abroad. Greenko has positioned itself to set on a path of exponential growth in storage space and has nearly **100 GWh** of storage capacity projects in the pipeline. The storage projects under the development phase and the construction/design phase are represented, in the figure on the next/ adjacent page.



Geographic Expansion



Future Projects

Greenko Intelligent Energy Utility Platform

The Intelligent Energy Utility Platform aims to provide key sustainable grid solutions for a green energy future. It helps the organization in identifying the new market opportunities and their potential sizes such as the Schedulable Energy Market, Storage Market, unlocking new Energy Value Pools, ancillary services, and grid management.



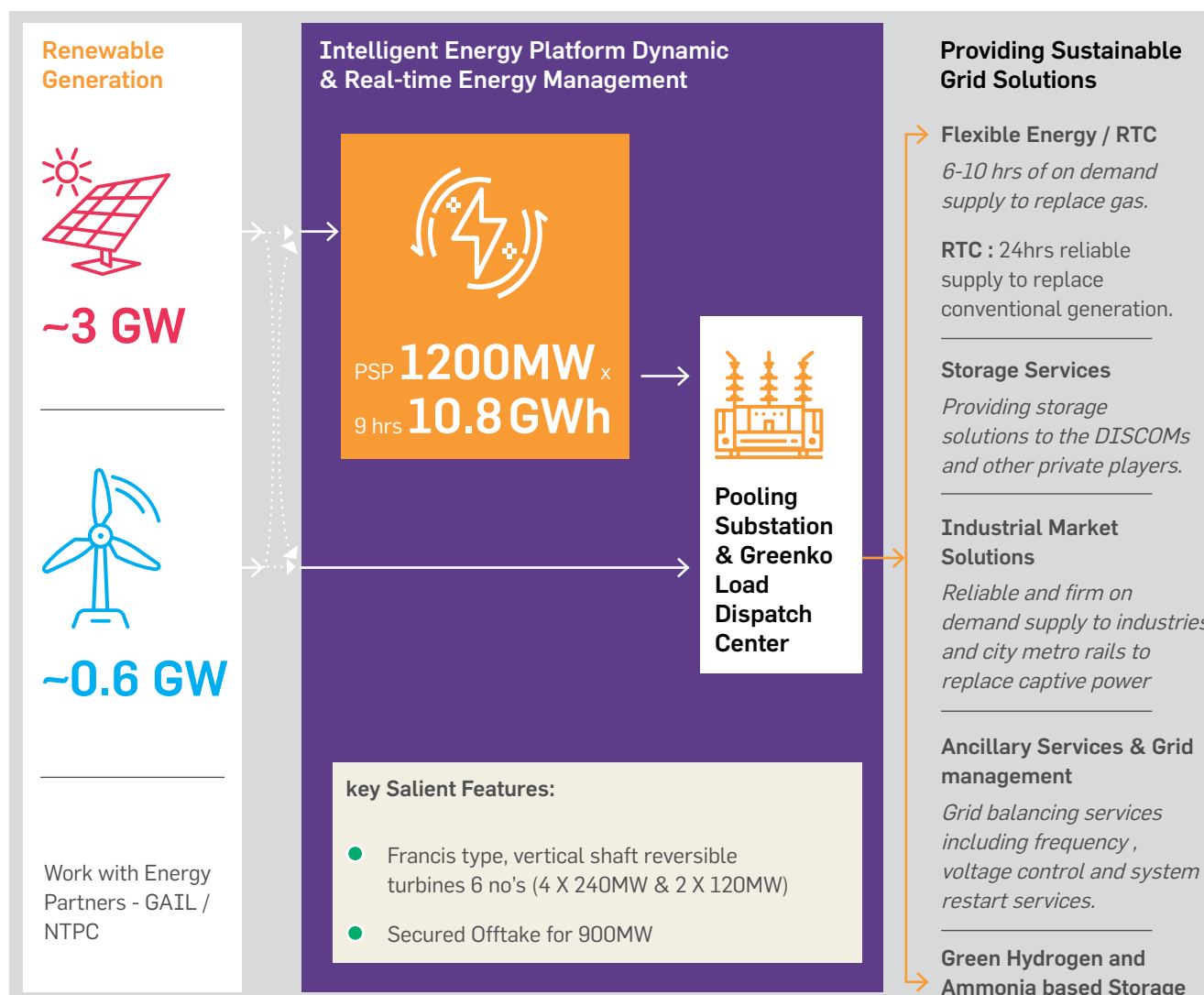
IRESP Pinnapuram

Greenko's Integrated Renewable Energy Storage Project (IRESP) is the world's first and largest Gigawatt-scale integrated project that combines solar, wind, and pumped storage components and is located at Pinnapuram. The power from all the three components will be commonly pooled as all the three elements of the project are closely situated in the Pinnapuram IRESP area.

The IRESP consists of four key components which are as follows,

Key Features	Details
Location	Pinnapuram, Kurnool District, Andhra Pradesh
Standalone Pumped Storage Project (SPSP)	Generation of 1.2 GW with 9-hour storage resulting in a daily storage capacity of 10.8 GWh
Solar Park (Generation Capacity)	3.0 GW
Wind Park (Generation Capacity)	0.6 GW
Central Pooling Substation (CPSS)	Connected to evacuate energy nationally to multiple inter-state consumers. Greenko Renewable Energy Management center housing the 'Intelligent Energy Platform' (to forecast, monitor, balance, and deliver the required energy and storage services) will be an integral part of CPSS.

Pinnapuram Project Snapshot



Future Projects

IRESP Saundatti

Saundatti Integrated Renewable Energy Storage Project (IRESP) has been envisaged to be a 2.66 GW project comprising of 1.26 GW of Standalone Pumped Storage Project (PSP), 1.0 GW Solar, and 0.4 GW Wind energy project. Thereby, Greenko is planning to harness PSP, solar, and wind potential in the state of Karnataka to supply dispatchable and schedulable renewable energy to the national grid.

Key Features	Details
Location	Saundatti, Belagavi district, Karnataka
Standalone Pumped Storage Project (SPSP)	1.26 GW with storage Capacity 10.08 GWh
Solar Park (Generation Capacity)	1.0 GW
Wind Park (Generation Capacity)	0.4 GW
Central Pooling Substation (CPSS)	PGCIL/CTU sub-station at Dharwad for further supply into the National Grid.



IRESP Rajasthan

There is one more Integrated Renewable Energy Storage Project (IRESP) proposed in Rajasthan with the standalone pumped storage project (PSP) located in the Baran district while the Solar and Wind parks would be located in the Pali district. The PSP has a designed generation capacity of 2.52 GW along with a storage capacity of 17.7 GWh. The Solar and Wind parks have a designed capacity of 3.6 GW and 0.9 GW respectively.

Key Features	Details
Location	PSP: Shahbad Tehsil Baran District, Rajasthan Solar & Wind: Jaitaran Tehsil, Pali District, Rajasthan
Standalone Pumped Storage Project (SPSP)	2.52 GW with Storage: 17.7 GWh (7 hrs cycle)
Solar Park	3.6 GW
Wind Park	0.9 GW



Future Projects

IRESP MP 30, Gandhi Sagar

Another standalone pumped storage project (SPSP) is proposed in the Neemach District of Madhya Pradesh with a designed generation capacity of 1.44 GW and a storage capacity of 10.4 GWh.

Key Features	Details
Location	Neemach District, Madhya Pradesh
Standalone Pumped Storage Project (SPSP)	1.44 GW with storage Capacity 10.4 GWh



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Pan India Presence¹

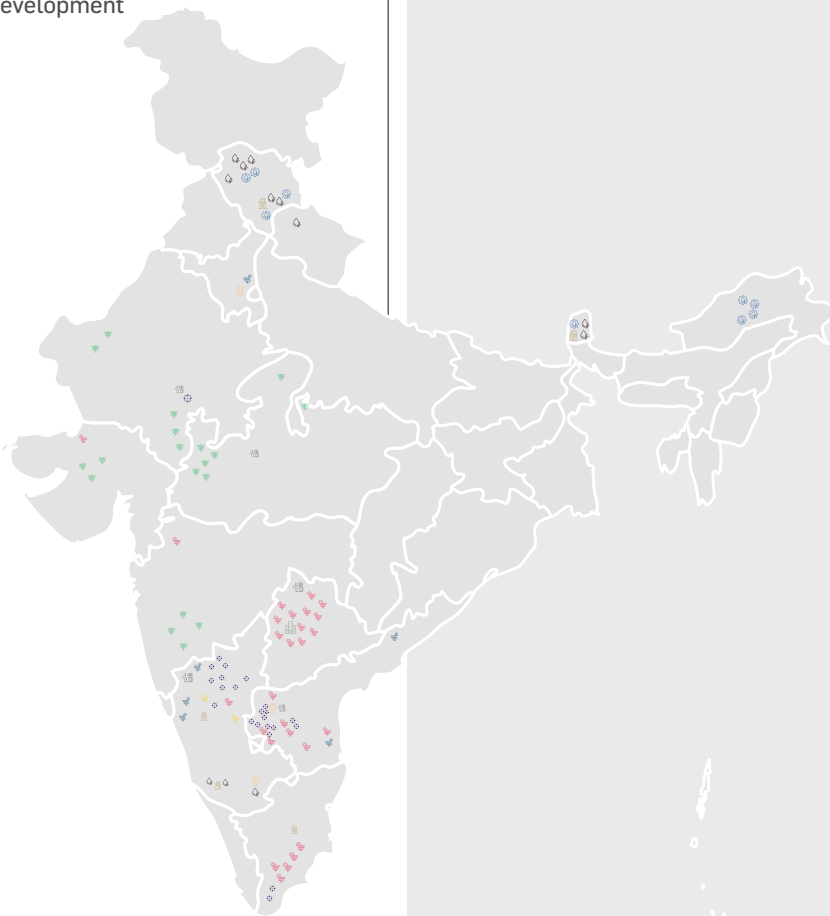


Greenko has a clear sense of purpose for developing its business strategy. We understand the frequency and quantum of communication with our stakeholders is extremely critical to our business success and hence, we bank on transparent and clear dialogue as the key virtue for our business strategy.

- Rakesh H. Shah
SVP-Business
Development



Greenko has a wide range of operational assets with existing projects in **Solar, Wind, Hydro, and Integrated Renewable Energy Storage Project (IRESP)**. All the projects are strategically located pan India with a potential for further growth in the form of clusters intending to harness the maximum potential of the available renewable energy resources. The details of all the projects across India are presented below:



-  Solar Operational
-  Solar Under Development
-  Wind Operational
-  Wind Under Development
-  Hydro Operational
-  Hydro Under Development
-  IRESP
-  Wind Solar Hybrid
-  Corporate Office
-  Regional Offices
-  Cluster Offices

¹(GRI 102-4)

Andhra Pradesh

Pinnapuram*	IRESP	4860 MW
Ghani Solar Park	Solar	816 MWp
Amidyala	Wind	227 MW
Rayala Wind Farm	Wind	179 MW
MPR Darn	Wind	104 MW
Borampalle Wind Farm	Wind	105 MW
Belguppa	Wind	101 MW
Nimbagallu	Wind	100 MW
Animala	Wind	84 MW
Nalakonda	Wind	82 MW
Sandla	Wind	50 MW
Guttasema	Wind	40 MW
Greenflash	Solar	41 MWp
Arushi	Solar	39 MWp
Rain Coke	Solar	33 MWp
PoIy	Wind	24 MW
Jed	Wind	24 MW
Sriram - Andhra Pradesh	Solar	23 MWp
Vayuputra	Wind	20 MW
Rayachoti	Solar	11 MWp
Makkuva*	Battery Solar -	5 MW
Kasumuru*	Battery	5 MW

Arunachal Pradesh

Rego*	Hydro	97 MW
Rapum*	Hydro	81 MW
Pernashelpu*	Hydro	81 MW
Kangtangshin*	Hydro	75 MW

Delhi

DMRC	Solar	4 MWp
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Gujarat

Lalpur	Wind	220 MW
Charanka	Solar	53 MWp
Maliya	Wind	40 MW
Mahidad-V	Wind	14 MW

Himachal Pradesh

Malana	Hydro	100 MW
Sorang*	Hydro	100 MW
Harsar*	Hydro	70 MW
Budhil Hydro	Hydro	70 MW
Bharmour*	Hydro	45 MW
Ravi River Basin Cluster	Hydro	32 MW
Sutlej River Basin	Hydro	30 MW
Beas River Basin Cluster	Hydro	25 MW
Lassa*	Hydro	24 MW
Jeori	Hydro	10 MW

Karnataka

Saundatti*	IRESP	4860 MW
Rona & Gadag*	Wind Solar - Hybrid	1500 MW
Pavgada*	Wind Solar - Hybrid	1500 MW
Fortune Five Wind Farm	Wind	165 MW
Tadas	Wind	144 MW
Vyshali Wind Farm	Wind	100 MW
Devrahiparigi Wind Farm	Wind	100 MW
Pavgada Solar Farm	Solar	90 MWp
Chitradurga Solar Farm	Solar	66 MWp
Gurmitkal	Wind	60 MW
Netravathi River Basin Cluster	Hydro	60 MW
Kustagi	Wind	50 MW
Saroja	Wind	36 MW
Hemavathy MHS	Hydro	24 MW
Shanay	Wind	21 MW
Ramanakoppa*	Solar	20 MW
Chandragutti*	Solar	20 MW
Jogihalli-IV	Wind	15 MW
Jasper MHS	Hydro	11 MW
Sai Spurthi MHS	Hydro	10 MW
Hipparigi*	Solar	5 MW

Madhya Pradesh

MP Gandhi Sagar*	IRESP	1440 MW
Shivapuri	Solar	270 MWp
Mamathkheda	Wind	101 MW
Mahuria II	Wind	56 MW
Bercha	Wind	50 MW
Amba	Wind	50 MW
Rathedi II	Wind	24 MW

Maharashtra

Suvaan	Solar	138 MWp
Ratnagiri Wind	Wind	102 MW
Khandke IV	Wind	40 MW
Maha Wind	Wind	34 MW
Khanapur V	Wind	32 MW

Rajasthan

Rajasthan	IRESP	2520 MW
Slipa	Wind	150 MW
Tanot Wind Farm	Wind	120 MW
Bhesda	Wind	40 MW
Dalot & Devgarh	Wind	23 MW
Dalot	Wind	20 MW

Sikkim

Teesta Urija Ltd.	Hydro	1200 MW
Dikchu HEP	Hydro	96 MW
Rahikyoung*	Hydro	25 MW

Tamil Nadu

Poovani	Wind	200 MW
Adhavan	Solar	60 MWp
Kathiravan	Solar	60 MWp
Phoebus	Solar	60 MWp
Vagaikulam	Wind	24 MW
RT Renewable	Solar	18 MWp
Adityashakti	Solar	13 MWp

Telangana

Adilabad*	IRESP	2000 MW
NTPC - Karvy	Solar	77 MWp
Zuka	Solar	74 MWp
Jilesh	Solar	70 MWp
Sunborne	Solar	45 MWp
Karvy	Solar	22 MWp
Sriram - Telangana	Solar	22 MWp
Ellanthakunta	Solar	12 MWp
Talmadla	Solar	12 MWp
Chennur	Solar	12 MWp
Kowdipalli	Solar	10 MWp
Digwal	Solar	9 MWp
Shankapur	Solar	9 MWp
Manakondur	Solar	6 MWp

Uttarakhand

Swasti HEP	Hydro	23 MW
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Uttar Pradesh

Dhruv Milkose	Solar	1 MWp
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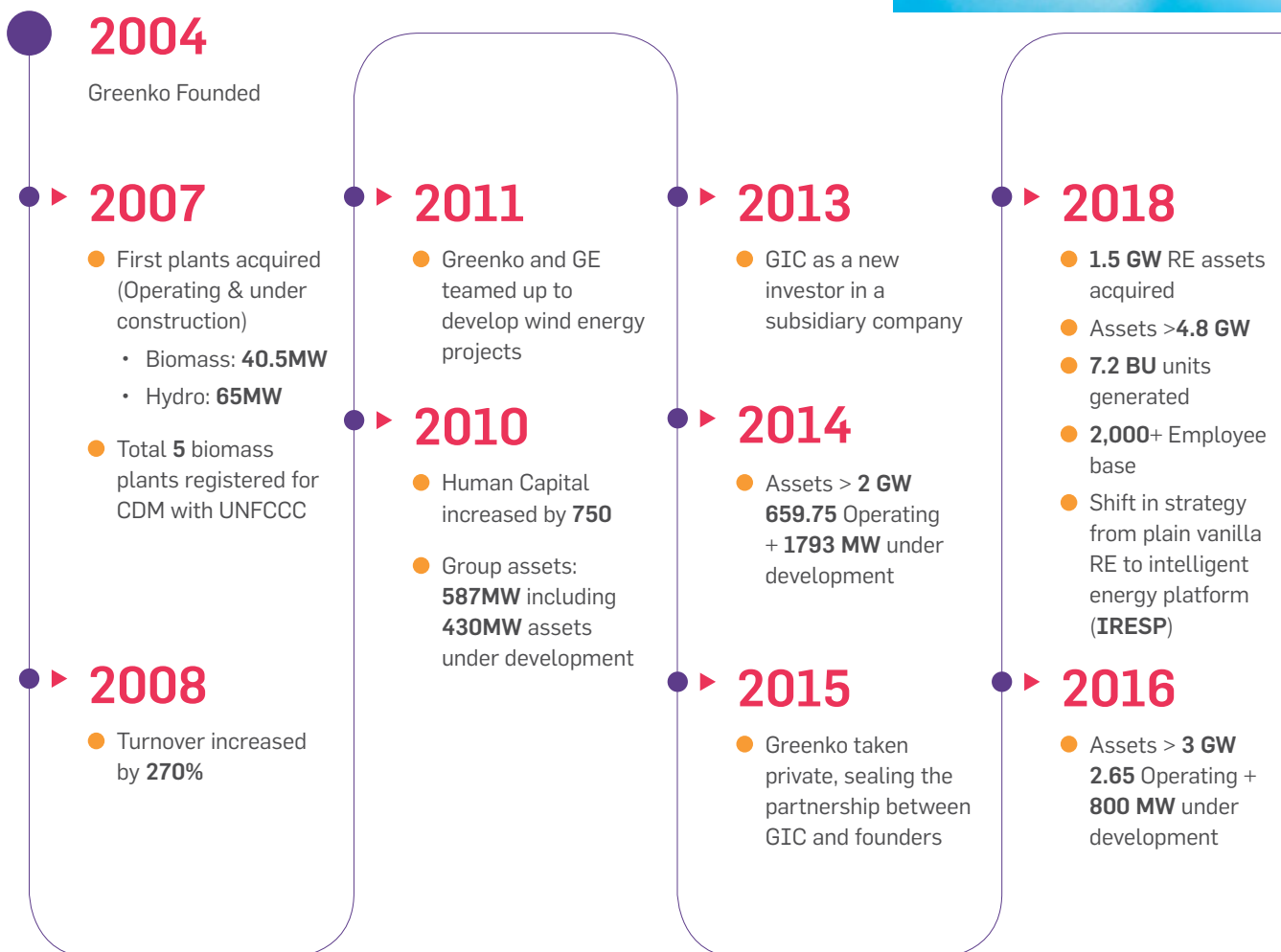
*Projects under Development

Journey so far

Greenko's journey so far has been unique, since it aims to generate **100% RE** to support the country's energy needs, with a long term and steady business focus **# Harit Urjaa Sada Ke Liye.**

During the journey, Greenko has rightly secured technology partnerships to achieve scale, adopted self EPC and O&M model, and improved access to the grid. Not only on the technology front, but Greenko has also been actively participating in policy advocacy. The organization is also accessing institutional consumers directly and is poised to enter the next phase of access for customers with a provision of electricity plus services and leading India towards deeper decarbonization to meet the commitment to Net Zero 2050. Further, the business will also extend to tap electrification of energy.

This roadmap (as presented below) is transformative and will herald firm and flexible RE in India, delivering energy security and economic stability.





▶ 2019

- Assets >**6.2 GW**
- Units generated **9.97 BU**.
- Unprecedented growth - overseas fund with **2,294 million USD** investment flows.
- Circular Economy and Regenerative Thinking.
- Owned O&M infrastructure.
- Climate Risk Assessment for critical operating sites.

▶ 2040

- NET Zero company by 2040

▶ 2030

- On target to build and operate multiple **IRESPs** with storage capacity of **40 GWh**

▶ 2023

- Target to manage
- **30 BU** of electricity generation
 - **10 GW** of **IRESP** completion

05

Delivering Value – Purpose & Principles

Sustainability & Corporate Governance

Organizational Structure

Leadership Team

Committees of the Board

Compliance and Ethics – Norms to Conduct Business

Risk Management

Greenko's ESG Framework

Greenko Integrated Management System

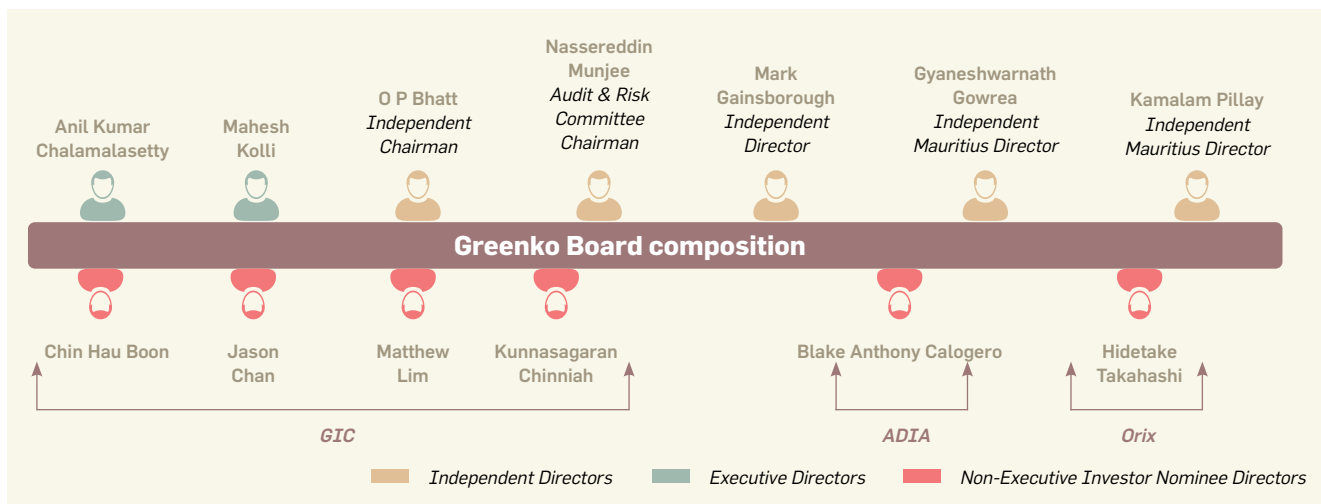
Business Continuity during Covid-19 Pandemic





Sustainability and Corporate Governance¹

The business operations of Greenko Energy Holdings and its subsidiaries (Greenko Group) revolve around owning and operating clean energy technologies in India. The board is constituted by various representatives from **GIC, ADIA, Orix, Founders** and independent directors.



Shareholder Pattern²

Our major stakeholders GIC, Sovereign Wealth fund of Government of Singapore and Abu Dhabi Investment Authority (ADIA), Sovereign Wealth fund of Government of Abu Dhabi, Orix Corporation and Greenko Vetures Limited.

Greenko has well drafted set of principles, policies, structures leading to a strong and resilient corporate governance framework, that serve as a nucleus for carrying out the company's business operations to meet financial, operational, and strategic objectives and also defines a mutual relationship between its shareholders, stakeholders and the Board. By adhering 100% to the framework, Greenko continues to enjoy enhanced stakeholder trust year on year and emerges to be a strong, viable, competitive and accountable

corporation. The governance framework is crafted considering

- The nature of the business
- The company's size and stage of development
- Availability of resources
- Shareholder's expectations and
- Legal and regulatory requirements

The Governance Framework at Greenko is constructed on the following principles:

1. Ethical approach – culture, society; organizational paradigm

2. Balanced objectives – congruence of goals of all interested parties
3. Each party plays its part – roles of key players: shareholders/directors/ staff
4. Decision-making process in place – reflecting the first three principles and giving due weight to all stakeholders
5. Equal concern for all stakeholders – albeit some have greater weight than others
6. Accountability and transparency – for all stakeholders

The salient features of Greenko's Corporate Governance Framework are as follows

¹(GRI 102-18, 102-19, 102-32) | ²(GRI 102-5, 102-7, 102-10)

Steering for the Long-Term³

Greenko's Vision and Mission are well aligned with the shareholder interests for accomplishing long term goals. To continue the focus on decarbonization, digitalization, and decentralization of the Energy System in India and harness all the value pools, Greenko cannot afford to be immobilized by the demands of quarterly results and focuses always on long-term goals, such as market share targets, percent of revenue from new markets, besides quarterly earnings guidance. Greenko follows a staggered representation of the Board and this ensures in promoting continuity and stability across the boardroom.

Best in the Board

Greenko's Board ensures that its membership has the proper mix of skills and perspectives. To reaffirm this, the Board not only follows age term limits but also maintains gender and other diversity requirements. The Board critically reviews their composition and appropriate skill sets to promote ambitious growth of the company. The Board presently conducts internal evaluations by the chairman or lead director and process design for reviews involving grading directors on various company-specific attributes.

Orderly Voice to Shareholders

Greenko's executive directors' campaign aims to provide shareholders equal opportunity to make decisions and make their voice heard in a reasonable way.

At Greenko, we follow the best corporate governance practices, as stated below:

- The Board comprises of knowledgeable directors who are highly qualified and competent,

having relevant expertise in business operations. They have strong ethics and integrity, diverse backgrounds and skillsets, and sufficient time to commit to their duties.

- The Board identifies regularly the gaps in the list of directors, complement them with ideal qualities, characteristics and keeps an 'evergreen' list of suitable candidates to fill Board vacancies.
- Most of the directors are non-executive and some including the Chairman are independent.
- An engaged Board where directors' question and challenge management decisions.
- Conducting familiarization programs covering the business, their duties, and the Board's expectations; reserve time in Board meetings for ongoing education about the business and governance matters.
- Review Board mandates and undertake performance evaluation.

Define roles and responsibilities

Greenko conventionally adheres to following good governance principles:

- Written mandates for the Board and each committee setting out their duties and accountabilities.
- Delegation of certain responsibilities to committees such as audit, nomination, and remuneration and 'special committees' formed to evaluate proposed transactions or opportunities.
- Written position descriptions for the Board Chair, Board committees, the CEO, and executive officers.
- Separation of the roles of the Board Chair and the CEO: The Chair leads the Board and ensures it acts in the company's long-term interests;

the CEO leads management, develops and implements business strategy, and reports to the Board.

Emphasize integrity and ethical dealing

- Adopted a conflict-of-interest policy and a code of business conduct setting out the company's requirements and process to report and deal with non-compliance and formulated a Whistle blower policy.
- Appointed a dedicated Director responsible for oversight and management of these policies and procedures.
- Evaluate performance and make principled compensation decisions
- Directors' fee structure does not conflict with the director's independence or discharge of his/her duties.
- Measurable performance targets for executive officers (including the CEO) to regularly assess and evaluate their performance against set standards and align compensation to performance.
- Establish a Compensation Committee comprising of independent directors to develop and oversee executive compensation plans.

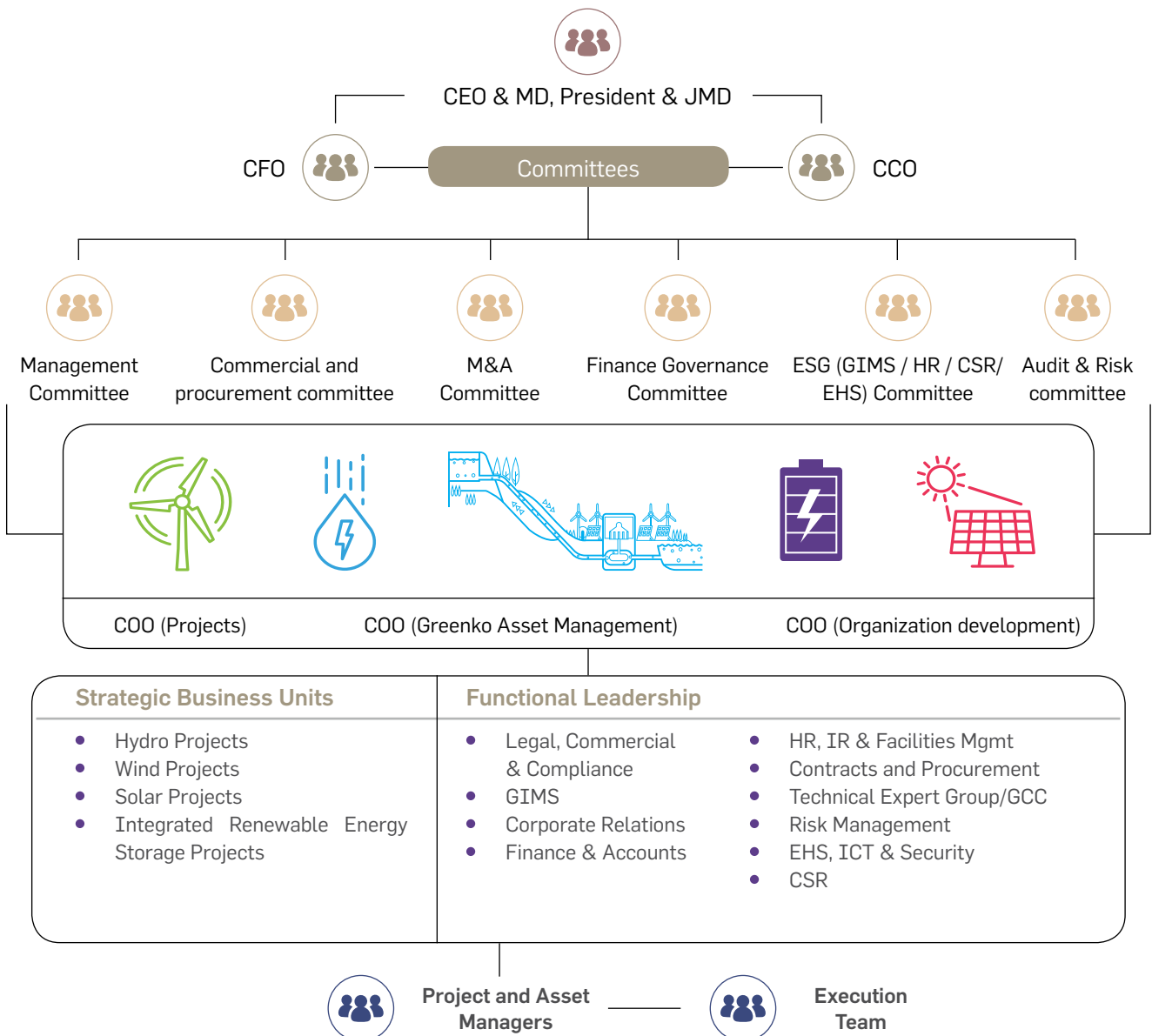
Effective Risk Management

- The Board is responsible for strategically establishing the company's risk tolerance mechanism, thereby developing a framework and clear accountabilities for managing risk. It reviews, by itself or by anointing external independent parties, the adequacy of the systems and controls in place to identify, assess, mitigate, and monitor risks and the sufficiency of its reporting.
- Directors are responsible for understanding the current and emerging short and long-term risks the company faces and its performance implications. Management's assumptions are often challenged, and the adequacy of the company's risk management processes and procedures are assessed.

³(GRI 102-26)

Organizational Structure

Greenko follows a multi stakeholder approach by vesting responsibilities and accountabilities among various stakeholders and departments in its governance ladder. The responsibility for the review of decisions is spread across various committees in the organization and this ensures effective and timely risk management and helps to drive the right solutions at the right time.





Leadership Team¹

Greenko's leadership team has diverse knowledge, skill set and expertise to drive the sustainable growth in the organization by incorporating various business models and innovations in Greenko's business operations. The standings and contribution of the leadership team offers inputs to stakeholders to carry out the day-to day business operations of Greenko and to foster healthy growth of the organization and the society.



Mr. Anil Kumar Chalamalasetty

(Chief Executive and Managing Director)

had an extended entrepreneurial career during which he was involved in evolving start-up businesses in Information Technology, Infrastructure, and Environmental sectors in the United Kingdom and India. Mr. Chalamalasetty is experienced in mergers and acquisitions, transition, and project management with a successful track record of managing operations involving large remote teams. He co-founded and developed the Company with Mahesh Kolli in 2004 and incorporated it in early-2006 to raise funds for financing early operations. He also worked out the effective implementation of the strategic business road map for the Company. He is a graduate in Computer Science and holds a master's from Northwest University.



Mr. Mahesh Kolli

(President and Joint Managing Director)

started his career in the energy sector and went on to build his entrepreneurial interests in Information Technology and Environmental space. His entrepreneurial journey started with an environmental solutions company focused on technology transfer from developed markets to India. He co-founded Greenko Group along with Mr. Anil Chalamalasetty in 2004. Within Greenko, he is responsible for driving the vision, business development, and new project initiatives of the Group. Mahesh is a regular speaker at Carbon Market & Clean Energy conferences across the world and is a graduate in Mechanical Engineering.



Mr. Vasudeva Rao Kaipa

(Chief Financial Officer)

Joined the Board in Feb 2012. Prior to Greenko, he was an Executive Director for XL Energy Ltd (from 2005) which has diversified interests including significant solar power operations and organized its IPO to the Indian Stock Exchange in 2006. He also served on the Board of Directors of GSS America Infotech Ltd, a Software Services Company which he advised and helped organize its IPO and NEST Ltd. Vasu also served as an Executive Director at Goldstone Technologies Ltd apart from working for Kirloskar Electric, in several key finance roles.

¹(GRI 102-20, 102-27)



Mr. Naredla Venugopala Rao

(Chief Operating Officer-Greenko Asset Management)

the former CEO of Reliance Power, is a power-sector professional. He has more than 36 years of experience in senior positions as CEO, CFO of Reliance Power, Lanco Group, and NTPC. At Greenko he heads project management and asset management.



Mr. Adishesu Gopalam

(Chief Operating Officer-Projects),

An energy industry veteran with over 45 years of varied experience in the design, development and operations of Hydro, Pumped storage, Lift irrigation projects and solar parks in India. He retired as Chief Engineer and Director (Hydro) of Andhra Pradesh Power Generation Corporation (APGENCO) while also serving as a CEO of APSPCL. At Greenko he heads the Integrated Renewable Energy Storage Projects.



Mr. Nagendra Dandamudi

(Chief Operating Officer – Organization Development)

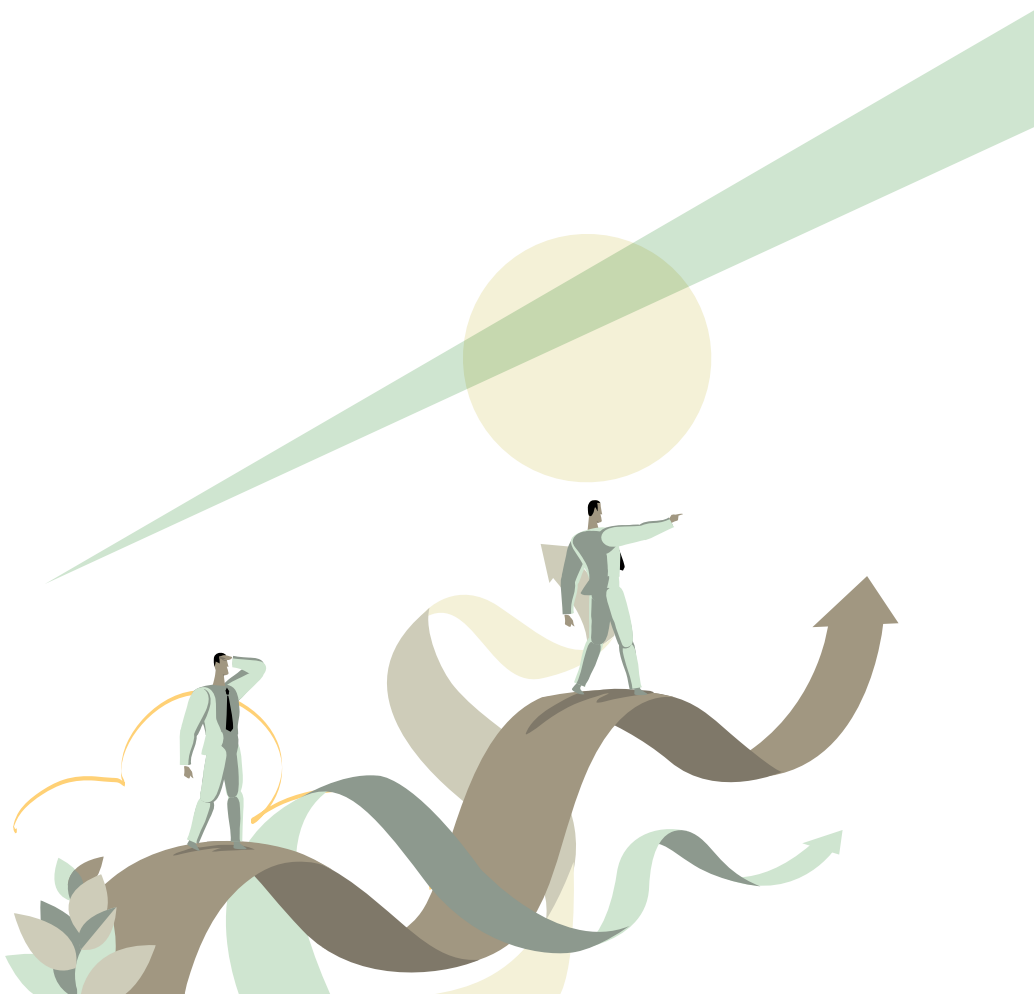
has over 25 years of experience in leadership positions at various organizations including AT&T, Cable & Wireless, and Motorola. At Greenko he leads Greenko's transformation initiatives, Sustainability, Integrated Reporting System, Greenko Integrated Management System, HR Strategy, and Technology Initiatives.



Mr. Vinay Bhatia

(General Counsel)

is a 2001 alumnus of one of India's premier law schools, NLSIU Bangalore. He has a diverse blend of experience across organizations such as ICICI Bank, AMSS, Franklin Templeton, SunEdison and IFIN. As India General Counsel of SunEdison, Vinay played an instrumental role in the rapid expansion of its business in India and emerging markets, while also serving as its regional compliance officer. At Greenko, Vinay manages commercial litigation and provides legal counsel for all project financing, project contracting and M&A activities.



Committees of the Board¹

The following committees were constituted to provide strategic direction to the board's decisions and timely mitigation of risks by conducting internal audits. The committees ensure on-time delivery of the projects and overlooks the progress of IRESP projects. The brief outline on various functions of the committees is drafted below.

Audit and Risk Committee

The terms of reference of the Audit and Risk Committee include the following:

- Overseeing and planning all audit activities and the definition of the scope of those activities
- Monitoring the integrity of the financial statements and any announcement or communications relating to financial performance
- Reviewing internal financial controls, reviewing the Company's internal control and risk management systems
- Reviewing internal risk assessment reports and the evaluation of actions intended to mitigate the identified risks
- Monitoring and reviewing the effectiveness of the internal audit function
- Making recommendations to the Company's Board of Directors concerning the appointment, reappointment, and removal of the external auditor and approving the remuneration and terms of engagement of the auditor; and
- Reviewing the auditor's independence and objectivity.

The Audit and Risk Committee is required to meet at least three times in a year, including once before the finalization of annual accounts and once every six months.

Remuneration and Nomination Committee²

The Remuneration and Nomination Committee determines Greenko's

remuneration policy, regarding performance standards and existing industry practice. Under the existing policies of the Company, the Remuneration and Nomination Committee determines, inter alia, the remuneration, and benefits package payable to the Directors. Apart from discharging the above-mentioned functions, the Remuneration and Nomination Committee also discharges the following functions:

- Setting up the remuneration policy for all executive directors and the Company's chairman, including pension rights and any compensation payments
- Recommending the level and structure of remuneration for senior management
- Recommending appointments to the Board of Directors of the Company's subsidiaries
- Determining the total individual remuneration package of each designate, including bonuses, incentive payments, and share options or other awards within the terms of the remuneration policy and in consultation with the directors.
- Reviewing and designing incentive plans for approval by the Board of Directors and shareholders
- Assessing and approving the performance or non-performance of targets set for awarding incentive exercises
- Determining the policy for, and scope of, pension arrangements for each executive director and other designated senior executives

- Overseeing the hiring of key executives and members of the Board of Directors
- Ensuring that contractual terms of termination, and any payments made, are fair to the individual and the Company
- Planning and preparing for Board succession and development; and
- Considering any other matter that may be referred by the Board of Directors for consideration by the Committee from time to time in respect of employment and remuneration

Capital Delivery Committee

The objectives of the Capital Delivery Committee (the 'committee') of the board of directors are to assist the Board with oversight of:

- The development and adoption of appropriate governance, monitoring and reporting frameworks for Board approved Integrated Renewable Energy Storage Projects (IRESP),
- The review and assessment of project plans and delivery processes to identify key risks, interdependencies, and milestones,
- Ongoing project progress and status of IRESPs against predetermined plans and milestones.
- Consider, review, and recommend for approval of capital expenditure for the IRESPs and to make recommendations to the Board in relation to the release of funds associated with project delivery after satisfaction of project status, including the achievement of milestones.

The role, responsibilities and powers of this committee includes matters set out above as amended from time to time as per the approval process.

¹(GRI 102-22) | ²(GRI 102-24, 102-35, 102-36)

Compliance and Ethics – Norms to Conduct Business¹

Greenko group adheres to the values in every segment of its business operations and drives its employees to adhere to its code of conduct by creating awareness through induction and training programs. Every employee is a signatory to the code of conduct policy. Through this strict adherence, Greenko has been more successful in carrying out the business activities in an ethical, transparent, and accountable manner.

The company embodies high standards in its operating principles and the code of conduct and core values form the bedrock of its daily operations. Greenko encourages its employees to deal with a situation in line with the code of conduct and makes decisions accordingly. Code of Conduct cannot possibly always address all the situations and the employees are encouraged to consult the management and derive decisions. In circumstances where the employees are unable to consult, they are encouraged to arrive at a best autonomous solution. This is intended to develop ethical, transparent, accountable and socially responsible behaviour among the employees. The ultimate responsibility for stewarding the organization's ethical climate, compliance with policies, process and control is vested with the Board and Audit committees. HR officers also serve as ethical counsellor for the site. The employees are educated on the code through trainings during induction programs, and regular training programs.

The code of conduct covers:

- Professional Integrity Relationships and Customer Relationships with Suppliers
- Relationships with Competitors Accurate Accounting Bribes and Kickbacks
- Gifts and Entertainment Conflict of Interest Confidentiality
- Workplace Communication Safety
- Political and Charitable Contributions

All employees who witness or doubt/suspect violation of this code in letter and spirit, have an obligation to report to the management or any member of the Board of Directors. All allegations of improper or illegal behaviour are investigated promptly and thoroughly. The investigation remains confidential as practicable and those conducting the investigation respect the anonymity of the complainant and privacy of all persons involved. No adverse action is taken or permitted against anyone for communicating observed violations in the code of conduct.

¹(GRI 102-16, 102-17, 102-25, 205-2)

Risk Management¹

Risk Management at Greenko is established on forward planning, protecting autonomy, commitment to reach the organization’s business objectives and the engagement of senior management and the Board. Greenko’s risk profile changes continuously and the risk management framework effectively mitigates the potential impact to a level acceptable to the Group’s strategy.

Risk Governance

The growing opportunities in renewable energy sector equally possess certain strategic, functional and operational risks. The elements of risk management are judiciously placed in Greenko’s organizational structure and are well to harness value pools. The board of directors and the audit committee are supported by the management to identify risks, assess enterprise-wide effects, and mitigate risks to create opportunities out of it. An exclusive department for risk management is created to establish a framework and catalyze the risk mitigation plan. Secretarial, Legal and ESG departments assist the Risk management department in vesting the ownership of the Risk Mitigation plan. This mechanism has proved effective for Greenko in driving risk management.



The integrity of our business is continuously tested in these uncertain times. We, always ensure that we conduct our business responsibly and ethically as this is a part of our business DNA. We perceive ethical and professional behaviour as our top priority and in doing so we reinstate our stakeholder’s trust.

- Vinay Bhatia,
General Counsel



Risk Management Framework

The Greenko Risk Management Framework (GRMF) is engineered to recognize and oversee future risks and protecting the interests of the organization’s business objectives. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) and some elements of Operationally Critical Threat, Asset, and Vulnerability Evaluation (OCTAVE) form the basis of GRMF. The internal risk control systems are periodically monitored by the Board and Audit Committee to identify, manage, and address the risks.

GRMF allows the Board and management to track and evaluate risks from an enterprise standpoint, empowering the organization to achieve the following business objectives:

- Strategic- Aligned with VMV and Strategic Objectives
- Operations- Effective and efficient use of resources.
- Reporting- Credible and reliable disclosures.
- Compliance- Comply with applicable laws, regulations, codes, and voluntary commitments.



¹(GRI 102-11, 102-15, 102-33)

Greenko's top management plays a critical role in GRMF, while it is jointly handled by Risk, Legal and Compliance functions. GRMF is used to evaluate risks related to any alternative ways considered by the management to meet the group's strategic objectives. In the instance of IRESP, prior to finalizing the size, scale, location, and timing, the management has determined that their strategy is within their overall risk appetite. Greenko's business-level objectives are achieved by focusing on business strategy and objectives which are broken into sub-objectives for various activities such as GAM, Commercial, Projects, Procurement and other functions.

Greenko's Risk Management Framework



The Greenko Risk Management Framework consists of eight components²:

- 1. Internal and External Environment** - Examining internal and external factors is considered the most important task. The Board sets a philosophy regarding risk and establishes a risk appetite. Further, it sets the basis for how risk and control are viewed and addressed.
- 2. Objective Setting** - Objectives are aligned to support the Greenko's Vision and Mission and are consistent with its risk appetite.
- 3. Event Identification** - Identifying potential events from internal or external environment affecting, both positively and negatively, the achievement of objectives.
- 4. Risk Assessment** - Identified risks, associated with hindrance or enhancer of objectives, are assessed on both inherent and residual basis, with the assessment considering both risk likelihood and impact.
- 5. Risk Response** - Possible responses to risks, which include avoiding, accepting, reducing, and sharing risks. Management selects a set of actions to align risks with the entity's risk tolerances and risk appetite.
- 6. Control Activities** - Policies and procedures are established and executed to help ensure the risk responses.
- 7. Information and Communication** - Relevant information is identified, captured, and communicated in a form and timeframe that enable people to carry out their responsibilities.
- 8. Monitoring** - Then the entirety of ERM is monitored, and modifications made, as necessary.



²(GRI 102-34)

Risk Management

Climate Risk Assessment and Management

Greenko is committed to 'Climate Risk Assessment and Management' as part of its Risk Management System, with the aim of making informed choices, building capacity, planning, prioritizing, mitigating, and adapting measures to reduce its vulnerability to climate change. This entails proactive and systematic identification and analysis of the potential climate-related hazards to Greenko's operations, based on projections of climate change models.

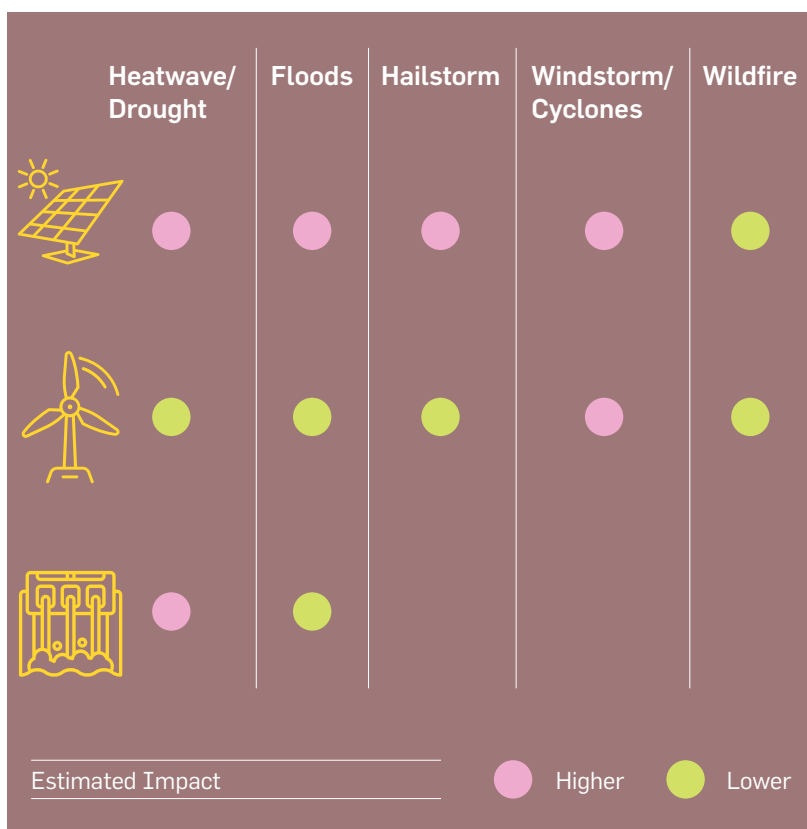
The integration of climate risk assessment in the existing framework was carried out by

identifying the physical and transition risks of climate change that have the potential to profoundly impact Greenko's business. Presently, the climate risk assessment is conducted for its critical operating sites.

Mitigating climate risk is a continuous process and Greenko's Risk Assessment and Management Framework enables the company to build resilience against variations in climate by taking account of all the potential climate risks in its operations and planning appropriate mitigation strategies.

As part of its climate risk management strategy, Greenko has over the short term identified the risk of extreme weather events and will implement actions targeted towards reducing its impacts on business. The company has identified the above events using the existing Early Warning System which has now incorporated the monitoring and warning of global warming induced extreme events (acute risks), whose frequency and severity are projected to increase, owing to climate change. This is crucial to proactively protect and minimize the impacts of climate change on the company's assets and the surrounding community, it operates in. It is essential for the company to build a resilient infrastructure and network to mitigate climate related impacts.

Scenario Planning – Risks and Opportunities



Climate Risk Governance

The assessment of climate risk and mitigation of its impacts is the first priority for Greenko. To be able to do this, climate risk assessment was included in the GRMF as per suggestions of the Board. Further, the company's Board of Directors reinforced Greenko's commitment to the UN's Sustainable Development Goals, especially numbers 7 – affordable and clean energy and 13 – climate action. The management undertook the climate risk assessment accordingly during 2020.

Climate Risk Strategy

While preparing a company's future strategy, the impacts of climate change are increasingly taking precedence. Greenko has a vision of decarbonizing the energy system through digitalization and decentralization which has already translated into strategic objectives and the organization is pursuant to achieve them. The group's ability to capture

and convert renewable sources into energy is always subjected to material uncertainties of climate change. Greenko continues to evaluate physical climate risk to its own assets along with the electric system in India to select a growth strategy, choice of location and use of technology.

Climate Risk Assessment

Greenko has examined the various impacts of different climate scenarios in 2020, which included the policy scenario of acceleration of renewable energy adoption by the Government of India and the physical scenario of climate change as per Global Climate Change scenario RCP 4.5. This modelling confirmed that the group's business model can tolerate the challenges that can arise from climate change. The analysis also put in place operational steps at each site, in addition to the risk assessment criteria, while evaluating new assets and technology choices.

In the case of physical impacts derived from the main climatic threats and the increase in the frequency and severity of extreme weather events, Greenko has plans and systems to improve the resilience of all assets and components. Also, it has begun discussions with the insurance institutions to cover climate risk resulting in extreme weather events.

The GRMF considers and monitors the risks derived from climate change:

Physical: possible material impacts on installations including the uncertainties in the resource availability for generation

Transitional: associated with the process of global decarbonization and its reflection in India (regulatory changes, market prices, technological, reputational, etc.).

Others: such as risks to the supply chain and social phenomena

Greenko does not foresee that these risks will have a catastrophic or permanent impact on the assets and revenues. The organization has a diversified portfolio of assets spread across different states and topographies. Although a slight increase in operational expenses is anticipated, there are also plenty of opportunities in the decarbonization of the energy system in India.

Metrics and Targets

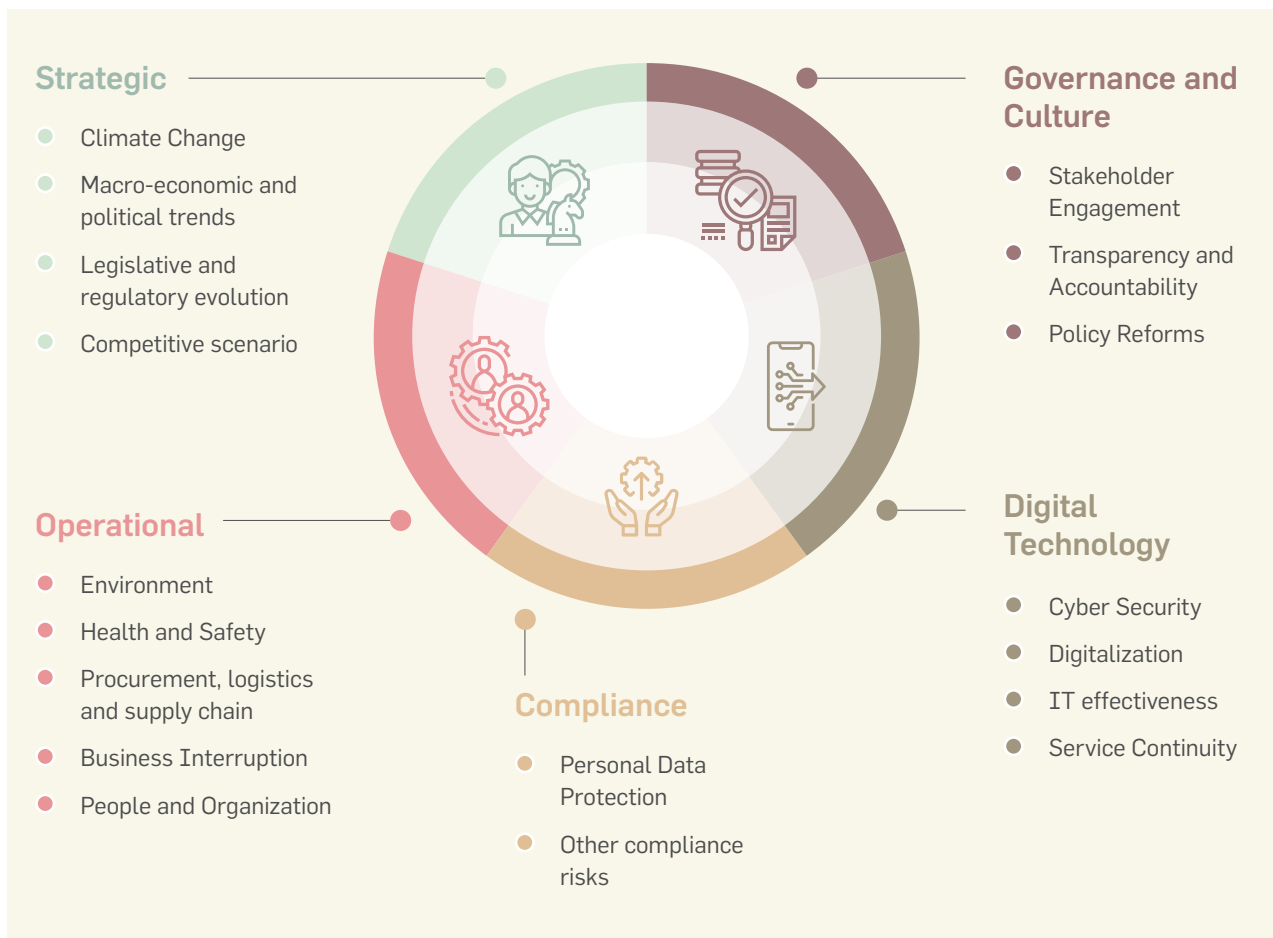
The climate change adaptation and mitigation strategies are integrated into Greenko's Risk Management Framework. A climate change specific strategy has been devised and it monitors and measures relevant indicators such as its contribution to the decarbonization of electricity, under GRMF. Critical business indicators such as greenhouse gas emissions, emission intensity across the life cycle, water recharged and reused, the extent of digitalization, etc. assist the company to monitor and plan targets.



Greenko's ESG Framework¹

At Greenko, integrating environment, social and governance (ESG) is at the core of the group's structured business model and business strategy. Applying a long-term sustainability context analysis, the company identifies the priorities and risks for the business and its stakeholders which allows for sustainability planning, execution of precise actions to achieve sustainability objectives and prepare for risks.

Adoption of ESG sustainability indicators at Greenko transcends through the entire value chain and not merely a benchmark for the assessment of results achieved. The company's ESG risk management is in line with COSO framework and integrated with Enterprise Risk Management. For the company's energy business, the prominent ESG issues are impacts of physical climate changes, water scarcity, health and safety, human capital development, customer and supplier engagement, cyber security, codes and policies, structure, transparency, accountability and oversight at the Board level.



¹(GRI 102-28, 102-31)

ESG Risk Management²

The material ESG factors to be addressed by Greenko are determined and presented below along with the position and goal against each factor.

ENVIRONMENT

Factor	Position	Goal
Net Negative Carbon Footprint	Deep decarbonization of the electricity sector is a necessity and making renewable energy flexible and dispatchable are the only paths to progress towards Net Zero 2050 ambitions.	To achieve carbon neutrality in the operations by 2025 and successively in the entire value chain by 2040.
Adapt to and Harness Climate Change	Plan and prepare to be resilient to physical climate changes that have potential to disrupt the business.	Be transparent and manage financial implications due to climate change with the help of disclosure frameworks such as TCFD and CDP.
Protect Biodiversity	Conduct Environmental and Social Impact Assessment (ESIA) to understand project impacts on biodiversity. Take steps to restore and improve biodiversity in project affected areas and other critical regions.	In alliance with partners and public-private-people initiative, restore biodiversity at each project site.
Adopt Circular Approaches	Follow circular approaches to refurbish, reengineer, recycle and reuse in project design, operation, and decommissioning.	Integrate plan for refurbishing, reengineering, recycle and reuse at the project design phase.
Diligent Environmental and Social Behaviour.	To protect and restore the environment, anticipation and mitigation of environmental and social impacts is critical.	The Greenko projects' team will conduct ESIA before initiating any project and prepare and follow ESMS in operations
Disclose Environment and Social Performance.	Communicate environmental and social impacts transparently to engage stakeholders.	Greenko would include Environmental and Social Disclosures in its Annual Integrated Report.



²(GRI 102-30)

Greenko's ESG Framework

SOCIAL

Factor	Position	Goal
Empowered Workforce	Proactively and regularly engage with workforce as employees and vendors are most critical business links.	Establish robust mechanism to track human right violations, sexual harassment, and employee grievance redressal mechanism. To be a leader in the diversity practices sector.
Safety and Health First	Strict adherence to International Standards on Health and Safety	All sites and operations will adhere to Occupational Safety and Health Management Systems in GIMS/EMS.
Focus on knowledge, experience, and retention	Focus on knowledge management, upskilling and reskilling, cross functional skills, and retention.	Establish and operate structured knowledge management practices and reduce employee turnover at all level and age groups.
Investment in training and innovation	Focus on innovation and training at all levels of business	Skill upgradation at all levels through multiple modes while also establishing structured innovation systems and processes effectively.
Customer Relationship Management	Engagement with different segments of customers to understand, anticipate, and address their concerns.	Establish and operate structured customer relationship management including Annual Customer Satisfaction survey.
Responsible Supply Chain Management	Reduce risk of non-compliance with social and environmental requirements by conducting regular audits, handholding exercises and evaluation of suppliers based on ESG.	Greenko will develop a responsible supply chain management program including processes for due diligence and audits.
Public-Private-People Partnership (PPPPs)	PPPPs are essential for inclusive and participatory socio-economic development.	Establish and operate community engagement and Grievance redressal systems to measure community participation and satisfaction in PPPPs.
Employment and Wealth Generation	Plan and execute the business to improve the local economy and employment.	Measure and improve direct/indirect employment generation and Economic value addition. Disclose financial investment contribution as per IAS 7 & US GAAP 230.

GOVERNANCE

Factor	Position	Goal
Code of Conduct	An all-inclusive Code of Conduct that serves as a benchmark for individual and organizational performance.	All employees, including the Board and the executive leadership sign the Code of Conduct and adhere to it. To conduct independent third-party audit once in three years.
Whistle Blower Policy	A policy for both internal and external stakeholders to bring in more transparency.	Establish a third-party whistle blower mechanism and adhere to it at all operations.
ESG commitment	ESG Risk Framework to be part of Enterprise Risk Management based on COSO principles.	ESG performance to be linked to KRAs and remuneration of executive leadership. ESG issues are covered in Internal Controls Framework.
Independent and Diverse Board	To foster independent decision-making and to mitigate any conflicts of interest.	To have an independent majority Board with independent Chairman.
Remuneration Policies	To design remuneration policies to attract and retain the best talents	Practice structured and transparent appraisal process to determine variable pay. Make provision for ESOPs and claw backs for remuneration to the leadership.
Risk Management	An integrated enterprise-wide perspective of risk management practices and the board and management accountability for the company's risk management is an essential ingredient of sustainable business and continuance of stakeholder trust.	Integrate ESG into Enterprise Risk Management. Deploy Enterprise Risk Management with Board and Management accountability Establish independent Risk Management function reporting to the Board or its committee
Information and Cyber Security	Prioritize and address information and cyber security	Dovetail Information and Cyber Security into Enterprise Risk Management Implementation of ISO 27000 based Information Security Management systems.
Materials and Fair Disclosure	Ensure that critical information is easily accessible to stakeholders in a transparent manner.	Deploy the institutional mechanism for determination of materiality and fairness of the disclosures Make the review of the framework and its implementation a part of Internal Audit.
Related Party Transactions	In determining whether a related party transaction exists, Greenko believes that the substance of the relationship and not merely the legal form must be considered.	Greenko would follow the guidance of International Accounting Standards Board on Related Party Transactions across all entities of the Greenko Group.
Tax Transparency	The company understands the level of economic contribution the business makes to society through taxes.	Greenko would disclose tax information as per GRI 207.

Greenko Integrated Management System

The Greenko Integrated Management System (GIMS) is a tool that mirrors Greenko's values of compliance and ethics in conformance with global benchmarks to drive standard practices across all operational areas of the group.



As an organization with deep rooted values in sustainability, we believe in promoting transparency and greater accountability. Greenko has been leading from the front, establishing multiple frameworks and platforms to encourage innovation and valuable employee insights. We have pledged to continue on this path and showcase our capabilities to be a global leader and achieve sustainability goals.

- Syed Saleem Basha
AVP, GIMS

GIMS is based on global best practices and integrates Quality, Environment, Health & Safety, Information Security, Energy, and Social Accountability Management Systems (QEHS-IS-En-SA) as per the requirements of ISO standards, the ESMS (Environmental and Social Management Systems) as per the requirements of IFC performance standards, Sustainability reporting as per the requirements of GRI Standards, and Integrated reporting as per the requirements of IIRC are also integrated into GIMS. The company has various sites which are certified by DNV-GL for implementing ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 & ISO 27001:2013.

Additionally, since FY 2020, under the purview of GIMS, Climate Risk Assessment in accordance with TCFD requirements is being carried out at Greenko. This has enabled the company to align its strategy to navigate transitional changes in regulations, markets, and behaviours towards decarbonization. Nevertheless, the physical asset risks and uncertainty in yields owing to changes in wind pattern, solar radiation, hydrological flows due to climate change continue to remain a challenge. In some assets and some periods, it may be advantageous, and, in some others, it could mean less generation. The initial analysis reveals that such things may balance out due to geographical spread and technological variety of the portfolio. However, across all assets accelerating digitalization to improve adaptive and predictive systems are essential, which is already a strategic objective for the Group's business.



Business Continuity in Covid-19 Pandemic

In the year FY 2020-21, the Covid-19 pandemic hit the world forcing countries implement lockdowns to contain the spread of the coronavirus. India had implemented one of the world's stringent lockdowns to prevent fatalities from the pandemic and to protect healthcare systems which were already under pressure.



The pandemic has taught us to question ourselves on how we can make our employees and businesses resilient and differentiate between 'nice-to-have' to a 'need-to-have'.

- Mohan Rao M
AVP - EHS



Greenko faced a challenge during such a time to deliver system-critical electricity and continue to operate and maintain its plants and construction sites despite the many restrictions. Greenko as an organization has always been prepared for and put in place plans for a range of contingencies including climate risks. However, for the Covid-19 pandemic all plans had to be revised and adapted to an ever-changing dynamic situation. This included Covid prevention and management trainings to the group employees, helping the communities and frontline workers and addressing the challenges faced in keeping wind, solar and hydro operations running at this crucial time.

Business Continuity Plan (BCP)

Resilient Workforce during Covid:

During FY 2020-21, the group has adhered to government protocols for Covid-19 such as social distancing and implemented a strict staggered rotation of employee schedules. All employees were educated on preventive measures through circulars, posters, and health trainings. The organization also ensured that employees were sensitized about the use of hand sanitizers, masks, sanitization of all the office premises on a regular basis. Regular monitoring of employees using non-contact digital thermometer gun and in-house Covid testing also ensured smooth running of business operations by reducing the time-to-treatment during the pandemic. As per government guidelines, the organization has facilitated Covid vaccination (both 1st and 2nd doses) for ~2200 eligible employees and their families.



Business Continuity during Covid-19 Pandemic



Greenko is committed to build a culture of care and safety during the times of pandemic. The group has conducted appropriate trainings for all of its employees including contract employees across all locations to create awareness for COVID prevention and management. A 6-member COVID committee under the leadership of CEO & MD was constituted with a '24/7 Helpline' for real time monitoring of employees and their families. The priority of the committee is the safety of all the employees and their families. Employees with any kind of symptoms of any illness or in 'Red Zone' are quarantined and subjected to COVID test for confirmation. They are also provided with required food, supplements, medicines and other medical assistance as per doctor's advice. A health bulletin is also published every day for all internal stakeholders via a tracker about employees' Health & Well-being. In addition to this, PPE kits were distributed to the employees, their families, in local communities including authorities, police personnel and frontline workers.

'NONE OF THE GREENKO POWER PLANTS HAD ANY STOPPAGE SINCE THE BREAKOUT OF THE PANDEMIC'

Quality of Service:



Greenko's business is a highly dispersed and diversified one with logistics being a fundamental challenge in maintenance and operations. The company under GAM established Central Monitoring Command Centers (CMCC) in Anantapur cluster for WIND, at Kurnool cluster for SOLAR and at respective Hydro plants for critical monitoring of operations and maintenance. Every cluster was given additional daily virtual support through bridge calls for 2 hours by respective business heads and HR teams to ensure smooth operations. Moreover, the plant employees took complete ownership and went beyond the scheduled hours to extend support, thus maintaining 'Zero Disruption'. The locations which were notified in 'Red Zones' for the Covid-19 pandemic by local authorities, appropriate arrangements for food and shelter were made for employees who stayed back for plant operation. All plants and sites of operation were sanitized on a regular basis with weekly EHS, contract and procurement meetings conducted to address operational and employee safety. It took intricate planning and execution from all employees across functions to explore the availability and stocking of spare parts for maintenance, ensuring smooth

power generation and maintenance. Communication was a key part during the pandemic, MS Team calls and WhatsApp chats formed an intrinsic part of continuous communication to keep employee morals high at all times.

Under the leadership of the company's CEO & MD, Mr. Anil Kumar C, a 'Covid Committee' was formed for the safety of the employees and their immediate family with a team of dedicated professionals to extend requisite support 'round the clock'. Greenko has evolved as a humane institution, caring for its employees, thus, ensuring compliance to the value of 'Stakeholder Inclusiveness'. During the first and second waves of Covid-19, employees and their dependents who had to be hospitalized, were extended critical medical support and the entire hospitalization expense was borne by the Greenko Group.

- All Greenko employees and their dependents were vaccinated and the cost of vaccination was borne by the organization.
- The group also extended medical support through doctor's consultation, hospitalization expenses and diagnostic tests to employees and their families.

Greenko extended its support through its trained healthcare teams, complete with equipment for remote areas which received appreciation from 6 heads of states for timely intervention. During the Covid-19 pandemic, a total of 180 Covid related hospitalizations were required of which 73 people were Greenko employees and 107 people were dependents of employees. The management also extended compensation support through monthly salary to the legal heir of the deceased employees (7), based on their remaining years of service, until the date of superannuation of the deceased employees.



06

Creation of Sustainable Value

Value Generation and Distribution

Integrated Value Creation Framework

External Operating Environment

Internal Operating Environment

Materiality

Value Creation - Greenko Way

Greenko's Strategic Approach

New Energy Value Pools





Value Generation and Distribution

Greenko is one of the leading renewable energy companies offering a wide range of solutions and is also playing a major role in assisting the country in progressively shaping the transition towards cleaner energy solutions. **Greenko is ambitious in creating a coast-to-coast inclusive energy asset network through the scrutiny** of its diverse operating elements and values.

Greenko is pertinent in making impeccable efforts to maximize the production from renewable energy sources like wind, water, and solar by adopting flexible technologies and by rigidly increasing the scale, size, and spread of Greenko's operations. The Agile workforce, Ownership model, People Process Systems, Individual Stewardship values are supplementing the external opportunities to harness the value pools.

Greenko is leading the digitalization, decarbonization, and decentralization of the Indian energy market and is determined to deliver clean, reliable and affordable power. Through its IRESP, Greenko is crafting state-of-the-art solutions by intelligently combining the storage and energy generation using solar, wind and hydro to provide RTC power to the grid. The key innovative developments of Greenko will create new value pools by addressing the dilemmas in the Indian Energy Sectors for scheduling of

peak and base loads, grid balance, inefficient storage systems and difficulty to switch between sources.

The transformative journey from GKO 3.0 to GKO 4.0 and above has carved the internal operating elements to harness the value pools and has catalyzed a state of ownership in the minds of its stakeholders. Greenko's DNA and values are providing strategic direction to progress through a changing environment. All these have leveraged Greenko to evolve as a champion in the power sector and Greenko is also keen on distributing its expertise to various stakeholders. Greenko has played a major role in India's policy framing ecosystems to shape the evolution of RE hybrid energy projects, tariff determination for RE plus storage projects, aiding the inclusion of the definition of 'storage' for pumped storage projects to integrate with RE generation.

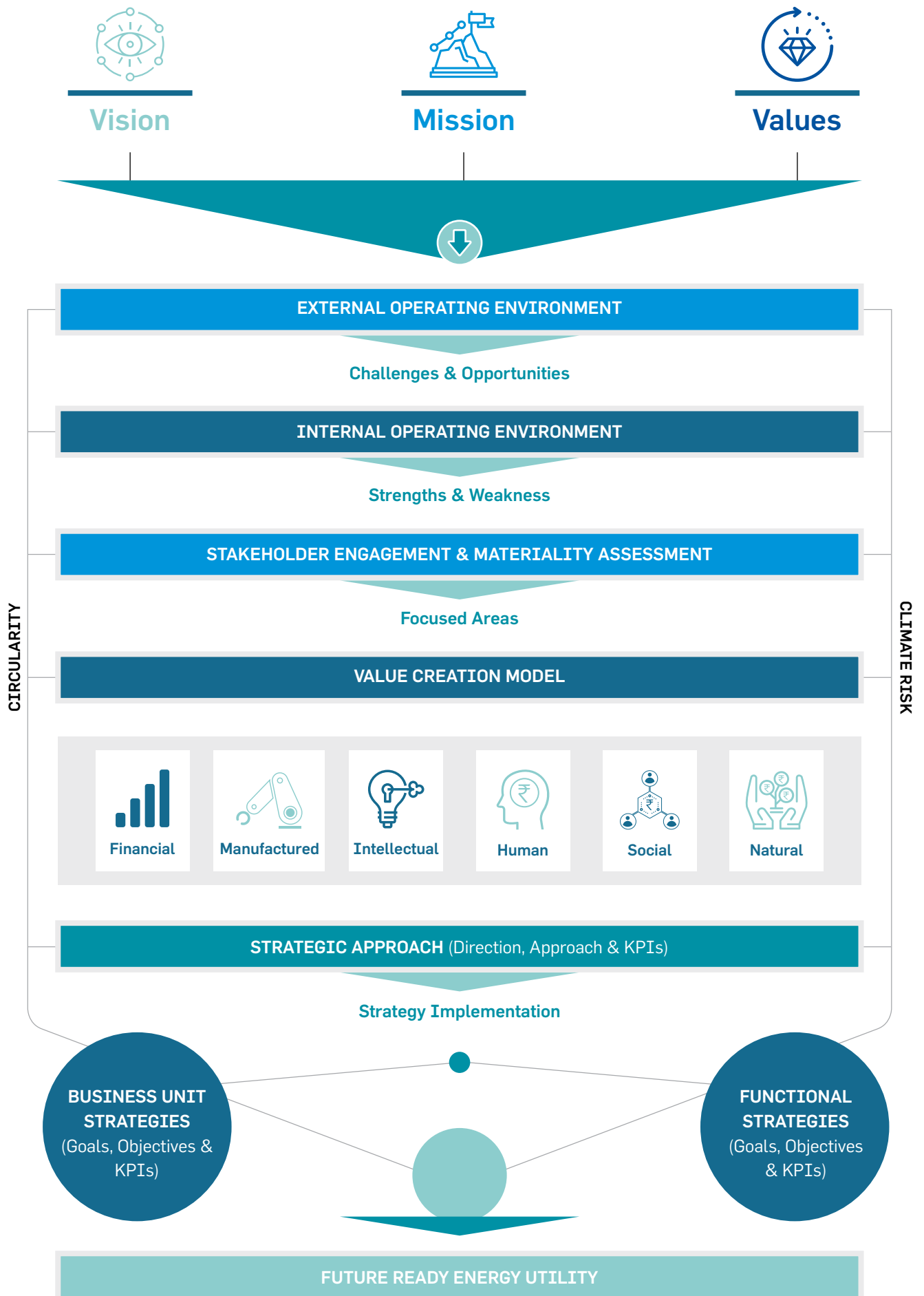




Integrated Value Creation Framework

Greenko's integrated framework is designed to deliver **sustainable solutions across the value chain** by harnessing value pools in dynamic internal and external operating environments. This integrated framework is developed to provide strategic direction to each function and business activity to contribute to Greenko's transformation and value creation.





External Operating Environment



Greenko is poised to become a global energy solutions provider with our customer centric and technology-based solution approach. In today's dynamic world, where major economies and businesses are increasingly focused towards net zero goals, we are well-positioned to deliver a multitude of competitive green energy products including electricity, industrial feedstock and other new-age energy molecules.



- Seshanka Palukuri
AVP, Strategic
Planning Group

Increasing Energy demand owing to Industrialization, Urbanization, Population explosion has created tremendous opportunities for the energy sector to exploit. Climate change is demanding a major shift towards Renewable energy and to increase its share in total energy consumption. International Organizations like United Nations have convened several agreements to limit the negative impacts of GHG Emissions resulting from electricity generation using conventional Energy sources like Coal, Natural Gas. All these External environmental proceedings offer prodigious opportunities for Greenko to expand its business offerings. Despite the increasing opportunities, various challenges would have a significant impact on Greenko's operation, decisions, and future developments. To effectively harness the opportunities and limit the impacts of risks, Greenko finds it essential to analyze the external environmental characteristics to catalyze and foster sustainable growth.





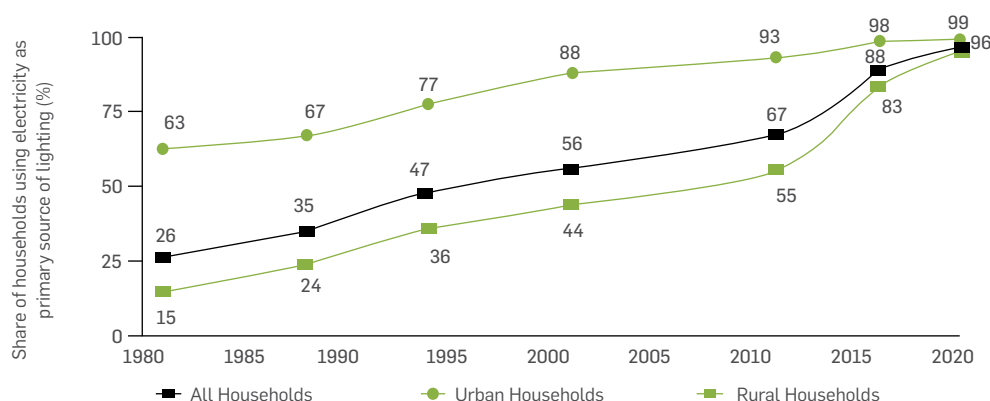
Economic development in India has stimulated the demand for Electricity and the total consumption is expected to reach 15,280 TWh in 2040, from 4,926 TWh in 2012, as per India Brand Equity Foundation (IBEF). The demand is expected to be met from all energy sources like Coal, Oil, Natural Gas, Solar, Wind, etc. It becomes necessary to increase the share of renewable energy mix, thereby establishing more stable and secure critical infrastructure to facilitate economic growth. Further, to limit the rise in temperature to 2°C above pre-industrial levels, it becomes vital to reduce the emissions from Electricity generation from Conventional Energy sources. India has set an ambitious target to set up 227 GW renewable energy sources by 2022. According to the Renewable Energy Country Attractiveness index 2018 by EY, the Indian renewable energy sector is the third most attractive renewable energy market in the world. India Energy Outlook 2021 by IEA has predicted that the Covid-19 pandemic will drive down the coal and oil demand and increase renewable energy generation from Wind and Solar by 15%.

India at the Cusp

India is the third-largest producer and second-largest consumer of electricity in the world and has an installed power capacity of 379.13 GW as of February 2021. For 2020-21, the electricity generation target from conventional sources was fixed at 1,330 BU, comprising 1138.533 BU of thermal energy; hydro energy (140.357 BU) and nuclear (43.880 BU); and 7.230 BU was imported from Bhutan. Further, the electrification of the country will promote the socio-economic well-being of the people, and the Government of India is making efforts to electrify every nook of the country.

Domestic energy demand is expected to grow due to increasing industrial growth, nuclear families, shrinking household sizes, and urbanization. Policies in India, over the last decade, have proved effective and accordingly, 96.7 percent of Indian households are now connected to the grid, with another 0.33 percent relying on off-grid electricity sources. 2.4 percent of Indian households remain unelectrified (State of Electricity Access in India, CEEW).

India's progress on household electricity access (1980-2020)



Source - State of Electricity Access in India, CEEW

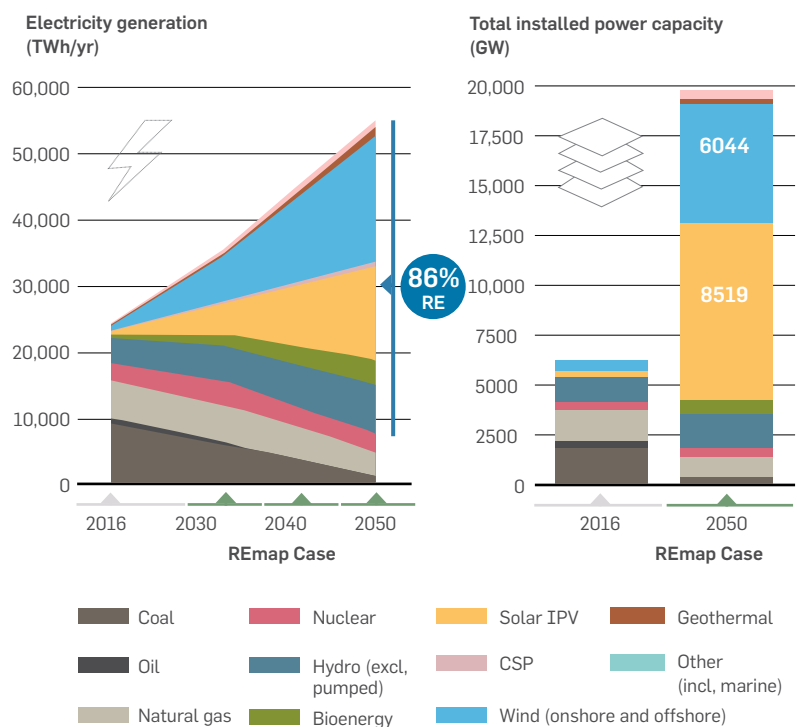
External Operating Environment



India will be one of the epicenters of Industrial development in near future. Further, the growth in commercial space will inflate the electricity demand for indoor environmental requirements like air conditioning and lighting. Transition to electrified mobility and industrial applications will also add to the increasing demand. Government plans to electrify rail routes will add to the demand. Expected increase in electricity demand in India in the coming years provides enormous opportunities for Greenko to harness renewable energy.

RE Technology Progress and Price Parity

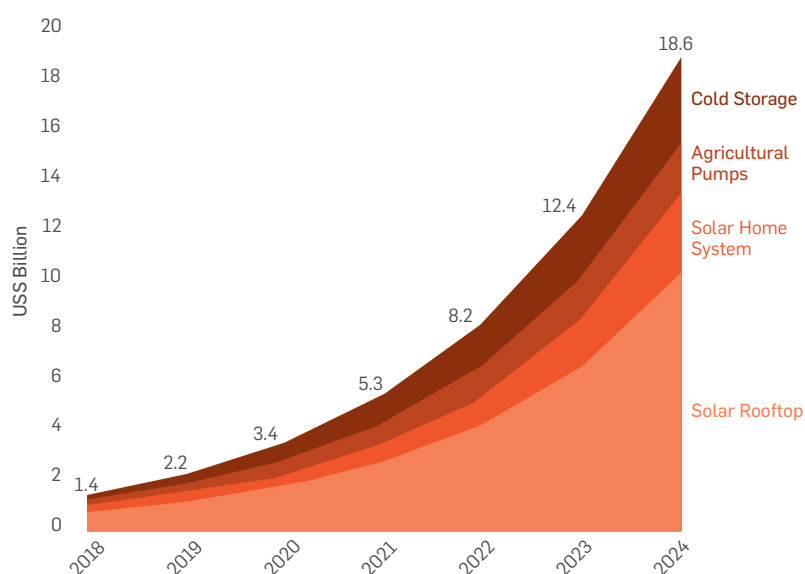
The ongoing Climate change is inducing entities to undergo an obligatory transition from fossil fuels to Renewable energy sources like Solar, Wind, etc. to limit GHG emissions, increasing sea levels, melting glaciers, and increasing temperature. Further to ensure energy security, it becomes necessary to diversify energy sources to reduce the reliance on fossil fuels.



Source- Global energy transformation: A roadmap to 2050, IRENA

The solar power sector in India is expected to undergo explosive growth in the upcoming years and IEA states that solar will match coal's share in the Indian power sector in two decades. Presently, Solar accounts for less than 4% of India's electricity generation, and coal is close to 70%. By 2040, they converge in the low 30%, and this electrifying turnover is attributed to policy initiatives and targets set by the Government. The Indian Electricity sector is at the cusp of a Solar Revolution and there is huge potential not only for large PV plants but, also for small distributed renewable energy sources like solar

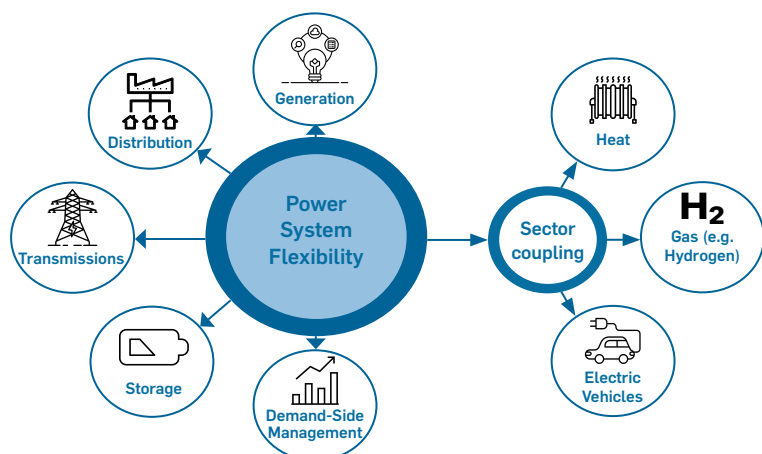
rooftops, solar pumps, cold storages etc. Solar energy is now the lowest-cost source of new energy in India. Spain, India, and the Middle East will continue to be the markets with the lowest solar Levelized cost of electricity (LCOE). The photovoltaic (PV) systems CAPEX will continue to decline in 2021 by 5% year on year, largely driven by decreasing component prices. Meanwhile, average module efficiency records continue to increase, surpassing 22.5% in PERC monocrystalline cell commercial production, and are forecasted to reach 24% by 2022. Solar energy has the potential to meet the energy needs of low income residential groups and thereby, can also help in achieving 100% electrification of households. Further, there are various initiatives taken by stakeholders to trigger the domestic manufacturing of solar panels and this could even lead to further lowering of price.



Source - The Future of Distributed Renewable Energy in India, Climate Policy Initiative

Power System Flexibility – Need of the Hour

Power system flexibility is defined as the ability of a power system to reliably and cost-effectively manage the variability and uncertainty of demand and supply across all relevant timescales. The deployment of variable renewable energy sources is accompanied by challenges such as increase in system requirements for balancing supply and demand. To effectively aid the transition from fossil fuels and ultimately to Net Zero levels, it becomes necessary to identify and exploit various flexible system integration sources in all stages viz., Generation, Distribution, Storage.



Source - IRENA

International experience suggests that a diverse mix of flexibility investments is needed for the successful system integration of wind and solar PV. Operational Complexity rises as the share of variable renewables rises. Hydro Power and Pumped Storage systems are flexible renewable energy sources in India for a long period. The need for flexible energy system was realized during the pandemic and hence, Central Electricity Regulatory Commission has come up with the regulation to operate coal-fired power plants with minimum generation levels at 55%. This has proved effective in increasing the capability of coal-fired plants to accommodate VRE. Supply-side Flexibility system integration further includes Grid reinforcement and planning to effectively accommodate VRE energy generation and several small-scale initiatives like rooftop net metering, which has been effective for households. Network developmental innovations, technology up-gradation, Research on Modelling and Optimization, Grid Digitization are further required to develop resilient, reliable, and transparent systems.

Energy Storage Systems will play a crucial role in increasing the system flexibility to accommodate the demand requirements. The energy storage market in India witnessed a demand of 23 GWh in 2018 with 56% of the battery demand coming from the power backup inverter segment. The raw materials for localized battery manufacturing are limited and this serves as a setback in integrating flexible storage systems. Recycling of batteries and others should be encouraged to drive domestic manufacturing. Pumped Hydro Energy Storage has been the most effective energy storage system over the years and it has now become necessary to develop small-scale storage devices with increased efficiency and decreased cost to aid the smooth transition. This development would ultimately lead to the large-scale adoption of Green Energy technologies at all levels.

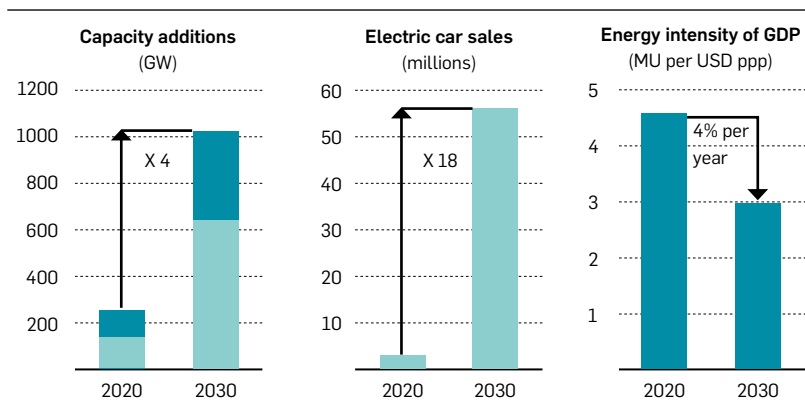


External Operating Environment

RE Electrification

The race to Net Zero 2050 requires the deployment of various renewable energy technologies and other BoS systems on a massive scale. The changing scenarios like the decreased cost of RE systems, the flexibility of energy systems, policy initiatives, and global pressure will lead to a historic shift. The research to diversify the energy sources will prove effective in exploring new feasible technologies. The augmentation of flexible systems like making the Grid systems smarter and resilient from threats will aid in the Re-Electrification pathways by increasing the share of renewable channels.

Key clean technologies ramp up by 2030 in the net zero pathway



Note: MU = megajoules; GDP = gross domestic Product in purchasing Power parity

Decarbonization of Energy and Industry

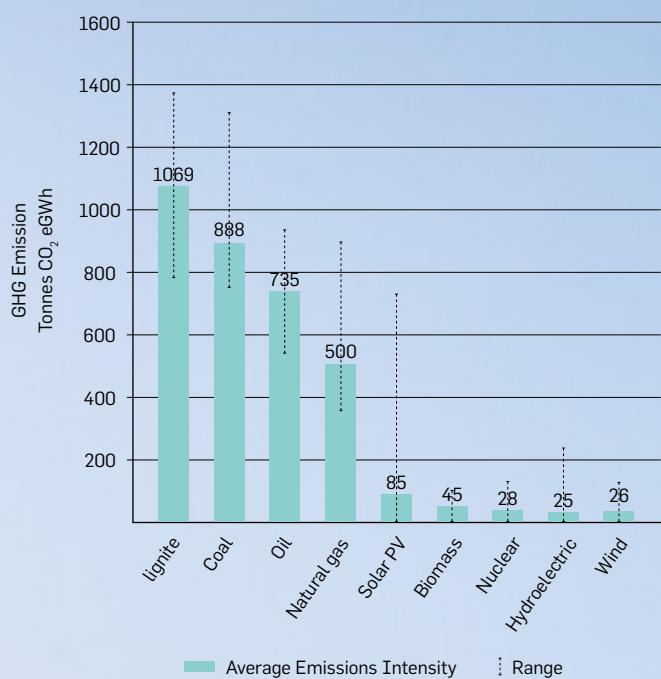
Climate change mitigation is one of the key areas for the countries to contribute to promote sustainable development and ensure the socio-economic well-being of the general population. GHG emissions are major drivers of global warming leading to various human ecological consequences. India is one of the largest energy producers and consumers in the world. Energy Sector accounts for 73% of GHG emissions which is the result of cumulative energy usage in Iron and Steel Industries, Petro Chemical Industries, Transport sectors, Residential and Commercial buildings. This gives rise to the need to shift to low carbon energy technologies and energy-efficient techniques. Further, the deployment of renewable energy and subsequent decrease in usage of conventional energy sources like Coal, Oil, etc will also help in reducing the catastrophic events.

India has globally committed to reducing GHG emissions through the Paris Agreement which intends to limit the temperature rise to 1.5°C above pre-industrial levels. Nationally Determined Contributions have been inducted to reduce Emission intensity in terms of GDP by 33 - 35% in 2030 from 2005 levels. Further NDCs have a major thrust on increasing the share of renewable energy, Developing Clean Energy and Energy-efficient technologies, Sustainable Green Transport Networks, Climate Resilient Urban Centers, Swachh Bharat Mission, Zero Effect, Zero Defect, Make in India.

Further to Decarbonizing the electricity systems, innovations in storage technologies, electrolyzers, carbon capture systems can aid the transformative journey. Green Hydrogen and Molecules are expected to evolve as an alternative fuel replacing fossils, especially in energy-intensive industrial sectors. The exponential growth in the electrolysis project pipeline in 2020 and the unprecedented interest around hydrogen as a decarbonization tool have been driven by a combination of falling costs and policy support. The declining cost of low-carbon hydrogen is anticipated to continue to fall by a further 40% through 2025 due to the falling cost of renewable electricity. But, the obstacles for tapping this fuel like electrolyzers, transportation of green hydrogen, and the requirement of renewable energy for providing the power source are to be subjugated. Carbon capture, utilisation, and storage systems are important technological systems to mitigate global warming by capturing and storing the emission. Cost of the technology is a major bottleneck for effectively utilizing, innovating and providing policy assistance to speed up the adoption.

Circular Economy practices can also augment climate change mitigation by increasing the life cycle of materials and also thereby reducing the corresponding GHG emissions associated with the manufacturing process, transportation of raw materials. Material Efficiency plays a significant role in promoting circular economic business models. Take-Make-Waste linear models when replaced with circular models can have impactful results in decarbonizing the systems. Life cycle emissions of solar and wind systems will also be drastically reduced since a major portion of emissions is from the Fabrication of systems. The barriers like Government regulations, Technological feasibility, Consumer behaviour, and expectations should be handled efficaciously to establish synergies between decarbonization and circular business models.

Figure - Breakdown of lifecycle greenhouse gas emissions for different electricity generation sources

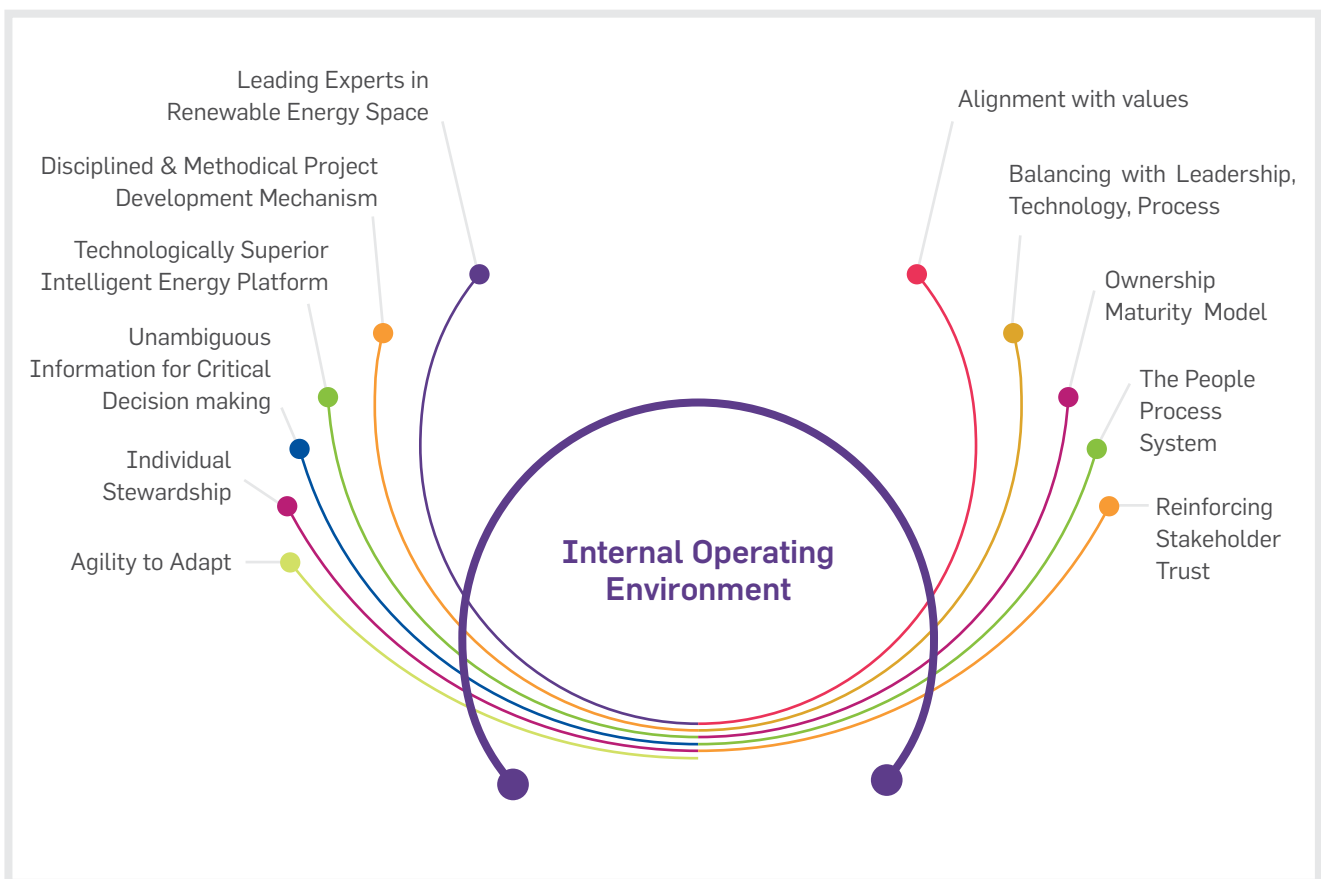


Source – World Nuclear Association



Internal Operating Environment

Greenko make sustained efforts to harness opportunities posed by the external environment through the scrutiny of internal elements. With this objective as the central pivot of operation, Greenko analyses its internal operational factors to identify the critical strengths and weaknesses which helps **Greenko in refining and enhancing its internal culture, capabilities, and competencies to provide a competitive advantage.** Through a continuous evaluation mechanism, Greenko has identified the following eleven key internal operating elements to serve as focus areas for evolving into a more resilient, sustainable, responsible, and transparent business entity.



Alignment with Values

The business operations at Greenko are driven by its Vision, guided by aspirations, and living by its values. Greenko's SEEDIT Values serve as the foundation for endeavoring culture, stability, and growth. Institutionalization and Adaptation of Greenko Values have been a remarkable journey through Learning and Development interventions. SEEDIT values have been effectively communicated to the employees. Induction programs are being conducted to impart the knowledge of SEEDIT values to new employees, thereby aligning them with the Greenko standards. Greenko not only inculcates values but, believes in living by them and also aids the workforce to follow the same. The appraisal system at Greenko is entirely merit-based and the organization rewards equal weightage to performance and adherence to SEEDIT Values.

Balancing Leadership, Technology, and Process

Greenko endeavors to improvise the elements of Leadership, Technology, and Processes to develop a strong, and resilient organization. Greenko believes that the critical elements for improvising performance are strengthening and preparing the workforce for future leadership roles, effective utilization of technological tools and processes. Greenko's strong leadership and governance framework is guiding the group to position itself for long-term value creation by harnessing growth opportunities. Greenko has a well-laid leadership development program to impart knowledge and develop expertise in future leaders. Greenko is continuously upgrading its technology and systems and processes. Management systems with underlying feedback, measurement loops, and performance improvement methods are also adopted. Greenko's DNA focuses on the maintenance of the balance among Leadership, Technology, and Processes.



Internal Operating Environment

Ownership Maturity Model

The human assets form the core of Greenko operations and they are agile, resilient, and responsible groups steering Greenko through a successful path by mitigating all the short and long-term risks and developing into a more prosperous organization. At Greenko, each employee is a responsible steward, the embodiment of values, and strives hard to reinforce the brand. At Greenko, augmentation of Human Capital through inorganic growth is more incidental to business acquisitions, spanning across its various businesses viz. Hydro, Wind, and Solar. The diverse skill set of the workforce has helped in establishing the synergic relationship between various stakeholders and also in successful project delivery. The organization is also making enormous efforts for the skill development of its workforce by exploring new project arenas.

The organization believes in the ownership model to develop a team with the traits of accountability, authority, and autonomy to emerge as a successful organization. This has proved effective by bringing out innovative ideas and motivating the workforce to make the right decisions at the right time.

Authorize

The ownership model at Greenko accords authority to its employees in decision-making. The teams are aligned and encouraged to make the right decisions even in the most critical scenarios. They are also informed about several 'not-the-Greenkaway' illustrations in advance, to avoid instances of making wrong decisions. Since most of the relevant information is available in an unambiguous way, it prevents wrong decision-making in most scenarios. The team members are encouraged to view things differently and make decisions commensurate with a given situation/scenario. The managers respect and support the team's decision.

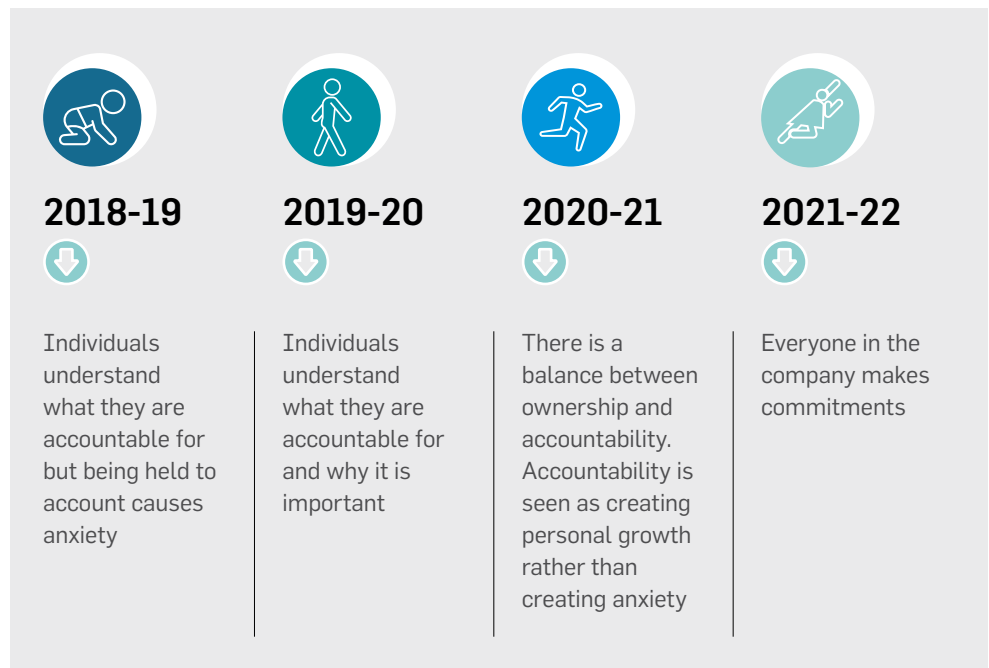
Align

The key to aligning the human asset to match the organizational values for business transformation not only warrants the team to be congruent with the expected outcomes of any business decisions, but it also delivers the task at hand on time. The success of any project generally means timely delivery of objectives within a stipulated time and

budget. But, for Greenko it means addressing the concerns of relevant stakeholders to meet their expectations throughout their journey with the company. The stakeholders not only share the success of projects but, are also responsible for their outcomes. The Organizational journey at Greenko, from GKO 3.0 to 4.0, requires the transition from output-based objectives to outcomes, and this system will aid in owning the task and its outcomes right from the beginning. The organization has, therefore, aligned the KPIs to goals that are beyond outputs and include outcomes that enable ownership and innovation.

Autonomy

At Greenko, the employees and teams can work independently in an autonomous way, with the guiding vision and support from its leaders, as and when required. Each team member is, therefore, sure about the task at hand and can align and coordinate with everyone else. There is a lot of clarity about seeking help at Greenko, the alignment to outcomes enable teams to autonomously decide 'What', instead of restricting themselves to 'How'.



The People Process System

Greenko balances its 'ownership model' with the People, Process, and Systems approach. The PPS model was implemented at Greenko to achieve the following:

- ⦿ To build and recalibrate competencies of human asset
- ⦿ To internalize in GAM for enhanced process efficiency
- ⦿ To connect people to motivate overall PPS implementation
- ⦿ To share best practices across businesses
- ⦿ To achieve set business targets to aid transformation
- ⦿ To aid Greenko towards the smooth transitioning from GKO 2.0 to 3.0 and reach GKO 4.0

The People – Expectations & Competencies

The impact of the PPS Model in three years at Greenko has shown:

- ⦿ Improved sustainable operational efficiency and growth with the measurable performance of the 'People' and the 'Assets' - **Focus**
- ⦿ Contributing to the regeneration of efficiency in people and operational assets for value creation, through Energy Systems for Greenko - **Regenerative Thinking**
- ⦿ The group has mapped Key Performance Indicators (KPIs) of the Businesses for each of the employee roles and measured it against predetermined metrics and weights assigned to employee role deliverables - **Talent Management**
- ⦿ The Performance Management System (PMS) was implemented with measurable weights- 50% for Business KPIs and 50% to measure Business deliverables- in alignment to Greenko Values - **Strategic Thinking**
- ⦿ Multi domain-multi skilled employees who can role play in uncertain times- a transition towards GKO 4.0 made it

imperative for Greenko to multi-skill its human assets to get a circular orientation, not allowing any stagnation in the same role year on year - **Circular**

The Process

As a framework, GAM was divided into seven key areas for which detailed processes were delineated, discussed, and adopted in these key areas. The features of the process flow include:

- ⦿ Cross-functional activities
- ⦿ The mandated flow of day to day, week over week, month on month activities
- ⦿ Communication with centralized teams like Tech services
- ⦿ Checks & balances and the way forward, when falling short of targets

The GAM and HR Leadership Team have convened a 'Leadership Conference' to calibrate on the Group's vision, values, and the PPS Model. All the GAM employees have been trained and the HR Team and GAM Leaders have put the PPS Model to work and the outcomes are 'propounding and profoundly positive' for the business.

Also, the KPIs identified for each of the GAM assets (Hydro, Wind & Solar), and the performance outcomes were measurable indicators for Hydro, Wind & Solar Operational Assets. In the Greenko Asset Management (GAM) vertical, majority of the total employees are multiskilled for various domains (Hydro, Wind & Solar) and are eligible to work in multiple functions in addition to their multi-disciplinary domain knowledge, thus reaffirming the circular approach in business management.

The System

The analytical management systems deployed for tracking project and asset management include analytical measures such as:

Celeste Solar - Analyze the trends and identify any deviation from the expected results

GOMs - Tracking of Maintenance activities and alerts to check any form of deviation from schedule or quality GMAT Tracker - Tracking of minutes of meeting and closing the action items

GATS - Tracking of assets (e.g. Modules)

GEPS - Tracking of project activities

Forecast & Scheduling

- Deploying statistical forecasting models and real-time weather forecasts to predict day-ahead energy Activity Tracker

The systems also consist of predictive measures such as:

Aerial drones - for digital plant inspection which is an advanced technique for reliability and performance improvement

Thermal Imaging - Thermal Imaging camera to observe the health of modules.

Predict Downtimes

- Development of custom notifications based on queries and machine learning models to identify anomalies and predict impending failures

Greenko has showcased exemplary strengths through its model and PPS framework implementation. Greenko's renewed strengths along the new dimensions of circular and regenerative thinking would aid its smooth transformation from GKO 3.0 to 4.0.



Internal Operating Environment

Reinforcing Stakeholder Trust

Stakeholder engagement and inclusiveness have been the prime objective of Greenko's operations and are evident from Ownership Maturity models and SEEDIT values. The above 'Value Drivers' are seamlessly integrated with the 'Enablers' to strategically create a Value Proposition with a definite 'Outcome'. Most of Greenko's business models are Public-Private partnerships and this has proved effective for Greenko to foster and nurture relationships with stakeholders at all levels, which further helps in strategy development and decision making. Ownership model and PPS are aided with HR strategy to support the inclusive growth among the workforce with suitable policies, processes, and decisions. The bedrock of the company's reputation is the trust which it has gained through all its years of operations amongst all stakeholders and Greenko believes that this would help in guiding through its transformation stages in subsequent years for making the progression from GKO 3.0 to 4.0. These elements are also embedded in Ownership Maturity Model and PPS systems.

(GRI 102-21, 43)

Agility to Adapt

The agility to adapt among all levels of organizational stakeholders is the sole creditor for the organization to undergo a smoother transition from GKO 1.0 to 2.0 and then to 3.0. The policies and internal support extensions for imparting the level of ownership and authority have proved effective for the younger workforce to develop competencies and potential to take up the leadership roles. Further, the leadership pipeline is designed in such a way that it meets the business expansion plans of the Group, thereby helping the younger generation to climb up the ladder. Talent scalability is a critical and ongoing agenda for HR to provide the required number of talented resources for new projects and acquisitions. Since its inception, Greenko has always grown with a mechanism of built-in talent scalability. Ownership and empowerment make the organization more agile by incorporating some traits of self-belief.

Individual Stewardship

Greenko finds its success from the sense of responsible stewardship the workforce has gained through these years. Employee welfare programs, merit-based annual performance reviews, and talent recognition are salient factors for retention of 99% of its workforce during the reporting period.

Unambiguous Information for Critical Decision Making

Availability and flow of information from one level to other is the major requisite for effective decision making. Greenko has established advanced information technology systems to evolve a real-time monitoring system to supervise the progress of project execution and asset management and thereby, enable the availability of information to all on a need-to-know basis. This helps in eliminating conflicts, delays, and friction among the stakeholders and also in developing a sense of stewardship.

Technologically Superior Intelligent Energy Platform

Greenko offers a wide range of product solutions, technologies, business models in

the Renewables sector in different geographies. The proper management of project execution, follow-ups, and asset governance following high standards requires a sound knowledge of digital solutions with higher efficiencies. Greenko continues to excel in these areas by employing a range of digital and decentralized solutions for carrying out the business in a sustainable and accountable manner. This asset base is being significantly augmented to create an Intelligent Energy Platform. Greenko recognizes the challenges in technological up-gradation and adoption for making the transition from GKO 3.0 to GKO 4.0 and strives to create a robust business model.

Disciplined & Methodical Project Development Mechanism

Greenko follows a meticulous approach for carrying out the business activities like project execution, management, and delivering the final solutions in a self-disciplined and agile environment. Discipline is one of Greenko's core values to define process orientation, effective deployment of competencies appropriately, and using systems adequately. Therefore, it has developed an in-house state-of-the-art project monitoring system known as GEPS for tailoring robust and real-time project management, QA/QC, engineering, logistics, material management, and stores. Greenko has developed into an exemplary player by carrying out the business in a disciplined and agile manner and is the paradigm for the best practices in project execution with minimization of operating costs. Greenko realizes the complex nature of the process of transition from GKO 3.0 to GKO 4.0 and therefore, strives to employ solutions to deliver the projects in time without delays.

The table below mentions the capabilities possessed by Greenko with respect to executing the pumped hydro-power storage projects

Execution Steps	Greenko's Capabilities
Construction of Pumped Hydro Storage Projects	<ul style="list-style-type: none"> ⦿ Significant expertise in Pumped Hydro components (Civil works, Electro-Mechanical Engineering), and is working to construct the final product ⦿ Construction of 1st Pumped Storage is underway
Offering Energy Solutions with AI/ML-based energy scheduling & dispatch capabilities	<ul style="list-style-type: none"> ⦿ Greenko has extensive large-scale SCADA expertise ⦿ Network management solution being built together with industry-leading experts including PRDC, Siemens & OSI
Marketing of products/services to DISCOMS and other potential customers	<ul style="list-style-type: none"> ⦿ Strong relationships with DISCOMS/Regulators; ability to influence regulation and demand for such services ⦿ Tie-ups with State-owned utilities (NTPC, NHPC)

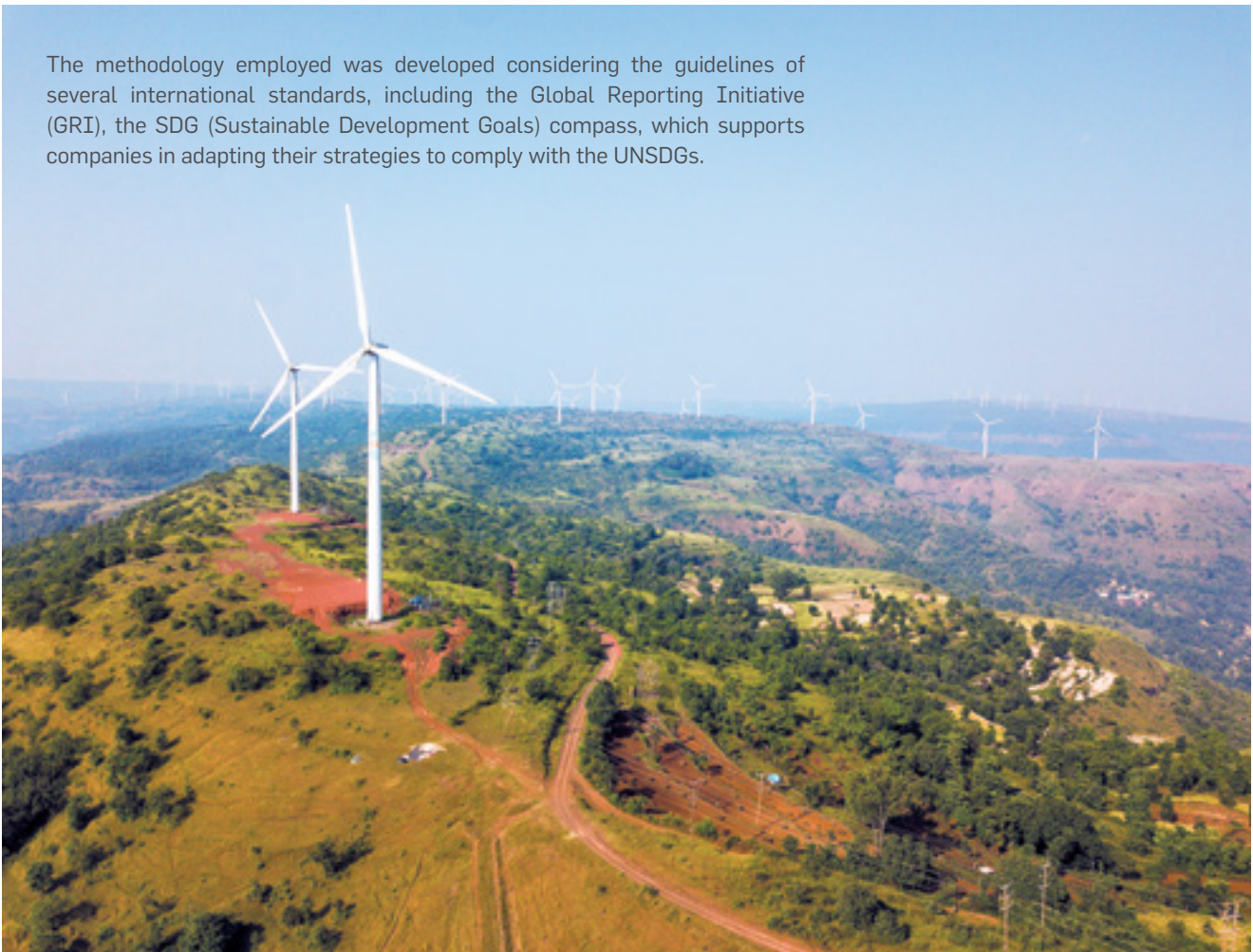
Leading Experts in Renewable Energy Space

Greenko team has developed distinctive expertise in various renewable energy sectors by delivering solutions for project execution, asset management arriving at and managing different kinds of commercial arrangements with public and private entities; managing revenues, and distributing value amongst stakeholders. This has allowed Greenko to emerge as a significant market player to constantly create innovative, novel, and futuristic solutions for delivering sustainable value. Greenko believes that the expertise and competencies gained through these years will help in addressing the new risks and challenges in upcoming years and will lead to a smooth transition from GKO 3.0 to GKO 4.0.

Materiality¹

The materiality analysis also called the analysis of priorities makes it possible for Greenko Group to identify and assess the material issues that influence the organization's ability to create sustainable value in the short, medium, and long term. Addressing the material issues according to the impact it has on the company's strategy and goals is important for effective risk management and incorporating sustainability within the organization's business practices by capitalizing on the new market opportunities. **The result of this analysis is shown in the form of a materiality matrix.** This matrix supports the identification and definition of issues that have a significant impact on the operations of Greenko Group.

The methodology employed was developed considering the guidelines of several international standards, including the Global Reporting Initiative (GRI), the SDG (Sustainable Development Goals) compass, which supports companies in adapting their strategies to comply with the UNSDGs.

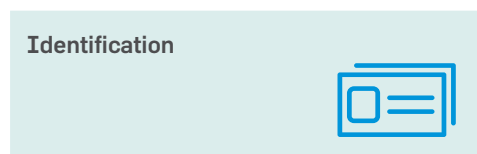


¹(GRI 102-29)

Materiality Assessment

Materiality assessment, at Greenko, is viewed as the most crucial strategic business tool as it helps to navigate through the complex risks, expectations, and opportunities that society may offer. This practice helps the organization in creating and delivering shared value in the long run.

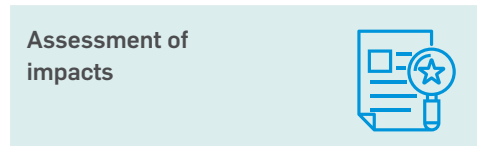
Materiality Assessment



Identifying relevant issues



Engage Stakeholders to collect the data on impacts of these issues on Greenko and its stakeholders.



Analyze the data and Prioritize the Material topics as per High, Medium and Low priority.



Draw the materiality matrix. Segregate the material topics into High, Medium & Low. Select the Key focused Areas.

Stakeholder Engagement²

Material topics are directly and indirectly linked with the stakeholders. Effective engagement helps in identifying and addressing the needs of stakeholder groups including marginalized person or community that is directly or indirectly affected by the organization. This process of engaging stakeholder groups can benefit by reducing the overall risk to the business. More importantly, it will give a chance to everyone (those who affect and will get affected) to voice their opinions.

The materiality assessment was conducted by consulting extensively with the diverse pool of internal as well as external stakeholders, from across locations and levels, including the key leadership team, functional heads, department heads, and other relevant officials.

Stakeholder engagement – The Greenko way

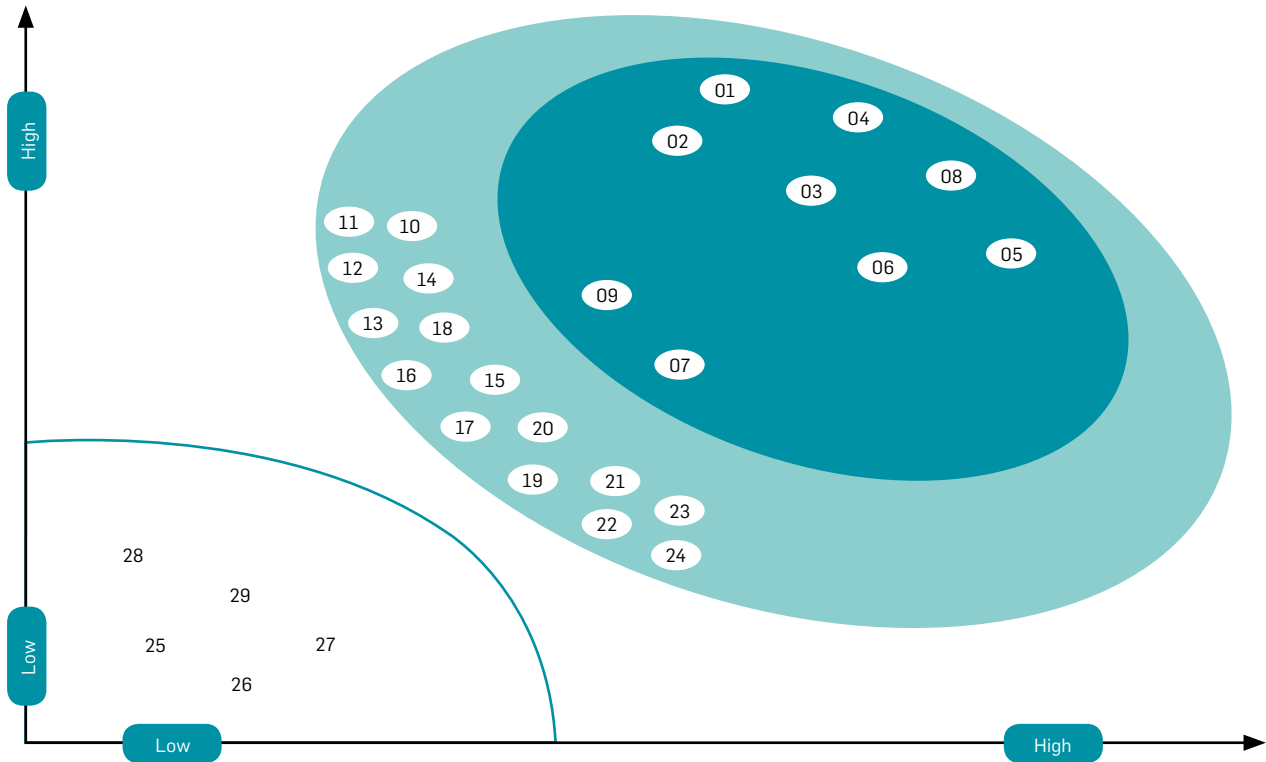


²(GRI 102-21, 102-40, 102-42, 102-43, 102-44)

Materiality

Materiality Mapping³

Based on the comprehensive materiality assessment and the key stakeholders' perspective, the identified material issues were evaluated and rated as High, Medium, and Low depending on their impact on Greenko's business operations and society. The materiality matrix is presented below:

































High-Priority	Medium-Priority	Low-Priority
1. Economic performance	10. Stakeholder Engagement	25. Energy management
2. Energy storage value pools	11. Regulatory compliances	26. Succession Planning
3. Excellence, Adoption, and management of Assets and Projects	12. Risk management	27. Grievance mechanism
4. Health and safety	13. Diversity	28. Land Management
5. Community development initiatives	14. Waste Management	29. Sustainable partnerships
6. Innovation and technology adoption	15. Talent acquisition and retention	
7. Public policy advocacy	16. Skill Enhancement	
8. Climate Proofing	17. Employee welfare	
9. Regenerative and Circular Value Pursuit	18. Employee Engagement	
	19. Transparency	
	20. Anti-corruption	
	21. Sustainable supply chain management	
	22. Human Rights	
	23. Life cycle management	
	24. Biodiversity	

³(GRI 102-47, 103-1)

Materiality Issues: Significance and Impact

The key materiality topics, their significance, and impact associated with the UNSDGs and the six capitals is presented below:

Material Topics	Significance	SDG Connect	Linkage
High-Priority			
1. Economic performance	Linked with the achievement of economic objectives		Financial
2. Energy storage value pools	Contributes to assessing value and viability.		Manufactured
3. Excellence, Adoption, and management of Assets and Projects	Helps the company to maintain higher efficiency of assets which further leads to higher returns.		Financial
4. Health and safety	Ensures safety, health, and welfare of people engaged in work or employment.		Social and Relationship
5. Community development initiatives	Be a part of the problem-solving and decision-making process, thereby contributing to the welfare of the community.		Social and Relationship
6. Innovation and technology adoption	Sustainability-driven initiatives are being adopted by the company.		Intellectual
7. Public policy advocacy	Achieving a greater good for the communities by capacity building.		Human
8. Climate Proofing	Climate change inclusive actions are taken by the company.		Natural
9. Regenerative and Circular Value Pursuit	Helps in building a circular economy will reduce the pressure on the environment.		Natural
Medium-Priority			
10. Stakeholder Engagement	Helps in effective risk management for all the stakeholders		Social and Relationship
11. Regulatory compliances	The organization's adherence to laws, guidelines, and specifications are crucial to the company and the consumers.		Financial
12. Risk management	Analyzing and attempting to quantify the potential for losses and implementing the risk mitigation measures accordingly		Intellectual
13. Diversity	Aims to represent every group and individual in its workforce		Human
14. Waste Management	Helps in cutting overall production costs in the long run and achieving the pursuit of a circular economy		Natural
15. Talent acquisition and retention	Selecting and retaining the best talent helps in organizational growth		Human

Material Topics	Significance	SDG Connect	Linkage
16. Skill Enhancement	It is a short-term investment that would yield long term benefits and returns		Human
17. Employee welfare	This leads to high proficiency and a huge positive impact on overall productivity		Human
18. Employee Engagement	Workplace approach that describes the level of enthusiasm and dedication a worker feels toward their job		Human
19. Transparency	A practice of being honest of its operations to all the stakeholders		Social and Relationship
20. Anti-corruption	Enforcing compliance mechanisms to prevent corruption and create a better work culture		Financial
21. Sustainable supply chain management	Integrating environmentally viable techniques within the existing supply chain		Social and Relationship
22. Human Rights	Practicing this helps in managing risks at all levels and directly impacts the performance of employees		Human
23. Life cycle management	This involves business, economic, and inventory cycles and helps in continuous development of business operations.		Manufactured
24. Biodiversity	Biodiversity loss is directly linked with financial loss and the downfall of the company. Hence, companies need to maintain ecological biodiversity for long-term sustainability.	 	Natural
Low-Priority			
25. Energy management	Aims at controlling and reducing the organization's energy consumption		Natural
26. Succession Planning	Helps in ensuring that employees are recruited and developed to fit key roles within the company		Human
27. Grievance mechanism	Helps in building a safe working environment for all		Human
28. Land Management	Land management practices should ensure optimum utilization of resources and minimal negative impact on the environment		Natural
29. Sustainable partnerships	Sustainable partnerships ensure long-term profitability and sustainability.		Social and Relationship

Value Creation - Greenko Way

Towards sustainable and responsible growth, shared with our stakeholders.

Inputs



Financial Capital

Gross debt Issued

- Green bonds and Bond offering to raise 940 Million USD.

Equity Infused

- 980 million USD in equity

Diverse sources of funds

Diverse power sale contracts

Cost reduction initiatives

- Cost savings by self O&M

The pursuit of organic and inorganic growth opportunities 0.95 GW capacity addition



Manufactured Capital

Diversified Asset portfolio

- Solar
- Wind
- Hydro
- Pumped Storage

Diversified across geography

- SOUTH Operating/Planned
- NORTH
- EAST
- WEST

Capacity addition of 0.95 GW

Owned O&M Infrastructure



Intellectual Capital

Life Cycle

Cost-Effective RE options

Digitalization

- Implementation of GOMS, SCADA & SAP
- Introduction of BoT (robotic process automation)
- Use of predictive maintenance, scheduling, and forecasting, improving generation agility

Innovation hub

- 209 ideas generated



Human Capital

- 43.06 Average Training Hours / Employee
- A supportive environment in the workplace
- Digitalization in the overall hiring process
- Health & safety training
- Specialized Domain training for wind/hydro/solar segment
- Cross-functional and business roles



Natural Capital

Responsible suppliers

- Creating awareness and capacity building of vendors/suppliers
- Encouraging suppliers to become ISO certified & RoHS compliant

Resources for land, water, and habitat restoration

Circular Economic approach

- Self O&M
- Repair and refurbish infrastructure
- Asset sharing

Environmental Stewardship programs on Material conservation



Social & Relationship Capital

Public policy advocacy

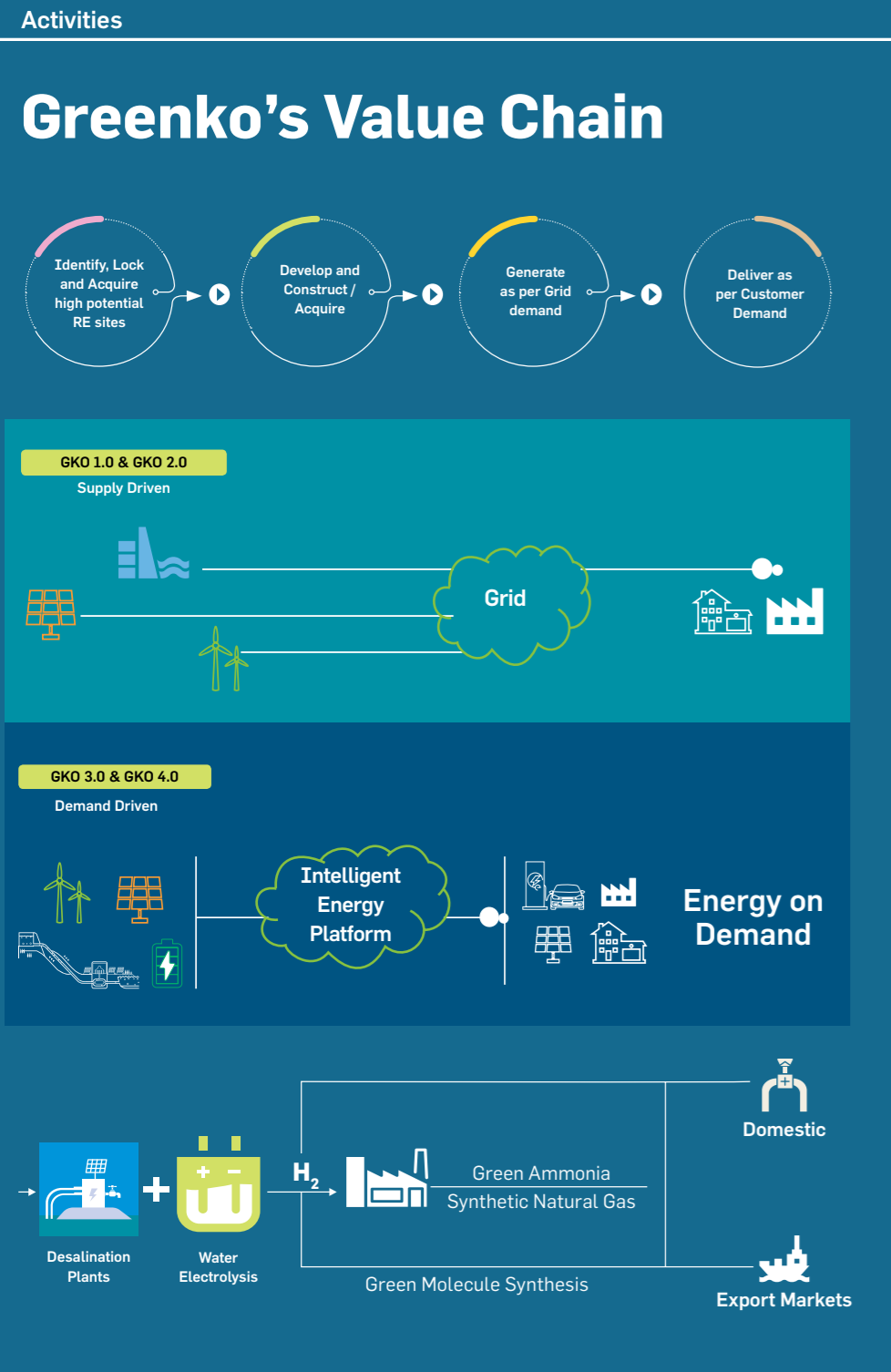
- 600+ professional hours spent by senior management in policy-making decisions at State & Central Government level

Engaging with customers and addressing their specific requirements

EHS training for contractors

Co-creation projects with local community and suppliers

- INR 17.07 crore invested in CSR
- 304 hours volunteered by employees for CSR activities



Outputs



Financial Capital

- **11.52 Million USD** revenue from the sale of power through the exchange
- **0.1 Million USD** revenue from the sale of REC certificates
- **21.4 Million USD** revenue from GBI
- **A+** Credit rating



Manufactured Capital

- **9745 MU** of Renewable Energy generated
- Healthy PLF maintained at **24.5% (S), 44.5% (H), 24.4% (W)**
- **99.5% (S), 99.07% (H), 98.8% (W)** grid availability



Intellectual Capital

- **95% ICT** regulatory compliance
- **82%** of plants covered under SCADA
- **92.33%** of plants covered under SAP
- Process standardization & qualitative improvement
- **462** continual improvement programs
- **99.98%** uptime of servers
- **209** innovative ideas generated through knowledge sharing Innovation Hub sessions



Human Capital

- **18%** increase in training hours/employee
- **99%** of staff Retention
- **6.17%** of women in workforce
- Reduction in the average age of employees from **36.65 years to 35 years**
- **1%** Attrition rate for new hires



Natural Capital

- **Decarbonization**
 - **12.4 MtCO₂** emissions avoided
- **Environment improvement**
 - **15,473.22 tons PM10** avoided
- **Supply Chain**
 - **85%** of critical suppliers are ISO 14001 certified & RoHS compliant
- **Restoration of Nature**
 - Habitat conservation & recovery of Great Indian Bustard and Olive Ridley Turtle species
 - Habitats for birds, fox, and fish restored
 - **1,30,071** saplings planted

Circular Economy

- The value generated due to repair/refurbish and asset sharing
- Electronic waste avoided due to reuse after repair/refurbishing

Climate Adaptation

- Reduced losses in employee productivity
- Reduced weather-related breakdowns
- Improved access to O&M
- Reduced erosion



Social & Relationship Capital

- Changes in the RTC RE related policies and pumped storage projects
- **95%** customer satisfaction index for utility customers
- **80%** of contractors/suppliers retained beyond 3 years
- **20027 hours** of safety training for contractors
- **285** community development programs

Outcome

Value Delivered



- Interest and bond proceeds
- Dividends
- Remuneration to employees
- Local area infrastructure improvements
- Taxes to the Government
- Contribution to Community through CSR



- Transparency and reliability
- Response time
- Technology transfer



- Decarbonization
- Improved air environment
- Reduced electronic waste and Conservation of virgin materials
- Restoration of nature
- Community adaptation to climate change

Value Retained



- Industrial infrastructure
- Grid performance
- Clean and reliable energy



- Improved quality and quantum of employment
- Up-gradation of skills



- Inclusive development in regions of operations
- The improved policy environment for decarbonization
- Improved business opportunity and wealth for suppliers

Value Retained



- Organic and inorganic growth of assets
- Infrastructure for sustainable management of assets
- Infrastructure for agility and adaptation in the face of changing climate
- Human capital development



- Solid digital infrastructure for effective performance management
- Protocols and Standards
- Improved operational performance
- Seamless information flow and decision making



- Uninterrupted and stable supply chain
- Predictable and stable wind, solar and hydro resources
- Compliance with regulations
- Community trust
- Uninterrupted operations
- Improved O&M



- Asset Health
- Asset Life
- Improved Asset Performance



- A highly skilled and motivated workforce
- Agile and autonomous networks
- Fair, safe and healthy workspace



- Attainment of long term stable and effective relationships with contractors & suppliers
- Increased stakeholder trust
- Favorable policy environment for firm RE
- Attainment of knowledge on evolving technologies
- Diversified customers and customer-centric business approach

External Environment

- Responsible and patient capital
- Transparency and good governance practices
- Clean, affordable, and reliable energy in India
- Climate change
- Decarbonization, Digitalization, Decentralization
- Need for flexible and firm RE
- Energy Security
- Circular Economy
- End of Life of Assets
- Aspirational and Entrepreneurial Millennial
- Inadequate skills for emerging job roles
- Fair, safe and healthy workspace
- Changing policy environment
- The financial health of DISCOMs
- Increased stress on water, land, and ecosystems
- Investor Watch on environmental and social risk management
- Increased public concern and regulatory watch
- Sustainability and climate change goals

Internal Operating Environment

- Innovation
- Values (SEEDIT)
- Public-Private People partnership
- Real-time monitoring of assets
- Robust Integrated Management Systems
- Intelligent Energy Platform
- Empowered teams
- Diversified source of revenue
- Diversified Renewable Technologies
- Matured PPS
- Predictive and self Operations and Maintenance
- Quality Assurance and Control
- Integrated Renewable Energy Storage Projects
- Responsible contracts and Procurement
- Public Policy Advocacy
- Value creation for community
- Climate proofing of business
- Preservation of biodiversity
- Life cycle management of assets

Contribution to UNSDGs





Greenko's Strategic Approach¹

Greenko's Strategic objective is to be a leader in decarbonization, digitalization and decentralization and deliver clean, reliable and affordable energy to India. This can be achieved through three pillars: RE Assets, Storage Assets and Zero-Carbon Molecules. Through this approach, Greenko will significantly contribute to Make-in-India, Aatma Nirbhar Bharat and Energy Independence by 2047.

Greenko's strategic objectives are achieved through mitigating risks and harnessing opportunities to enhance value across multiple capitals, explicitly recognising their interdependence.

¹(GRI 103-2)



Greenko's Strategic Approach

Financial Capital

Greenko aims at optimum utilization of financial resources for delivering consistent economic value to all of its stakeholders. In the pursuit of its vision and mission, Greenko endeavors to tap diverse capital sources and pursue both organic and inorganic growth aimed at being amongst the top 3 power utilities in India. The Group strives to achieve its financial goals through sound planning and investment while ensuring that the operational KPIs are in alignment with the benchmarked internal and external standards for better and higher productivity in the long run.

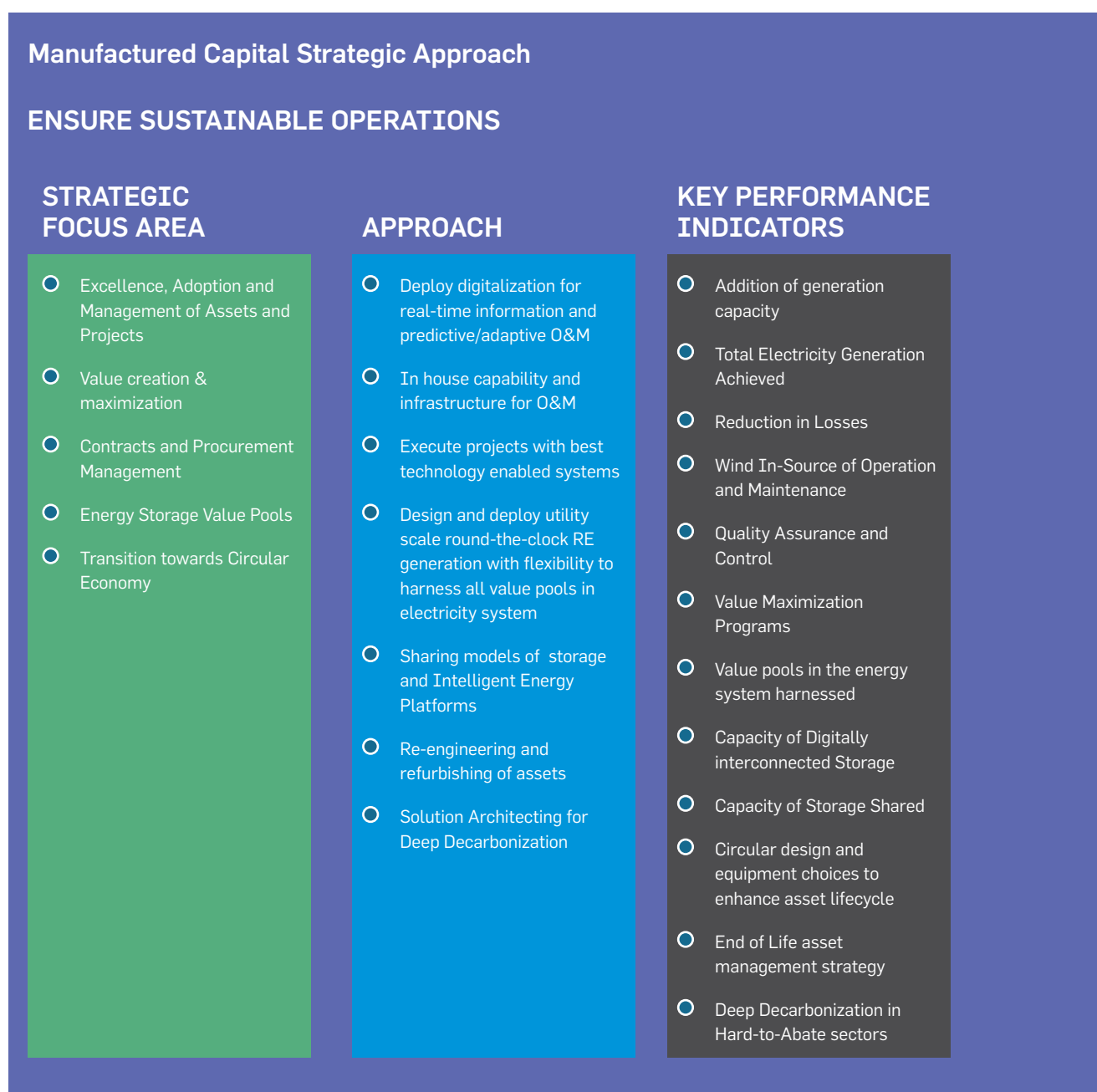
Financial Capital Strategic Approach

PRESERVE AND ENHANCE VALUE FOR SHAREHOLDERS

STRATEGIC FOCUS AREA	APPROACH	KEY PERFORMANCE INDICATORS
<ul style="list-style-type: none"> ○ Debt Capacity ○ Access to capital ○ Organic and inorganic growth ○ Revenue Growth (to be amongst top 3 power utilities in India) ○ Seamless fund flow to the targeted objective ○ Climate Change Risk Assessment and Impact mitigation 	<ul style="list-style-type: none"> ○ Improve credit rating ○ Harness diverse avenues of funds ○ Pursue appropriate M&A opportunity ○ Pursue high growth through healthy CAPEX deployment in new projects delivering flexible and firm power ○ Maintain CAGR above 40% till 2023 ○ Diversify across decarbonization, digitalization and decentralization technologies to generate firm, RTC electricity ○ Improve quantum and stability of revenues by providing superior quality, reliable and firm power 	<ul style="list-style-type: none"> ○ Credit Rating ○ Fund flow statements ○ Leverage or Diversity of fund sources ○ Share of funds deployed for organic to inorganic growth ○ CAPEX to revenue ratios ○ Ratio of firm power delivered to CAGR ○ Monthly variance in revenue ○ Top-line ranking amongst power utilities in India ○ Percentage of revenue earned from delivering power-as- demanded

Manufactured Capital

To preserve and enhance operational asset value and project management, Greenko has adopted the following effective strategic approaches viz. Excellence, Adoption and Management of Assets and Projects; Contract and Procurement Management; Quality Assurance and Quality Control; Energy Storage Value Pools and Transition towards the circular economy. Greenko's Project and Asset Management team is constantly monitoring the operational KPIs and modifying the strategic approaches in constantly changing market conditions.



Greenko's Strategic Approach

Intellectual Capital

Innovation and Digitization is the focus of the transformational journey at Greenko as it helps the Group to capture and transform renewable energy. Greenko is also determined in building an Intelligent Energy Platform and Pumped Storage projects for firm and RTC energy generation, investment in advanced analytics, Internet of Things (IoT), and deployment of systems to improve asset management by predictive maintenance, real-time remote monitoring, and intervention.

Intellectual Capital Strategic Approach		
PRESERVE AND ENHANCE INNOVATION AND SYSTEMS		
STRATEGIC FOCUS AREA	APPROACH	KEY PERFORMANCE INDICATORS
<ul style="list-style-type: none"> ○ Integrated Management Systems and Continual Improvement ○ Achieving Energy efficiency through technology ○ Improving Business performance via innovation ○ Integrating Technology in Business Automation ○ R&D partnerships 	<ul style="list-style-type: none"> ○ Innovation in in-house technologies ○ Enabling robotic process automation (RPA) ○ Improving business process efficiency ○ Sustainable certification for operational assets ○ Collaboration with R&D institutions 	<ul style="list-style-type: none"> ○ Ideas generated and implemented through in-house technology innovation hub ○ Reduction in delay of documentation process ○ Reduction in Human Errors and proactive approach to employee related requests ○ Digitalization of work processes ○ Identify issues that might present a security risk and propose effective counter measures on site. ○ Comprehensive review and validation of documented information. ○ Elimination of audit management formats ○ Environmental performance standards ○ Progress on R&D Collaboration

Human Capital

People are at the core of Greenko's success today and tomorrow. Greenko's commitment and value proposition for the development of Human Capital is by nurturing talent, caring for people, and leveraging the employees' passion and potential appropriately. This is supported by Learning & Development initiatives to have a pool of competent talent of resources for the sustainable business portfolios of the Group.

Human Capital Strategic Approach

ATTRACT, RETAIN AND NURTURE THE BEST TALENT

STRATEGIC FOCUS AREA

- Talent Acquisition
- Competency Development
- Diverse Workforce
- Reward & Retention
- Encouraging Continuous Learning Culture
- Health & Safety across Value Chains
- Digitization
- New Skills and Competencies

APPROACH

- Attract talent early and Nurture for succession
- Aiming for improved Diversity across the business
- Conducive & cross-functional environment for high performance
- Recognition of efforts and rewarding the performance
- Instilling a sense of ownership for the outcomes
- Health & Safety to remain prime across all the business activities extended to the entire value chain- including contractors/vendors & communities under operations
- Cultural alignment of digital transformation across HR function
- Attracting Talent for New Skills and Competencies

KEY PERFORMANCE INDICATORS

- Encouraging a culture of onboarding fresh talents as GET's and training extensively across all the niche domains
- Mentoring the young achievers via PPS systems for required skill sets to fill in the gaps
- Employee engagement initiatives
- Building strong technical skills- progression of the learning curve for employees
- Mainstreaming Gender in policy design & implementation of projects
- Percentage of people retained in acquisitions
- Percentage of women employees at different levels
- Age and Demographic distribution
- Succession planning for mapping the skills of employees with future leadership role requirements and training them accordingly
- Extensive training on health & safety aspects by adding new competencies to each repository
- Digitalization of majority of activities for HR transformation
- Nurturing human talent to acquire the core competencies for the desired futuristic growth

Greenko's Strategic Approach

Social and Relationship Capital

Through its business operations, Greenko contributes to sustainable development of many people. Greenko's partnership with communities enables the Group to deploy projects on time, manage assets efficiently, and provides a broader social license to operate. During the Covid-19 pandemic, Greenko has realized its role as a responsible corporate citizen by providing aid to communities in the form of vaccination for employees and their families, supplying oxygen concentrators, trained healthcare teams with equipment to remote areas etc.

Social and Relationship Capital Strategic Approach

REINFORCE STAKEHOLDER TRUST AND DEVELOP CO-CREATIVE PARTNERSHIPS

STRATEGIC FOCUS AREA	APPROACH	KEY PERFORMANCE INDICATORS
<ul style="list-style-type: none"> ○ Partnerships ○ Public Policy Participation ○ Branding ○ Human Rights ○ CSR / local community initiatives 	<ul style="list-style-type: none"> ○ Participate actively and ethically to contribute in shaping public policy ○ Awards and Recognition ○ Contribute strategically in the communities to effect measurable outcomes ○ Preserve human rights of every individual and community ○ Partnerships to harness opportunities in adjacencies 	<ul style="list-style-type: none"> ○ Partnerships with suppliers/contractors/regulators/customers for long-term affordable, reliable, and clean power ○ Partnerships in adjacencies ○ Smart contracts for critical project management ○ Strategic partnership through International Competitive Bidding for risk-sharing and rewarding ○ Percentage of time spent by the board in the oversight of strategy ○ Number of Grievances received and addressed ○ Community Social Investment- Number of Beneficiaries ○ Social Return on Investment for select interventions ○ Community satisfaction index ○ Number of hours spent by senior management, contributing to public policy ○ Amount spent for Partnerships/Sponsorships ○ Customer satisfaction index ○ Percentage of local procurement expenditure ○ Number of co-creation projects with stakeholders ○ Supplier satisfaction Index

Natural Capital

Greenko is committed to following sustainable business practices and is proactively contributing towards the integration of renewable energy into the national grid and conserving the biodiversity in the areas of its operation. Greenko is making efforts through innovative business models to reduce the GHG emissions occurring due to its business operations. In addition, Greenko is also committed to the responsible consumption and conservation of natural resources.

Natural Capital Strategic Approach

PRESERVE AND ENHANCE NATURE

STRATEGIC FOCUS AREA

- Mitigating impacts on nature
- Ecological Restoration
- Climate proofing the business
- Extending life and Managing end of life

APPROACH

- Conduct ESIA and adhere to ESMP in letter and spirit
- Monitor and measure social and environmental benefits of each project /intervention
- Preserve proactively land and water resources in the regions of operations.
- Adapt to climate changes at each site
- Identify and manage life cycle impacts of projects
- Map second life and end of life for every asset

KEY PERFORMANCE INDICATORS

- Direct & Indirect GHG emissions avoided
- Air Pollution avoided
- Water used
- Water resources recharged and conserved
- Wastes / Effluents generated
- Contribution to Biodiversity conservation
- Number of plants for which life cycle assessment is carried out
- % of assets for which second life or end of life is identified
- % of assets that are covered by climate proofing plan
- % of assets covered under LCA and Life Cycle Management Plan

New Energy Value Pools



The key to Greenko's growth potential lies in constantly evolving innovative business models based on storage, intelligent energy and new energy options. Greenko has streamlined project management activities and established a lean corporate structure which aids in higher revenues, better growth and reduced operational costs.

- Divya Mathur
AVP, Corporate Planning



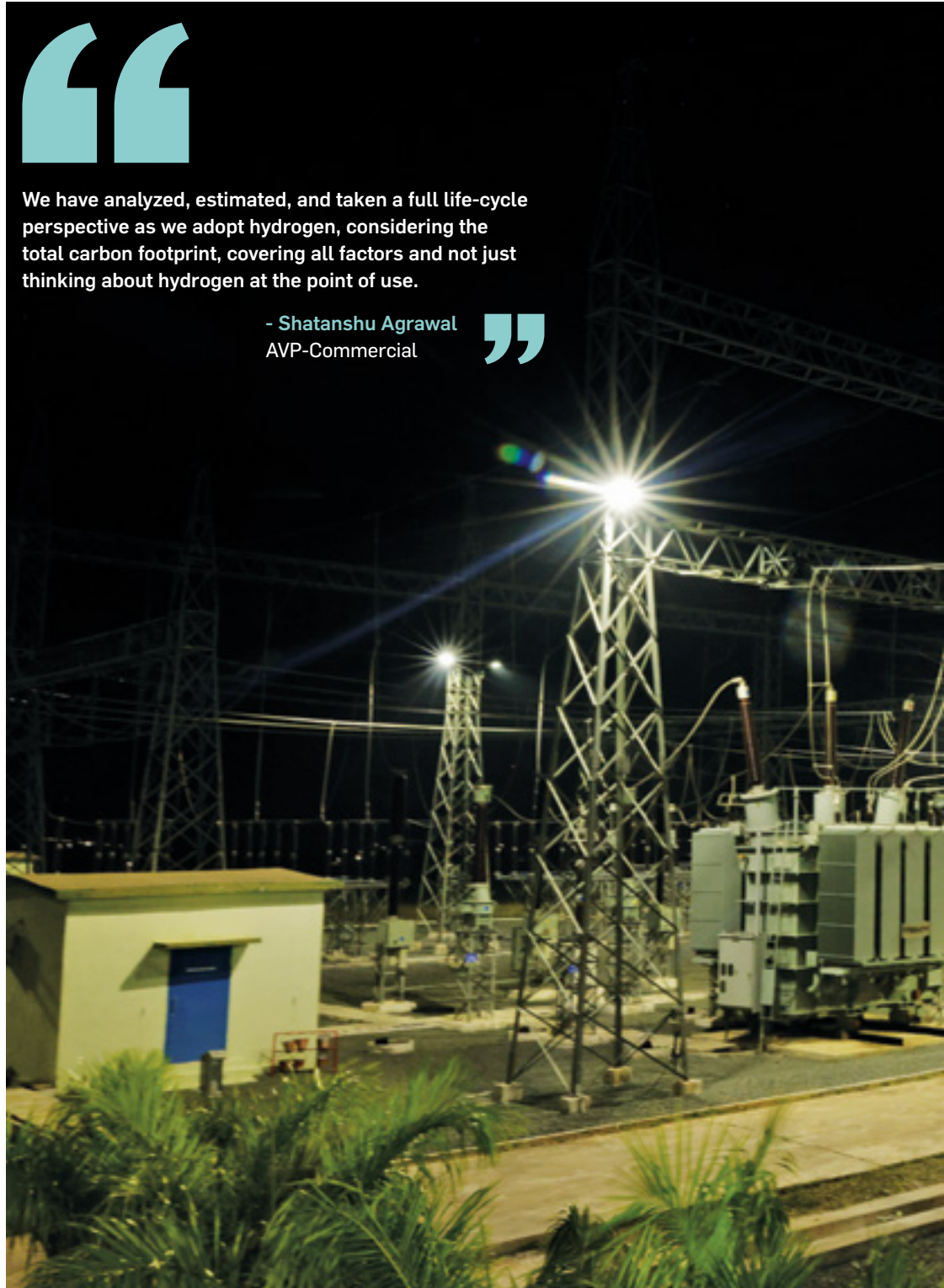
The conversion of 'Green electrons' to 'Zero carbon molecules' will not only need enough green electricity, but also electricity at lower cost, and we believe that is possible based on forecasts and our analysis.

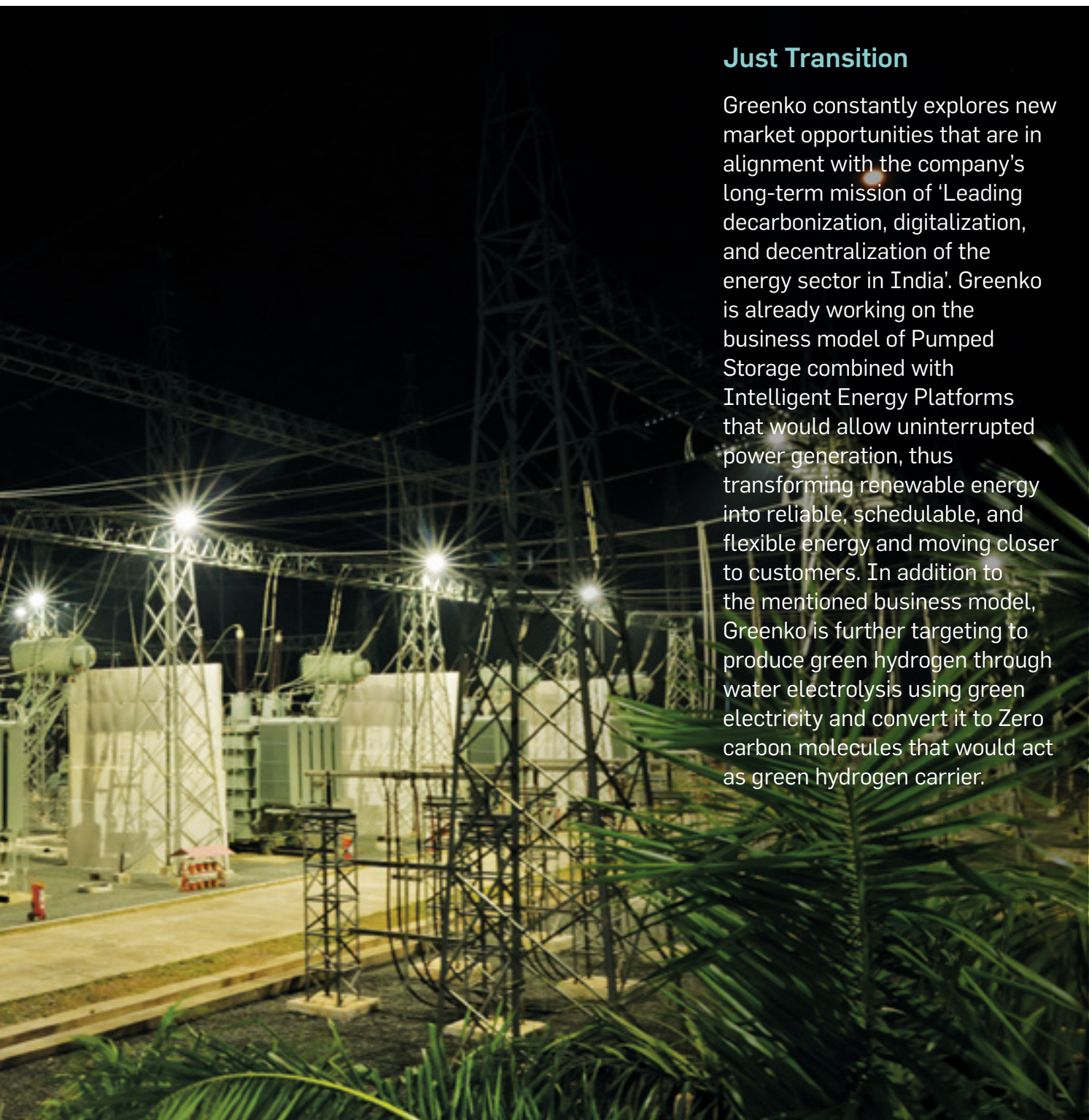
- Prasad Joshi
VP, Business Development



We have analyzed, estimated, and taken a full life-cycle perspective as we adopt hydrogen, considering the total carbon footprint, covering all factors and not just thinking about hydrogen at the point of use.

- Shatanshu Agrawal
AVP-Commercial





Just Transition

Greenko constantly explores new market opportunities that are in alignment with the company's long-term mission of 'Leading decarbonization, digitalization, and decentralization of the energy sector in India'. Greenko is already working on the business model of Pumped Storage combined with Intelligent Energy Platforms that would allow uninterrupted power generation, thus transforming renewable energy into reliable, schedulable, and flexible energy and moving closer to customers. In addition to the mentioned business model, Greenko is further targeting to produce green hydrogen through water electrolysis using green electricity and convert it to Zero carbon molecules that would act as green hydrogen carrier.

New Energy Value Pools

Transitioning to low-carbon technologies can create healthier working conditions, increase the number of jobs available, and protect against the destructive impacts of a warming world. At the same time, the jobs created from these transitions will vary across skill levels and geographies, and may not necessarily cater to the communities that are currently engaged in high-emissions sectors. Climate policy in India has been built on the pillar of 'co-benefits' which uses climate action as a pathway, rather than an impediment, to socio-economic development. A just transition is an important part of the co-benefits approach due to its focus on employment and communities; in addition, unjust transitions can slowdown or even derail climate movements through labour rights protests and long-drawn legal battles.

The global energy sector is undergoing fundamental change – sweeping away entrenched business models while creating new opportunities. While predicting the outcome of this ongoing disruption is notoriously difficult, it's a safe bet that intelligent energy storage will be a key building block of Grid 2.0. It is relatively easy to identify three trends driving the ongoing global reshaping of the energy landscape: decarbonization, decentralization, and digitization. As the landscape evolves, charting a safe course requires understanding each of these three Ds - while embracing storage early will help energy users and producers buffer any potential shocks in the future.

The decarbonization efforts across the globe have intensified in recent times. It is driven by a powerful

combination of policy, technology and market forces. The Paris Climate Agreement with new global climate architecture, spreading the mitigation commitment deeper and wider, will disrupt the economic landscape across the sectors in all regions. Further to Paris Climate Agreement, the Race-To-Zero efforts by the businesses, cities and governments is also driving the demand for deep decarbonization. As it is well known, the world community has committed to keeping global warming below 2 degrees Celsius, and going beyond 1.5. Even the 2-degree goal implies a massive ramping up of clean energy technologies and limiting global warming to 1.5 degrees would require to reach Net Zero much before 2050.

The demand for deep decarbonization in energy, industry and transport sectors is complemented with decentralization. More distributed resources make for a more resilient system and enable small and large power consumers alike to produce much of the electricity they need locally.

Digitalization opens up multiple possibilities and makes the transition to Net Zero future feasible and flexible. Advanced energy management software and control algorithms will keep grids in balance and optimize the deployment of various generation and storage resources according to market (and thus, if the market design is done correctly) needs. Such software will also allow customers to lower their energy costs by becoming partially self-sufficient. It will also enable completely new business models, even helping generate revenues that offset at least part of their deployment cost.

Harnessing New Value Pools

In India, Greenko's next-generation energy utility promotes energy security and independence by substituting imports of oil & gas and long-term financial stability by offering no-escalation-of-electricity prices. There is a growing preference amongst B2B customers for renewable energy, combined with energy storage as the companies are committing to deeper cuts in GHGs to reach Net Zero Emissions by 2050. The sub optimal coal based captive power plants now can be replaced by firm and flexible energy from next-generation electricity utilities of Greenko.

Increased share of RE is pushing greater intra-day variations for baseload coal, demanding more flexibility from RE generators. Around 40 GW of generation capacity based on coal in India is generating power at a cost of more than Rs.4.20/kWh and Greenko's firm RE i.e RE assets combined with pumped hydro storage and intelligent energy platform can potentially compete with such capacity. Greenko is harnessing the potential of the Green Hydrogen market by using the low-cost RE power for green hydrogen production. The produced green hydrogen is then planned to be transported to the consumer market in the form of Zero carbon molecules.

The electric grid of the future would be following the five principles:

- Empowering the consumer while maintaining universal access to safe, reliable electricity at a reasonable cost;
- Demarcating and protecting the commons;
- Aligning risks and rewards across the industry;
- Creating a transparent, level playing field; and
- Fostering open access to the grid

These principles would help future-proof the grid with the flexibility, resilience, and scalability to meet future needs. Further, the attributes for the future distribution edge platform will be:

- Network efficiency, resilience, and reliability;
- Level playing field for all resources;
- Innovation;
- Transparent incentives to promote technologies that result in social benefits;
- Minimize complexity;
- Support the harmonization of business models.

Three pillars of Greenko, RE, Storage and Zero Carbon Molecules will harness multiple value pools in the 'future' distribution edge platform

Value Creation Pools

Due to new business models that involve IRESP, Green Hydrogen production, and Zero carbon molecules synthesis, the new value pools in different segments of the value chain will be;

Different Segments

Generation	Transmission and Distribution	End Consumer
○ RE Smoothing	○ Frequency	○ End-consumer Power Quality
○ RE Firming	○ Regulation	○ Reliability (e.g., Backup, UPS)
○ Curtailment	○ Voltage	○ Increase of Self consumption (e.g., Residential Solar + Storage)
○ Avoidance	○ Regulation	○ Green Hydrogen as a fuel
○ RET/RTC	○ T&D Investment	
○ RE Arbitrage	○ Deferral	
○ Energy Storage	○ Wholesale	
○ Green Hydrogen Production	○ Arbitrage	
	○ Zero carbon molecules as an energy carrier	

Next-Generation Green Energy

Greenko's new generation energy utility is designed to harness vital value pools proactively by developing state-of-the-art multi GW scale Integrated Renewable Energy Storage Projects 'IRESP'. The group has already initiated the development of Integrated Renewable Energy projects with a total capacity of 48.98 GWh across 4 states of India. The IRESPs are in the pre-construction phase with a total capacity of 15.82 GW and are located in the states of Andhra Pradesh, Karnataka, Rajasthan, and Madhya Pradesh. The IRESPs are expected to harness the power of solar and wind resources with digitally connected storage infrastructure to provide scheduled and flexible power to the grid. Please refer to chapter 4.4, for more details concerning the specifications of all the IRESPs.

The IRESPs are combined with Intelligent Energy Platforms to offer flexible renewable energy that can harness many value pools in the electricity system. The business model is a 'sharing platform of renewable energy storage combined with green hydrogen production and transportation of the same in the form of green ammonia or synthetic natural gas. This offers multiple services to RE generators, grids, distribution companies, refineries, fertilizer companies, traders, gas companies, and various consumers throughout the business model.

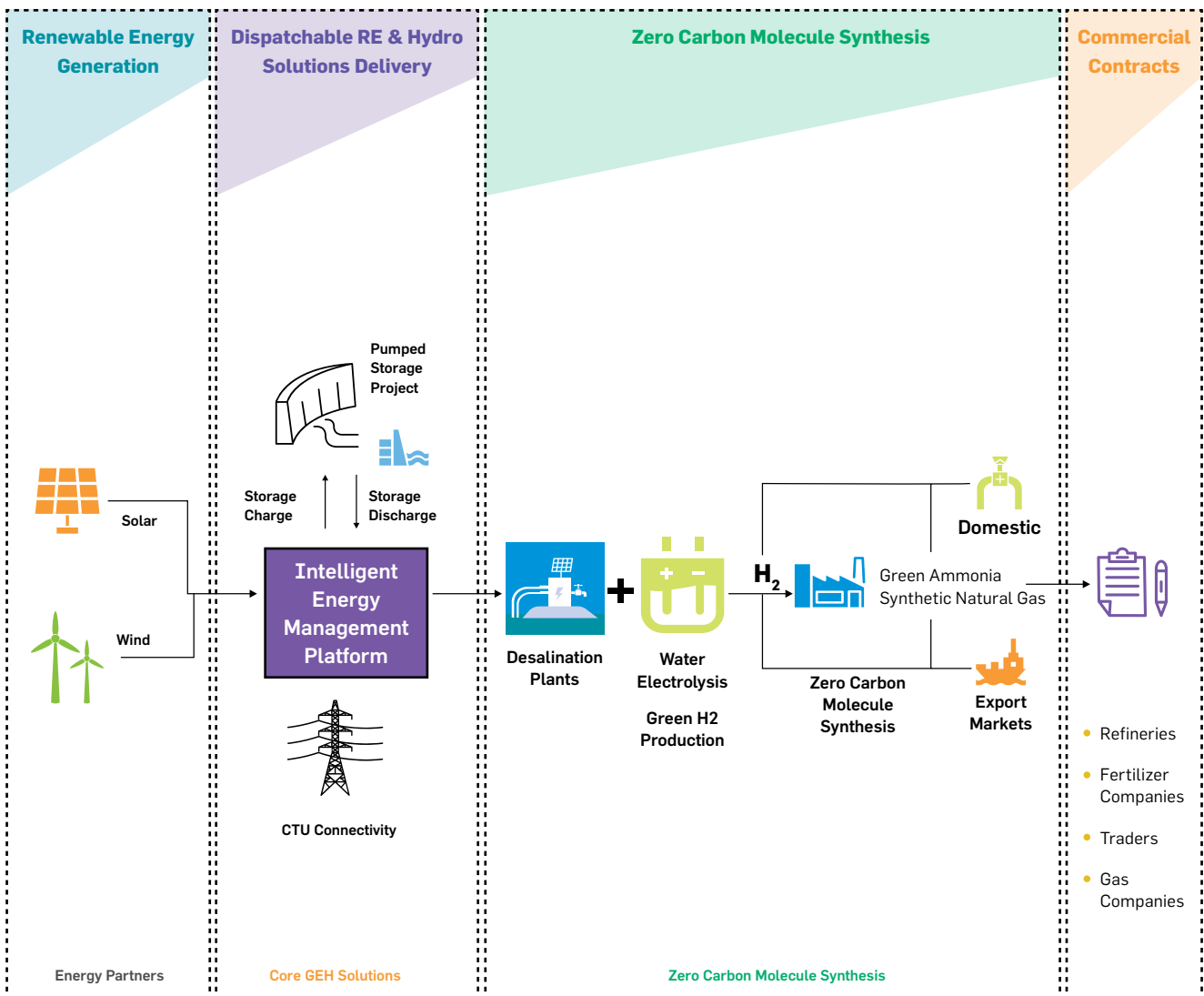
Converting hydrogen into other energy carriers, such as ammonia or synthetic hydrocarbon fuels, involves higher costs but in the case of fuels it also allows easy transportation and storage of hydrogen, and it is compatible with existing infrastructure or end-use technologies (as in the case of ammonia for shipping or synthetic kerosene for aviation).

New Energy Value Pools

Greenko's Green Hydrogen and Energy Carrier Architecture

The unique pumped hydro storage systems would enable dispatch of the lowest cost RE power for Green Hydrogen Production and it could be further synthesized into Zero carbon molecules and transported to the market in the form of green ammonia or synthetic natural gas. The overview of the four major stages involved in the business model is presented below:

Green H2 and Energy Carrier Architecture

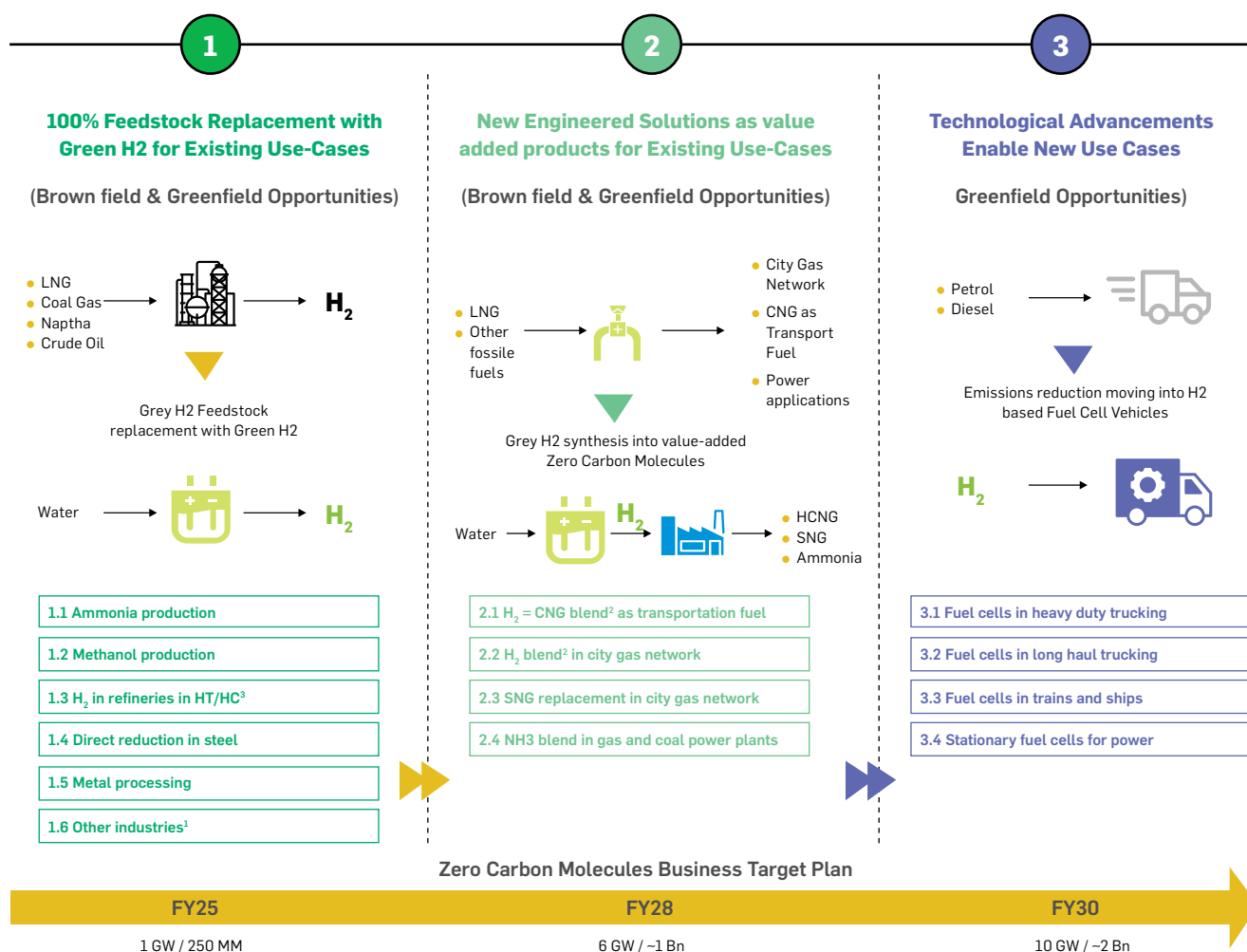


The proposed business model aims at developing sustainable revenue-generating assets in the long-term from which Greenko has estimated to achieve 50% EBITDA from clean energy services and technology business solutions combined.

Zero-Carbon Molecules Use-Cases

The business model will majorly help in targeting three markets:

1. Green Hydrogen production through water electrolysis using RE power would help in replacing the grey and blue hydrogen production methods.
2. Synthesizing the produced Green Hydrogen into value-added Zero carbon molecules that could be transported and stored as required.
3. The technological advancements would enable the usage of Hydrogen as fuel in Fuel-cell electric vehicles (FCEVs) in the future.



1. Other industries include – Edible oils, electronics, diamond cutting, power plants, glass industry 2. A 5% H₂ blend (by energy) with natural gas for city gas distribution 3. HT – hydrotreatment, HC—Hydrocracking

07

Performance Based Value Creation

Financial Capital

Manufactured Capital

Intellectual Capital

Human Capital

Social & Relationship Capital

Natural Capital





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Financial Capital



The flexibility and robustness of our projects are attributed to the customized SOP's which are designed to address the real-time operational challenges enabling us to deliver uninterrupted services. The vendor partners resonate well with our sustainability focus as demonstrated by their deep understanding of our business challenges getting reflected into robust contract completion mechanisms. Our instruments like green bonds have augmented in financing green projects while maintaining the fixed income for stakeholders.

- Selva H Thiraviam
VP, F&A



Image to come

Strategic Approach



Financial planning and Analysis is a crucial aspect for any organization, more so in the year of the pandemic. A strong internal structure to assess and mitigate risks, follow up due diligence, legal compliance and appropriate safeguards for credit has allowed Greenko to emerge unscathed during FY 2020-21.



- Venkateswarlu Tedla
Senior Vice President -
Project Finance

Greenko's core business strategy has been to focus on decarbonization, digitalization, and decentralization of the energy sector. To this end, it intends to transform its business models from Greenko (GKO) 2.0 – which involved decarbonization intending to increase renewable energy penetration, making renewables more competitive, and integrating renewable energy into the grid – to GKO 3.0, which involves digitalization with a focus on promoting RTC renewable energy. Following this, Greenko aims to move on to GKO 4.0, involving decentralization, Transitioning to Zero carbon molecules, Investments in new business models along the energy value chain, including customized Green Hydrogen and ammonia solutions, Electrolyser technologies, Creation of energy networks, and Network management.



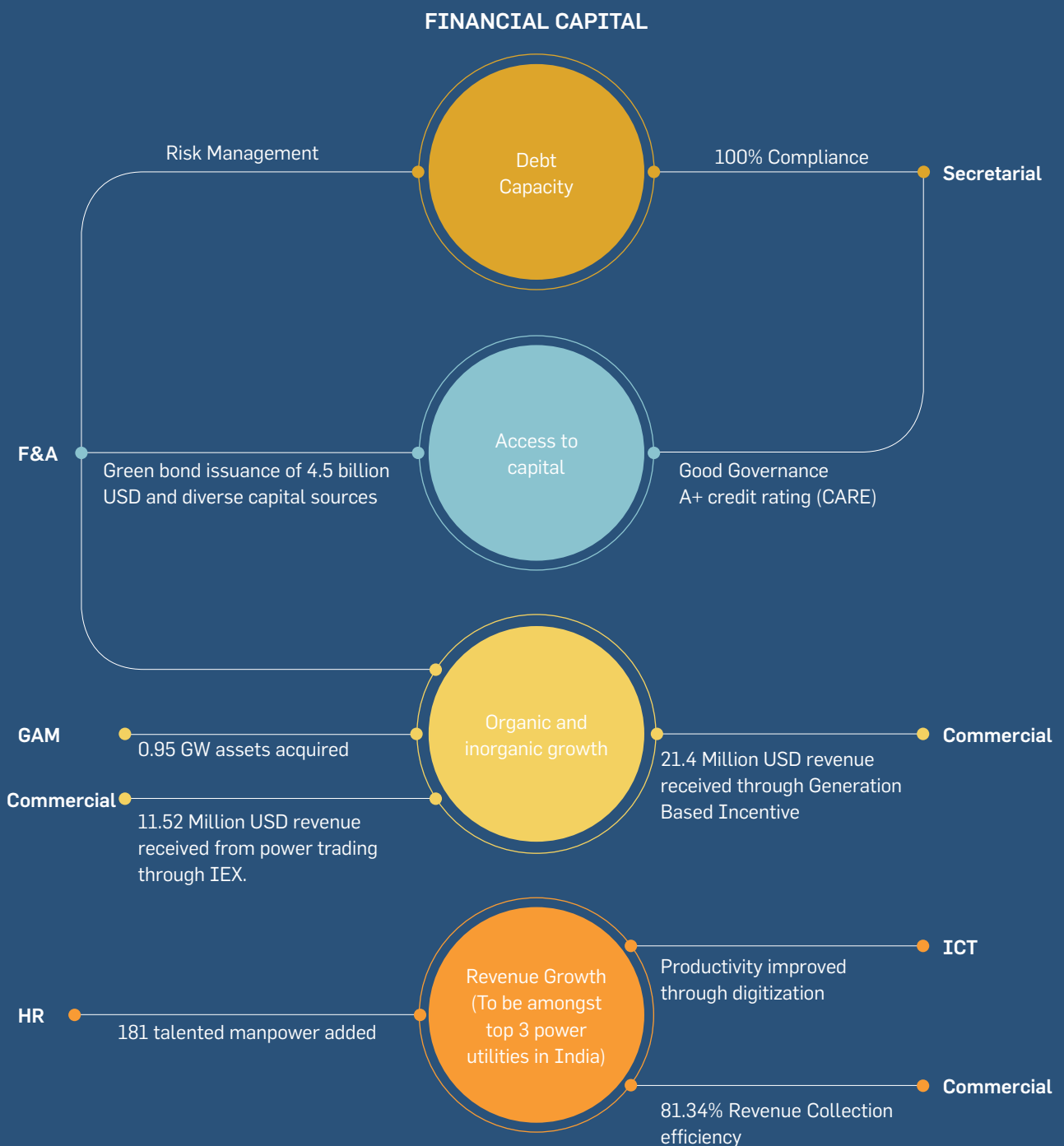
Financial Capital

Strategic Focus Area	Strategic Approach	KPIs
Debt Capacity	Improve credit rating	Credit Rating Fund flow statements
Access to capital	Harness diverse avenues of funds Pursue appropriate M&A opportunity	Leverage or Diversity of fund sources
Organic and inorganic growth	Pursue high growth through healthy CAPEX deployment in new projects delivering flexible and firm power	Share of funds deployed for organic to inorganic growth
Revenue Growth (to be amongst top 3 power utilities in India)	Maintain CAGR above 40% till 2023	CAPEX to revenue ratios Ratio of firm power delivered to CAGR Monthly variance in revenue
Seamless fund flow to the targeted objective	Diversify across decarbonization, digitalization, and decentralization technologies to generate firm, RTC electricity	Top-line ranking amongst power utilities in India
Climate Change Risk Assessment and Impact mitigation	Improve quantum and stability of revenues though providing quality, reliable, and firm power	Percentage of revenue earned from delivering power-as-demanded



To pursue this transformation, Greenko has to mobilise investments of about 15-20 billion USD in the coming 3-5 years. This requires Greenko to reinforce its efforts to pursue strategic focus areas as outlined below:

Integrated Value Creation in Financial Capital



Financial Capital

Journey so far

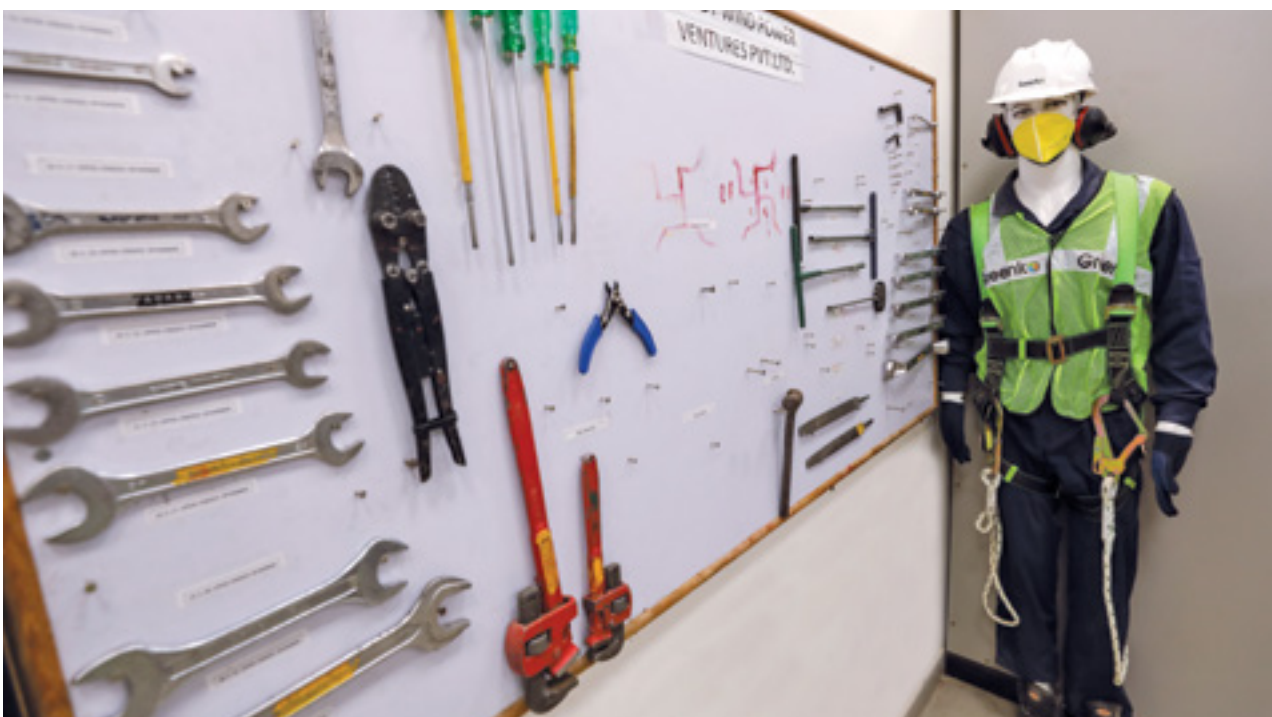
Greenko has performed well in the current reporting period, by consistently developing and reinforcing financial strength in line with its strategic approaches viz., pursuing revenue growth, organic and inorganic growth, enhancing debt capacity, and access to capital.

In FY 20-21, Greenko has increased installed capacity to 7.5 GW, thus scaling up the installed generation portfolio. This scale of expansion was achieved by acquiring nearly 0.95 GW of the renewable assets in FY 20-21.

Currently, at the GKO 3.0 stage, Greenko anticipates significant investments in IRESPPs to achieve RTC renewable energy. In this stage, the company has continued to focus on investments in the O&M of its assets through digitalization. In July 2020, Greenko and ONYX InSight signed an agreement to retrofit and modernize 500 wind turbines for efficient data collection and analysis. Greenko is also active in the open-access space (B2B segment). In 2020--21, the company sold 7.19% of the power generated through

this route. Dealing with energy customers directly is a step towards transitioning to decentralization and is also the focus of GKO 4.0.

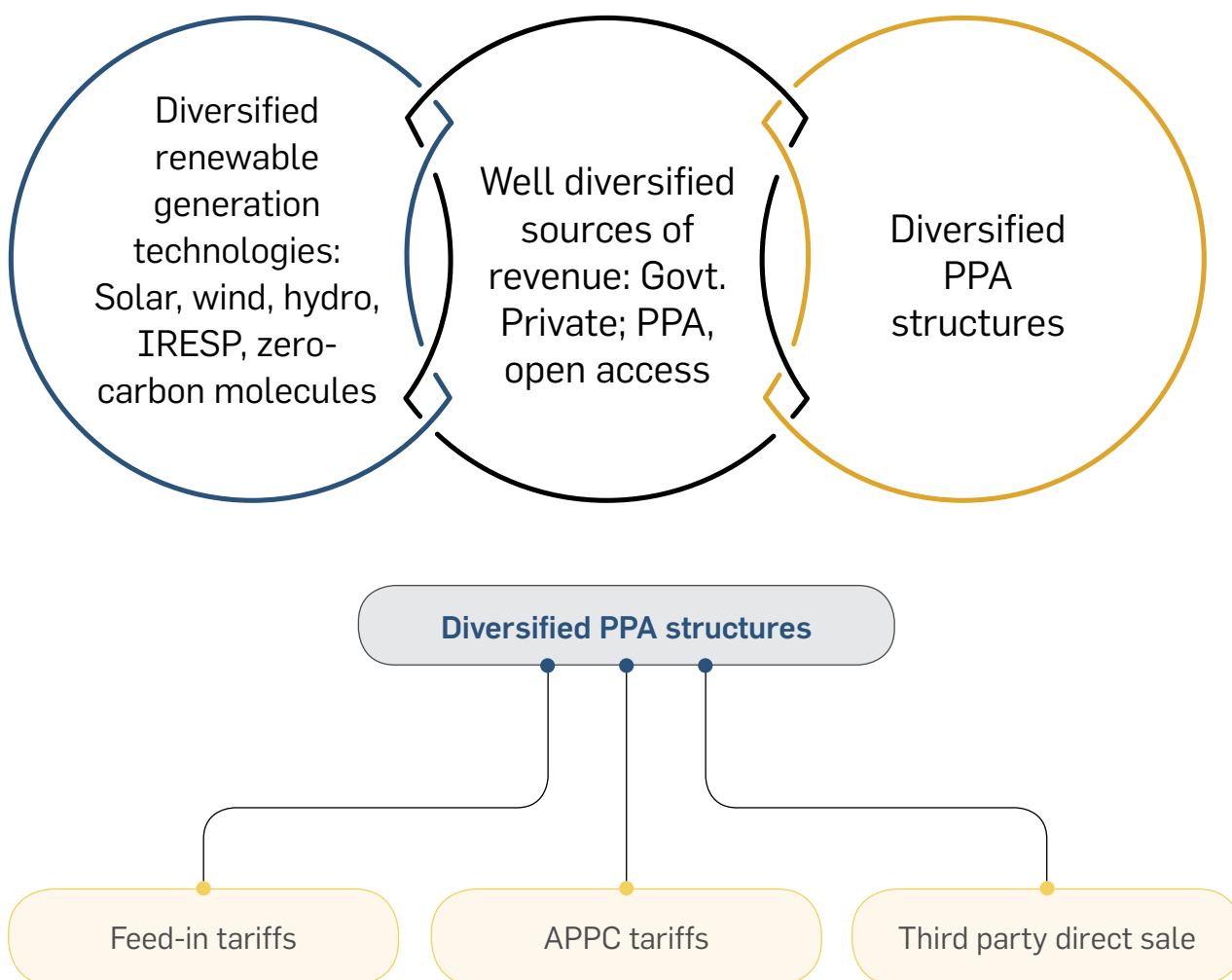
Be it organic and inorganic growth, diversification in sourcing finance and investments, new business strategies, and investment in IRESPPs to diversify its project portfolio, Greenko has tried to evolve itself continuously and adapt to changing business dynamics. In FY 20-21, the Group's growth has been affected by the ongoing Covid-19 pandemic and competition from the increasing number of players in the renewable energy sector. Despite these challenges, however, Greenko is still strongly positioned in the country's renewable energy sector.



Diversified Source of Funds

Greenko has maintained a good credit rating and has thereby, remained highly attractive to potential investors. It has been able to tap diverse sources of funds and has positioned itself among the top three renewable energy generators in India. Greenko has a well-diversified source of revenue – diversified renewable generation technologies and diversified PPA structures, including (i) Feed-in tariffs, (ii) APPC Tariffs, and (iii) Third-party direct sales.

Diversified source and renewable technologies



Financial Capital

Diverse PPA Structures

The different generation technologies help to peak generation in different seasons of the year. The diversity of PPAs and the types of customers served due to the reduction of regulatory and payment risks have ensured continuous cash flow for operational projects. Further, due to the different capital avenues that Greenko accesses, it can raise finance at competitive terms.

KPI	FY 2020-21	FY 2019-20	FY 2018-19
Saleable electricity (Excluding Import Energy and line losses)	8861.67 MU	9969 MU	7,379 MU
Sale of electricity to utilities (PPA / Feed-in tariff)	7873.50 MU	7879.18 MU	6,514 MU
Sale of electricity through Wheeling and banking (direct sale to consumers]	637.34 MU	620.01 MU	509 MU
Sale of electricity through exchanges	350.84 MU	403.54 MU	356 MU
Revenue received through GBI (Generation Based Incentive)	21.4 Million USD	25.7 Million USD	17.1 Million USD

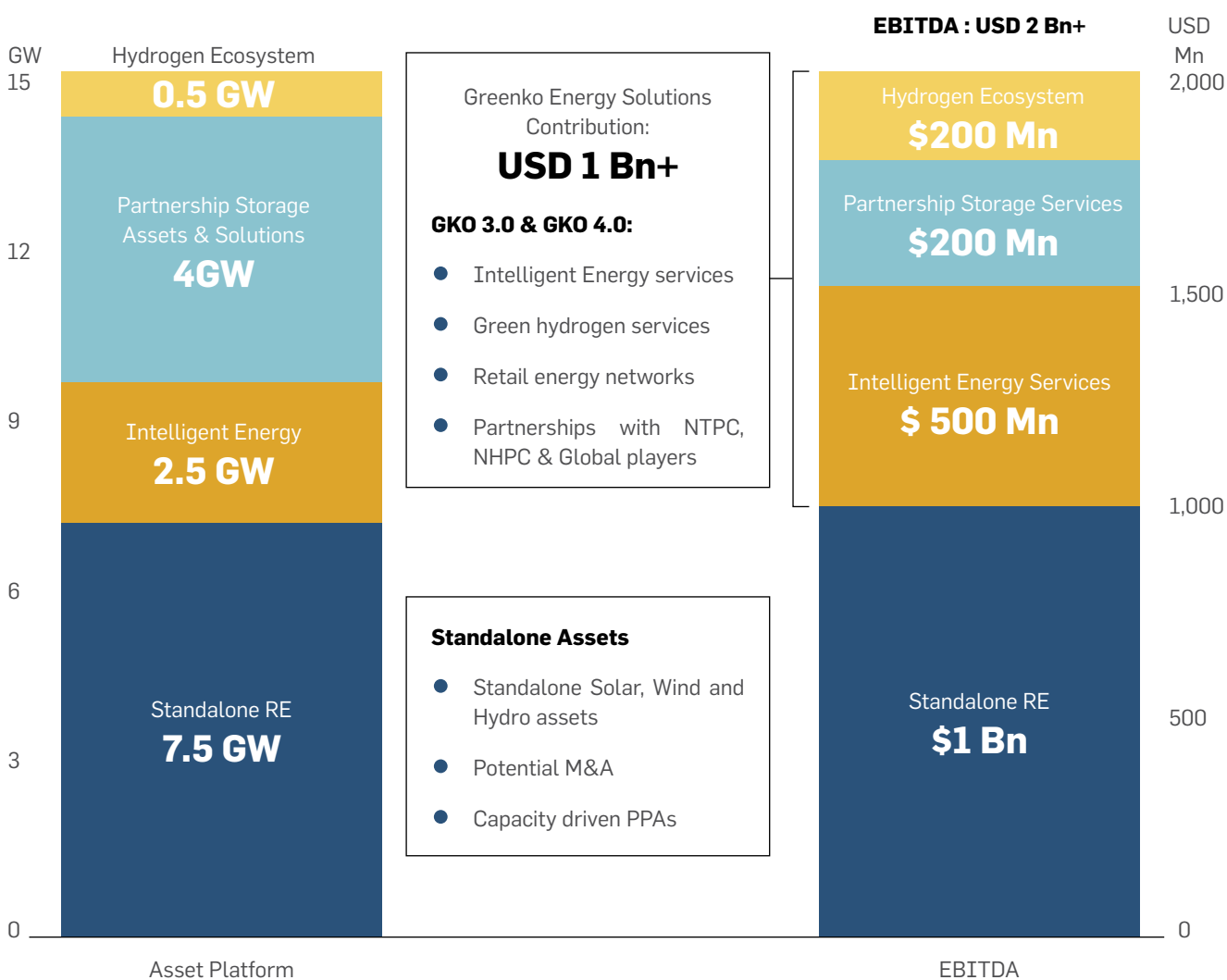
Overview of Financial Performance

KPI	FY 20-21 (US Dollar millions)	FY 19-20 (US Dollar millions)	FY 18-19 (US Dollar millions)
Profit before tax	-155.0	64.8	85.4
Profit for the year	-208.2	21.5	38.8
Earnings before interest, depreciation, and amortization (EBITDA)	430.7	562.4	470.5
Revenue			
Total Revenue	594.9	660.9	485.1
Revenue from wind energy projects	316.1	379.4	244.8
Revenue from solar projects	201.6	212.3	174.7
Revenue from hydro projects	76.6	67.5	63.3
Other operating income	2.5	1.6	0.6
GBI Revenue	21.4	25.7	17.1
REC Certificates	0.1	5.1	2.2
Expense			
Employee Benefit	61.2	28.6	14.9
Cost of material and power generation expenses	57.0	56.2	42.6
Other operating expenses	38.6	24.3	28.6

(GRI 201-1)

Greenko anticipates to achieve 50% EBITDA from the clean energy services and technology business solutions combined. The Group has come up with a full build-out plan until FY 2024-25 which is presented below:

Greenko's financial growth plan – FY 2024-25



Credit Ratings

Credit Analysis and Research Limited (CARE) for Indian debt instruments gave Greenko A+(CE) rating for FY 20-21

Moody's upgraded Greenko Dutch to BA1 reflecting its standalone credit quality and a two-notch

Fitch upgraded Greenko Energy credit rating to 'BB with stable outlook' as June 2020

CRISIL upgraded Greenko credit rating to 'BBB' for FY 20-21

India Ratings and Research awarded Greenko 'IND AA+(CE)' for FY 20-21

Financial Capital

Sustainable Financing through Green Bonds

Green bonds are fixed-income financial instruments. The issuer of these bonds gets the capital to finance green projects while investors receive fixed income via interests. Green bonds raise funds for new and existing projects which deliver environmental benefits, and a more sustainable economy.

Greenko has so far raised around \$4.5 billion through foreign and domestic green bond issues. The funds are diligently deployed as per the use of proceeds specified and follow the process for evaluation and selection. Greenko ensures that impact assessment and allocation reporting obligations are being fulfilled as required by the green bond framework.

Greenko is well aware of the importance of ESG factors when it comes to financing. The company believes in financing projects that respect certain environmental criteria.

- In November 2017, Greenko raised Rs 30 billion through the sale of onshore rupee-denominated bonds which will mature in 2027.
- In July 2019, Greenko Energy Holdings raised \$950 million through green bonds. The issue was oversubscribed by over three times and was one of the largest green bond issues by a renewable energy company.
- In March 2020, Greenko has raised \$940 million through the green bond issue priced at 3.85%. The bond was rated 'Ba1' by Moody's Investors Service. The demand for the bond exceeded \$2.5 billion and the proceeds from the bond sale are to be used for refinancing existing debt facilities.



Sustainable Financial Partnerships

Greenko believes sustainable development goals can only be achieved through partnerships. Greenko Energies Pvt Ltd (Greenko) and NVVN have entered into an MOU with an intent to explore the possibility of the development of Renewable Energy (RE) based RTC, flexible and dispatchable power supply offering based on the integration of RE sources and Pumped Storage projects.

In March 2019, Greenko signed an agreement with Siemens Financial Services (SFS), the financing arm of Siemens AG, for an equity investment in its 200 MW Poovani Wind Power project in Tamil Nadu. As per the agreement, SFS has agreed to take a 46 % equity stake.

Greenko has received equity from GIC and the Abu Dhabi Investment Authority, both key stakeholders in the company. In September 2020, ORIX invested \$980 million in Greenko Energy Holdings. With this investment, ORIX has a 21.8 % stake in Greenko. ORIX has integrated its existing wind energy business with Greenko, which includes projects with a cumulative capacity of 873 MW.



Financial Capital

Calibrated Inorganic Growth

Greenko's inorganic growth is guided by getting the right stakeholders involved at the right time.

In November 2016, the Group acquired SunEdison's 587 MW wind and solar portfolio in India for \$42 million and debt of \$350 million. During 2017-18, Greenko acquired 100% of the shares and voting interests in Karvy Solar Power Limited, New Era Enviro Ventures (Mahbubnagar) Private Limited, Premier Photovoltaic Medak Private Limited, Pennar Renewables Private Limited, Proeco Energy Private Limited, Saimeg Infrastructure (Mahbubnagar) Private Limited and Sharp Cleantech Infra Private Limited, from different developers.

After these successful acquisitions, in October 2018, Greenko acquired 385 MW of wind power projects from Skeiron Green Renewables at an enterprise value of about \$0.5 billion. During the same month, it also acquired Orange Renewables for approximately \$1.02 billion, which included \$680 million of debt. The equity infusion in the transaction was approximately \$340 million. Greenko took over 907 MW of operational solar and wind projects from Orange Renewables and over 500 MW of under-development assets.

Post merger or acquisition integration is very swiftly and sensitively managed. The finance, operations and human resources are seamlessly integrated in all instances till date. In most instances mergers have delivered accretion of value .



Circular and Regenerative Approach

The organization aims to harness overall organic and inorganic growth by embracing circular and regenerative thinking as a way of business.

Greenko's Integrated Renewable Energy Project, which is designed to address the inherent infirmity of wind and solar energy by employing the innovative solutions of Pumped Storage Plant (PSP), is an important component of our circular approach. These projects are designed as sharing platforms of storage and other electricity system services.

Under the circularity and regenerative thinking approach, Greenko aspires to explore and employ innovative ideas and action plans, such as 'invest-generate-and-consume', 'harness increasing electrification', 'solutions to non-electric use sectors' - which are adjacencies to the present business



Managing Climate Change Impacts – Risks and Opportunities

Greenko's three pillars- Renewable Energy, Storage and Zero Carbon Molecules are building blocks of transition towards a low carbon economy and to meet the target of restricting the average global temperature rise to 2°C and further ambition Paris Climate Agreement to limit the global warming to 1.5 degrees, to minimize the catastrophic impacts of climate change. However, like every other sector, the renewable energy sector is also susceptible to the impacts of climate change as the entire supply chain of the renewable energy system is significantly vulnerable to climate variability.

changes in precipitation leading to flooding and drought, sea-level rise, etc. have the potential to adversely affect the generation and transmission infrastructure of Greenko as well as the asset's productivity.

Physical Climate Risks

Greenko's assets face the physical risks of climate change such as extreme weather events which can range from droughts to tropical storms. The physical risks have the potential to directly damage the organization's assets and indirectly disrupt the supply chain due to the impact on production facilities, sales, and workforce.

Transition Climate Risks

The transition risks of climate change are the risks that could arise from the process of adjusting to a low carbon economy such as changes in policy, technology, market, and reputation.

Regulatory Risks

In the drive for deep decarbonization and tackling the adverse effects of climate change, India will have to reform the energy policy ecosystem and Greenko looks at these upcoming changes in public policy as an opportunity. To be on the top of these evolving policies, Greenko continuously engages with regulatory processes through proactive participation in discussions and public policy advocacy with both National and Local regulatory bodies viz., MoP, MNRE, MOEFCC, and CERC providing constructive feedback regarding policies and regulations.

The electricity production potential of renewable energy is critically impacted by the physical risks of climate change, due to its dependence on climate conditions. A shift in climatic conditions resulting in temperature extremes, heat waves, extreme

(GRI 201-2)

Financial Capital

Technology Risks

Climate change will drive the demand for RE, storage systems, and zero carbon commodities and services including transportation. While R&D will advance the possibilities, increased application of innovative methods will bring down prices. The relative costs of alternatives in storage, carbon capture and utilisation and hydrogen and other zero carbon molecules, with similar or overlapping functional capabilities are and will be evolving. Significant technology action leading low or zero carbon pathways is likely to happen during this decade. Greenko is in a position to mitigate these risks through its diverse portfolios of technology options and the proposed business model of zero-carbon molecules.

Market Risks

Along with increasing the power consumption from renewable energy sources, consumers are also becoming aware of the need to reduce energy consumption and are keen on making a shift towards an energy-efficient and low carbon lifestyle. In addition, climate changes will alter energy demand patterns across geographies and times. This would eventually lead to a risk of reduced demand and uncertainty in the market, causing an increase in operating costs. Greenko plans to mitigate this transition risk through the IRESP model that would enable in delivering firm, reliable, on-demand power.

Reputational Risks

The growing complexity of the electricity system and the increased frequency and seriousness of adverse climatic events requires constant monitoring of assets for ensuring optimum performance. The occurrence of malfunctions, potentially of a widespread nature, could increase Greenko's reputational exposure to public authorities and stakeholders in general. Greenko mitigates this risk by constantly monitoring its operational performance.



Looking Ahead

Greenko believes in creating shared value for all its stakeholders. The company focuses on its core business strategies and activities. This enables the company to achieve business objectives. It focuses on decarbonization, digitalization, and decentralization of the energy sector. The Group plans to do so by responsible investing and building long-term sustainable partnerships to gain sustainable returns (financial and socio-environmental).

Greenko plans to transition from 2.0 to 3.0

This involves decarbonization with the aim of increasing renewable energy penetration, making renewables more competitive and integrating renewable energy into the grid

It further plans to move forward from 3.0 to 4.0.

The stage 3.0 involves digitalization with a focus on promoting RTC renewable energy

Greenko further plans to move to its last stage 4.0

This involves decentralization, Transitioning to Zero carbon molecules, Investments in new business models along the energy value chain, including: Consumer focused Green Hydrogen and ammonia solutions, Electrolyser technologies, Creation of energy networks Network management.

Greenko has an operational portfolio of ~7.5 GW and pipeline of ~15 GW in Wind, Solar, Hydro and Energy Storage assets spread across 15 states in India. Further, its plans for Zero Carbon Molecules also are aggressive. Accordingly, the company looks forward to invest 20 billion USD in the next 3-5 years in the pursuit of energy transition interventions crafted for India.

To actualise Greenko's ambitious plans it will widen its investor base, tap into responsible/green/climate/ESG finance, focus on risk management and governance. While its efforts on cost optimization at every stage has to be pursued, through policy advocacy it has to monetise multiple values that its business delivers. Greenko believes that through right technological choices at right times, the leaders of energy transition will be distinguished.

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Message from COO-Projects

Dear Stakeholders,

The world economies are transforming towards new, low-emission pathways and India is well positioned to play a leading role in this process globally. Also, through its Intended Nationally Determined Contributions (INDCs), India has pledged to reduce its emissions significantly (Paris Agreement).

To meet the global ambition of Net-Zero 2050, firm, schedulable, dispatchable renewable power is essential for deep decarbonization.



Long-duration, Stand-Alone, Off-Stream, Closed Loop Pumped Storage and Intelligent Energy Platform is the best solutions for the same.

Wind and Solar, are the lowest-cost sources of new energy, however, their inherent infirm and non-schedulable nature presents a huge challenge for integrating large RE capacities, while maintaining the grid stability. To overcome this challenge, we have devised unique pumped storage (PSP) platform that enables lowest cost dispatchable RE power.

The Integrated Renewable Energy Storage Project (IRESP) will harness the cost-effective variable power of solar and wind resources with digitally connected storage infrastructure to provide scheduled and flexible power to the grid. Our IRESPs are designed to provide the necessary scale (large volume of energy storage) and have a long-life cycle resulting in the lowest cost of delivered (Schedulable Power On-Demand) SPOD energy over the life of the projects. Our agile workforce has come up with unconventional ideas for an intelligent in-house solution for integrating infirm and non-schedulable renewable energy and to meet schedulable power demand.

The Pinnapuram Integrated Renewable Energy Storage Project (IRESP), the first one to begin execution amongst many such projects in the pipeline, is the World's First & Largest Gigawatt Scale integrated project with solar, wind, and pumped storage components. The IRESP Project can meet the dynamic needs of DISCOMs/STUs viz., Round The Clock (RTC) Base Load Energy, 18 Hours Base Load Energy as per Demand or 12 Hour Peak Load Energy as per demand. Further, novel features of our IRESP design are:

- Optimal capacity utilization of the renewable energy components of the IRESP viz., Solar & Wind.
- Operational flexibility, faster active and reactive power adjustment, quick reaction time & higher efficiencies to meet the grid requirements.
- Fixed Speed synchronous machines
- Closed loop and off-stream design.

We have upskilled and reskilled our workforce in collaboration with qualified and experienced NICMAR faculty on all the aspects of IRESP viz. quality, safety, and construction project management. Further, Greenko Load Dispatch Center (GLDC) will be equipped with Energy Management System along with Auto Generation Control (AGC) & Intelligent Demand Supply Management System (IDSMS) designed to monitor and control solar, wind and hydro generations in the system to match the load requirement. The Forecasting and Scheduling modules supported by Artificial Intelligence (AI) and machine language (ML) will compare the data received from forecasting & scheduling and real time data from generating plants, and will generate schedule for PSP. The redundant controllers at PSP receive the schedule generated from GLDC to ensure continuous supply of contracted power to the designated point of common coupling (PCC) at power evacuation grid substation.

We have robust inhouse engineering team in Civil, E & M and Transmission wings who have done all the preliminary engineering required for DPR and all initial works including land requirement, site selection and sizing of all major components. In addition to execute this IRESP, we are working with very experienced global consulting companies such as, AFRY for the detailed design of all the civil works and Tata consulting Engineer, and EDF for review of both Civil E & M and Transmission designs. To spot and partner with the best global resources and expertise, we have followed International Competitive Bidding and adhered to the guidelines of IFC. The inhouse Contracts and Procurement (C & P) team has

developed a system to take care of bids, right from preparation of international competitive bidding to finalisation of the contracts. The systems and processes developed during this procurement are now standardized for deployment in upcoming projects. Further, our project management teams have designed the SOPs to address the challenges of balancing flexibility and robustness. Our partnerships with the vendors are executed in a twinning mode, to learn from each other and to make the knowledge and skill transfer smoother at the closure of the contract. Additionally, Greenko has also tied up with Austria-based international technology group Andritz for the supply of Electro-Mechanical equipment for the 1200 MW (6 Units) Pinnapuram pumped storage plant in Andhra Pradesh.

The PMC team of Greenko takes care of planning, monitoring and the supply chain management of the project including plant and machinery requirement of the project, duly lassoing with the execution team. The execution team prepares the work schedule and coordinates with different work fronts including the interface issues and ensures smooth flow of work as per the schedule.

The QA/QC teams diligently established good practices of quality standards in building and operating energy assets while supporting the Strategic Business Units to deliver their business plans. The teams are proficient in handling power sales, project financing, construction, insurance, equipment, and supply which makes a unique value proposition. A monthly QA report on all critical project activities is shared with Leadership team. Going forward, we will decentralize and digitalise our QS and QAQC processes and establish Advanced Central Labs at each cluster. As we move from GKO 3.0 to GKO 4.0, digitalization will provide a unified platform for on-site teams, project EPC and leadership to have real-time data on project monitoring and progress.

While the construction of our first pumped storage at Pinnapuram is underway, we have also developed significant expertise in pumped hydro components and are working towards the final product. Simultaneously,

we have in our construction pipeline 4 IRESP projects and despite the delays that have already happened in regulatory processes, we will strive hard to complete these projects within the time schedule. We realise that our success in this endeavor is contingent upon active cooperation of all stakeholders including employees, suppliers, regulators, public authorities, and communities. A multi-stage evaluation process is conducted by the Board during conceptualization of new projects that includes ESIA and ESMS. We call upon our stakeholders to actively engage with us for a successful joint endeavor to transform the electric system in India and contribute toward Global low carbon growth.

As we look ahead towards the execution of our first IRESP project, we have set ourselves on stringent execution timeframes. We have lost some time in the regulatory process, but we are hopeful to complete the process within the stipulated time. The support and cooperation of our stakeholders in this commitment now is more important than ever before, together we can actively engage and successfully transform the electric system in India

Adishesu Gopalam
Chief Operating
Officer-Projects

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Strategic Approach

To preserve and enhance operational asset value and project execution integrity, Greenko has adopted the following effective strategic approaches viz., Excellence in Adoption and Management of Assets and Projects; Contract and Procurement Management; Quality Assurance and Quality Control; harnessing Energy Storage Value Pools and Transition towards the Circular Economy. The performance against each strategic approach is monitored, measured, and boosted year on year, using established key performance indicators. The review of performance on operational capital demonstrates Greenko's preparedness for a smooth transition to GKO 4.0, to be able to generate 30 billion Units of electricity by 2023.



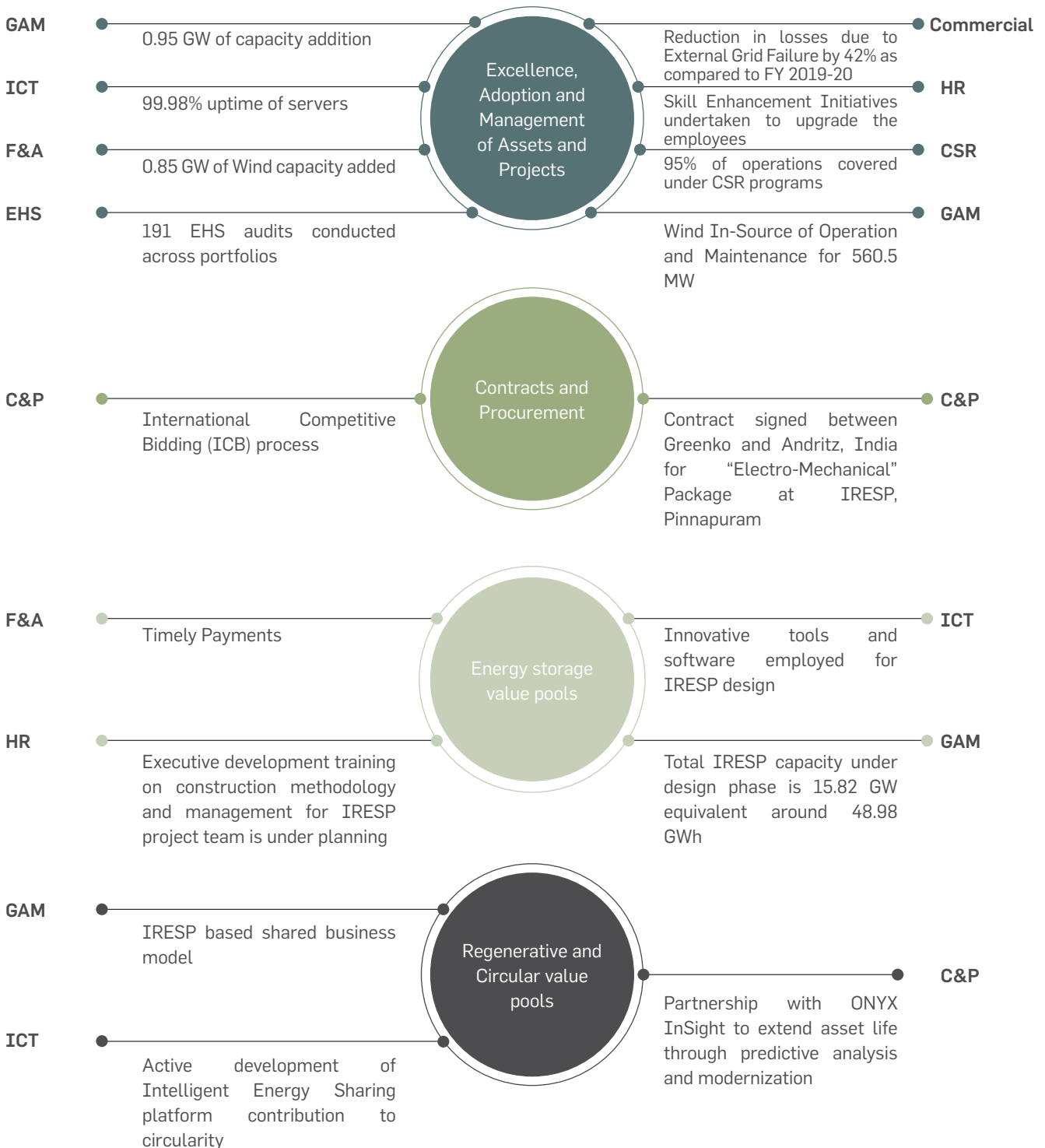
Greenko's operational business strategy in RE and Storage assets, include:

- Decentralization and Digitization of the entire GEP and GAM processes
- Enhancing automation to eliminate gaps in GEP and GAM processes
- In-house Advanced Central Labs for project clusters as per IS/BS/ASTM/ACI/MORTH standards
- Continue skill enhancement of the GEP and GAM team through training.
- Continue to identify and develop documentation for critical activities and new businesses.

Strategic Focus Area	Strategic Approach	KPIs
Excellence, Adoption, and Management of Assets and Projects	Deploy digitalization for real-time information and predictive/adaptive O&M	Capacity addition of 0.95GW 9745 GWh of total electricity generation achieved Reduction in losses due to External Grid Failure by 42% as compared to FY 2019-20 Wind In-Source of Operation and Maintenance for 560.5 MW capacity Quality Assurance and Control in IRESP
Value Creation and Maximization	In house capability and infrastructure for O&M	Energy Efficiency Initiatives and Value Maximization Programs improving productivity and cost optimization
Contracts and Procurement Management	Execute projects with the best technology-enabled systems	International Competitive Bidding (ICB) for IRESP New specific processes of C&P developed for IRESP Contract signed between Greenko and Andritz, India for 'Electro-Mechanical' Package at IRESP, Pinnapuram
Energy Storage Value Pools	Design and deploy utility-scale round-the-clock RE generation with the flexibility to harness all value pools in the electricity system Sharing models of storage and Intelligent Energy Platforms	Licensed to build and operate 48.98 GWh storage capacity of IRESP across 4 states. IRESP with a total capacity of 15.82 GW is under the design phase. IRESPs are planned to have digitally interconnected storage infrastructure
Transition towards Circular Economy	Reengineering and refurbishing of assets	Sharing business model harnessed through IRESP sharing platform Circular design and equipment choices to enhance asset lifecycle End of Life asset management strategy

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Integrated Value Creation in Manufactured Capital



Journey so far

Greenko is in pursuit of digitalizing and decentralizing its energy assets in alignment to accelerate decarbonization and harness newly emerging value pools.

In the current reporting period, Greenko continues to (i) improve its operating efficiency by intense deployment of digitalization (ii) renovate existing assets (iii) deploy people, processes, and systems to standardize operational responses, and (iv) develop new skills, systems, and partnerships for focus on Pumped Storage with Intelligent Energy Platform (v) invest in cutting edge technologies and processes, to power Greenko's transformational journey towards GKO 4.0.

To achieve and maintain operational excellence, Greenko's Project and Asset Management team is constantly making efforts to change, rethink, reinvent and reposition how people perceive quality, whether it pertains to construction or material.



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Excellence, Adoption, and Management of Assets and Projects

The transformational journey of Greenko, right from GKO 1.0 to GKO 4.0 is in synergy with the transitioning landscape of global energy systems, which is fueled by the 3D view i.e., Decarbonization, Digitalization, and Decentralization. Greenko's business operations are more focused on accelerating the transition of the energy systems by increasing the integration of renewable energy in the grid and making it more reliable by incorporating energy storage solutions.

Within this scenario, Greenko has made a significant investment in the Integrated Renewable Energy Storage Projects (IRESP). In addition to this, Greenko is constantly striving to improve the operational efficiency of the existing assets by deploying modern digital solutions and value maximization programs. The operating efficiencies and effective management of generating assets are crucial to delivering flexible, schedulable, and reliable power to the stakeholders and generating maximum returns on the investment.

Greenko's diversified operating assets are strategically located in terms of type, geography and technology employed. This diversification enables year-long power generation and delivers consistent output to all the relevant stakeholders. Greenko manages all of its operating assets with the highest standards of performance, availability, and efficiency, thus allowing them to ensure the delivery of clean, reliable, and affordable energy. Greenko believes that the constant maintenance of operational excellence has provided a strong foundation for the ongoing transition towards GKO 4.0.

In the current reporting period, Greenko Group continued to provide a clean, environment-friendly, and affordable electricity supply, thus contributing significantly to the transition towards the decarbonization of the economy. The energy generation infrastructure of Greenko has demonstrated considerable growth in scale with capacity addition of

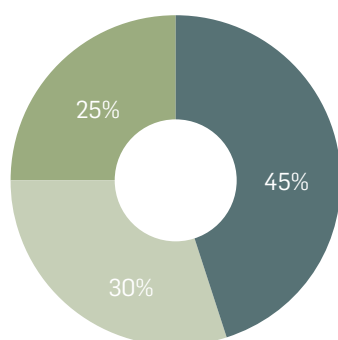
0.95GW, taking the total installed capacity to 7.5 GW in FY 2020-21. The growth in the total capacity majorly includes Wind Power projects spread across different locations, adding up to 0.85GW and a 0.1GW Hydro Power project.

In addition, there are several projects under development which include three Hydropower projects with a total licensed capacity of 186.5 MW, one Wind power project with a licensed capacity of 20.0 MW and four Integrated Renewable Energy Storage Projects ("IRESPs"), the Pinnapuram Pumped

Storage Project, and the Saundatti Pumped Storage Project, with a total pumped storage capacity of 2,460.0 MW equivalent to 22.1 GWh and with national grid connectivity. MP 30 Gandhi Sagar Standard Pumped Storage Project (SPSP), and Rajasthan IRESP are under development with storage capacity of 10.4 GWh and 17.7 GWh respectively.



Total Installed Capacity



● Wind ● Solar ● Hydro

Total Electricity Generation

KPI	Units	Total FY20-21	Total FY19-20
Total Electricity Generation	MU	9,745	9,969

In the current reporting period, the total generation achieved was around 9745 MU. The performance of the operating assets have significantly improved in terms of efficiency, availability, and reliability in the reporting period. The generation losses reported due to equipment failure, internal and external grid failure were significantly less as compared to that of the previous year.

Operational Performance and Generation Losses

KPI	Units	Hydro	Wind	Solar
Operational Performance				
Plant Load Factor	%	44.5	24.4	24.5
Plant Availability Factor	%	94.9	98.3	93.1
Grid Availability	%	99.07	98.8	99.5
MTBF (Mean time between failures)	Hours	2985	1624.6	NA
Total Number of Equipment Failure	Number	90	41	1452
Generation Losses				
Loss of Generation due to Equipment Failure	MU	19.4	47.3	11.7
Loss of Generation due to Internal Grid Failure	MU	12.9	20.84	2.3
Loss of Generation due to External Grid Failure	MU	10.6	7.95	7.7



It has been a very challenging year with an uncertain scenario for business as usual. I wish to congratulate my stakeholders for the resilience, flexibility and a winner's attitude in continuously supporting the project operations and achieving the set targets

- Subrahmanyam Sistu
Advisor-Projects

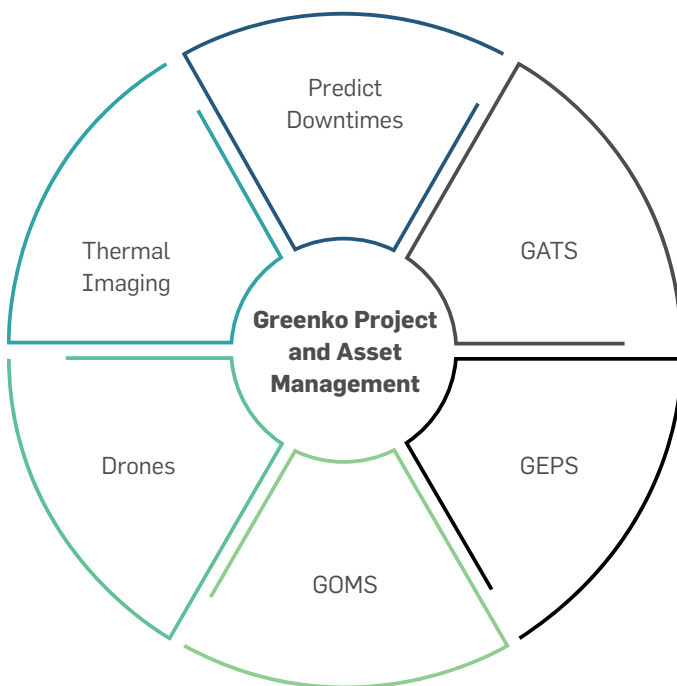


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Greenko Project and Asset Management

Greenko's ability to deliver reliable and affordable electricity depends on the continued efficient operation of its assets. The variety of skills and expertise housed by Greenko is the backbone of asset management capabilities to achieve excellence in performance.

Components of Project and Asset Management



To achieve and maintain operational excellence, Greenko has established strategic asset and project management systems and processes under PPS (People, Process, System) which enables the organization to identify and prioritize enhancement or remedial work on its diverse generating assets. It eventually helps in driving operational efficiency and effectiveness.

The analytical management systems deployed for tracking project and asset management involves GEPS (Greenko Energy Project System) and GATS (Greenko Asset Tracking System). In addition to analytical systems, Greenko has employed predictive systems in the form of aerial inspection and monitoring using drones to improve asset availability and performance. This allows Greenko to conduct regular audit inspections, to monitor and maintain the asset's performance and health.

GOMS (Greenko Operations and Maintenance System) is employed for tracking the maintenance activities and alert any form of deviation from schedule or quality. The operation and maintenance (O&M) of Greenko's large-scale infrastructure are benchmarked to industry best practices.

Greenko's Project Management



We at Greenko understand the program level objectives and detailed plans that involve impact analysis and risk assessment of our operational projects. We have developed and nurtured multiple project charters and specialized O&M skills for efficient project management and execution to build best-in-class framework and platform services as well as circularity across technical and functional services.

-Papa Venkata Ramana
SVP – Engineering Services



For managing the IRESP, Greenko has a disciplined project management team and has developed a technologically advanced project management system. In project management, Greenko follows a detailed process of self-discipline and agility throughout the stages of Initiation, Planning, Execution, Monitoring and Control, and Closing. The following is a brief description of the Project Management functions which are geared to achieve the target of completing the project within 3 years.

IRESP Project management

Project Management and Control (PMC)

Greenko has created PMC for governing the processes, practices, tools, and other activities related to project management. PMC defines and maintains the standards for project management, monitoring and controlling the entire process of project management from Initiation to Closing of each project.

- PMC reviews the planning and monitoring of resources as per the schedule.

- Approve the Construction methods for critical components.
- Update and revise the schedule based on progress.
- Review and resolve all interfacing issues.

Human Resource Management in IRESP

Greenko has an advanced human resource management system that looks after how the project will acquire, develop, and manage human resources throughout the project life cycle. For IRESP, the HR department has prepared a project plan which identifies and describes the processes that will be used to plan and acquire employees, train, track and ensure the transition. The responsibilities of the staff are delineated and managed using the staff management process.

The key management team members, who are highly agile, diverse, and experienced, involved in the IRESP project management are:

- **Director Projects:** With more than 40 years of experience in all the domains of IRESP Engineering and Management.

Project Director: With more than 28 years of experience in project execution, Construction, Project Management and Logistics Management.

- **Head PMC:** With over 25 years' experience of Wind, Solar and Hydro project management.
- **Head QMD:** With over 25 years' experience of quality management..
- **Head of Engineering** – (PSP/Solar/ Wind/T&D): with more than 30 years of domain experience.
- **Lead Design Engineers:** with more than 15-20 years of experience in the specific equipment of the specific component of IRESP: for example pump/turbine equipment in PSP of IRESP, PV solar cells design in Solar component of IRESP, etc.
- **Design Engineers:** with more than 5-10 years of experience in specific domains with hands-on experience on design and drafting platforms.



For implementing new technologies, Greenko has developed a strategy to identify the potential skill gaps and has progressed over time, taking the necessary actions to bridge the gaps by conducting integrated skill enhancement programs. This would help us in tackling the upcoming challenges in a more systematic manner.

-Ramanujam AVS
Sr. VP, PMC



While we are constantly scaling up the implementation of new projects to increase Greenko's operating portfolio, Life-cycle management remains a strategic concern from conceptualization to decommissioning of the assets, thus making the entire process self-sustaining.

- Mahalik KC
Sr.VP, PMC



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“

At all levels , there's a greater obligation to be more visible, empathetic, and engaged, because you need to show you understand the impact on everybody's life"

- Krishnamurthy Sunkara
VP, HR&IR

”

Upgrading the skills of the employees

Greenko has a strong technical employee base for building and operating Solar, Wind, and Hydro projects. The Group is now planning to integrate a domain-based technical employee base to an integrated technical employee base through internal and external training sessions. The training sessions are intended to make them understand the impact of each of their roles in the success of IRESP and drive their thought process towards the main objectives.

In the reporting period, Greenko has fulfilled the objective of training Man days of 5 days

in a year/ person. The in-house training programs are regularly conducted at HO for the entire QA/QC team by inviting the site team in batches. It consists of technical subjects and soft skills. Periodical technical con-calls (minimum fortnightly) are also conducted to discuss and clarify doubts from the site team. To enhance the skills and knowledge of employees, Greenko is taking up several initiatives such as conducting webinars, programs, conferences, training sessions, etc.

Skill Enhancement in 20-21

Greenko identifies topics for training through the training need identification process (TNI) of HR and plans training programs that will boost the team to work effectively and efficiently at various locations. The organization seeks feedback from the teams for any additional topics for training on a continuous basis.



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Engineering and Design in IRESP



In terms of innovation, new concept development is very important for us, also with regard to sustainability. Furthermore, all our integrated renewable storage energy projects have large quantities of excavation and disposal issues. A further important aspect is that you have to comply with all the legislation and regulations.

- Nanda PM
Sr VP, Engineering Services



Greenko's Engineering & Design team is responsible for the Roles/Activities in IRESP which include PSP, Wind & Solar components. The Engineering and design team's involvement extends to execution and then on to O&M. In designing, the team goes through total design cycle viz., conceptualisation, design and award of works to vendors/contractors. During the execution, this team reviews the designs submitted by vendors, periodical execution review for its adherence to design objectives, providing technical support amongst other things. As the execution is completed, the team trains the O&M team, handholds them to become conversant with all technical details of the design as executed and periodical review of operations and health of the assets.

Tools used by Engineering and Design

ETAP (Electrical Transient Analyzer Program) is a unified engineering and real-time platform used to model, design, visualize, analyze, predict, control, and provide insight on management and performance of electrical power systems. Greenko's Electrical AC Designs team is using this tool for power system studies like load flow, short circuit, protection relays coordination, etc.

ETAP platform will provide an active blueprint of the electrical system that offers automated rule-based design, model-driven predictive analysis, co-simulation platform, operator training simulation hub, combined with real-time analytics, intelligent control, and asset performance monitoring.



Digitization and Automation

With the help of digitization, Greenko plans to automate several documentation processes and reduce hardcopy records. This will ease the handing over process, reduce the maintenance and load on the environment (paperless). The following digitization initiatives are taken up by Greenko:

- Scheduling the virtual engineering meetings internally and with external stakeholders
- Uploading design documents and drawings in DMS

- Placement / storing of documents in e-server to access, avoiding hard copies
- Review and Approval of Design Documents and Drawings digitally
- Assigning action items digitally through GMAT
- Recording the engineering meeting minutes / MOM digitally through GMAT
- Standardization of Technical Specifications for PSPs
- Few Equipment sizing calculations
- Cable sizing calculations
- Powerhouse layout sizing calculations

Quality Assurance and Quality Control in IRESP



For Greenko, maintaining quality and reliability remains an utmost priority as we are expanding our business assets in the form of IRESP and new energy sources like zero-carbon molecules. In alignment with the transition towards GKO 4.0, Greenko has set a goal to digitize the entire QMD process and the Covid-19 pandemic has accelerated the adoption of innovative digital solutions while ensuring higher standards of quality and efficiency in our business operations

– Srinivas Popuri
Vice President, QMD



To drive the transformation towards GKO 3.0 & 4.0, Greenko is expanding its asset portfolio significantly, year on year, by exploring new business opportunities. While expanding the asset portfolio, it is also equally important to maintain the high standards of quality and efficiency of the existing assets for maximizing the returns.

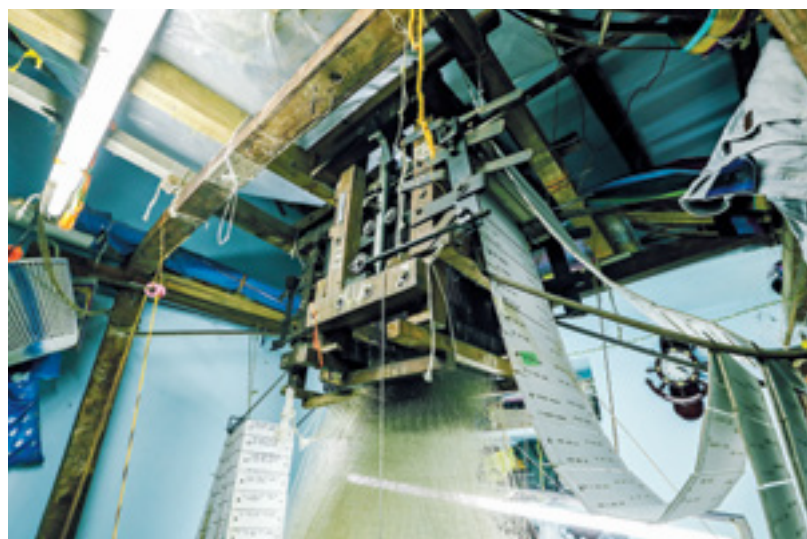
In line with a commitment towards achieving operational excellence, Greenko has a well-established strategic management plan and a core competent team responsible for the implementation of quality control measures across the organization. In the reporting period, the Quality Management Department (QMD) has been included in Greenko's IMS (Integrated Management System). The QMD is aligned with the company's objective of decentralization and digitization of the QA/QC process.

The QMD of Greenko has a vision of 'maintaining uncompromised quality standards in building and operating energy assets'. This vision enables the team to determine its focus areas, methodologies, and processes, integrate quality control elements into decisive phases of the project through strategic level policies and operations. A certain set of standards

for ensuring material and execution quality of operating plants and under-construction projects have been introduced.

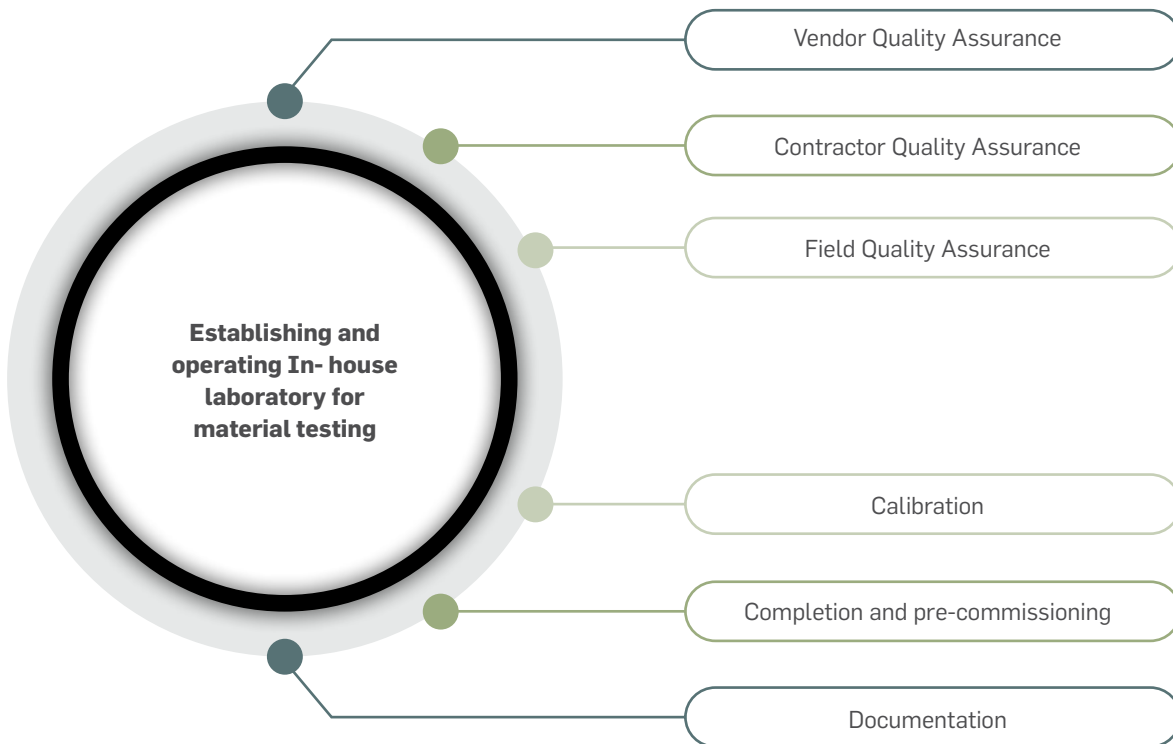
The Quality Management Plan consist of the team's interactions including aspects such as Policy & Objectives, Context Management, Project Organization, Communication Management, Design, and Engineering Management, Vendor Management, Quality Control and Assurance, Audit Management, Deviation Control, Document Management, Training, IT Management, and HSE Management.

QMD plays a pivotal role in ensuring quality from concept to handover of the project. The core philosophy is to focus on defect prevention rather than defect detection.

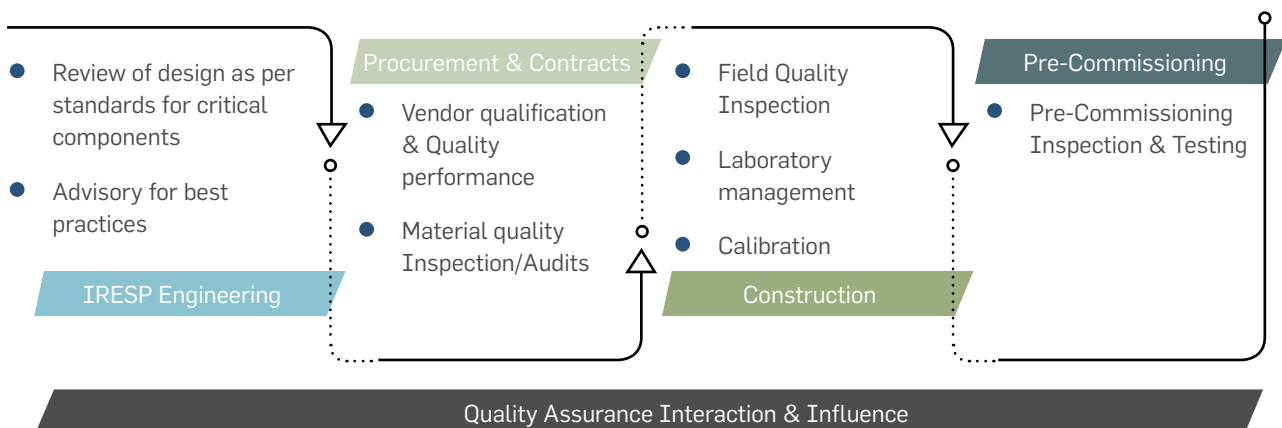


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Key schemes of management of quality for IRESP by QMD



To maintain excellence and the highest standards of quality, Greenko has documented and fully implemented the policy of Quality Assurance and Control. The QMD has established and adopted a Quality Management Plan for Quality Assurance (QA) of IRESP. In addition, Greenko has prepared a 'Quality Assurance Handbook', consisting of Civil, Electrical, and Mechanical procedures. These procedures are prepared based on National and International standards and codes adopted to the requirements of Greenko.



Best practices in quality assurance at all stages of the IRESP project construction are adopted. QMD has mapped interaction and influence areas for key stages of IRESP, such as Engineering, Procurement, Construction, and Pre-Commissioning. The company undergoes Multistage review of the engineering & designs throughout the stages to ensure the completeness and correctness of the design parameters.

By digitizing the QMD process, all formats can be filled online and records are available in the portal which can be easily accessed whenever any information is required. With the help of digitization, the decision-making process will be enhanced. It has further helped in engaging with competent consultants in the case of new areas of project components. The QMD uses a pyramid structure for monitoring performance.

For managing IRESP, considering the challenges of complexity, scale, etc., Greenko has adopted some innovative and novel practices which include:

- Engaging with premium institutes for providing tailor-made training programs
- Engaging with international consultants in determining quality assurance plans for monitoring critical and first-time activities
- Engaging competent 3rd party inspection agencies for material inspections
- Brainstorming with cross-functional teams to engage advanced testing methods and mechanisms.
- Establishing an advanced testing lab at the project site

- Setting up required communication process and schedule

Greenko has also established specific QA/QC metrics to measure and manage IRESP. SMART (Specific, Measurable, Achievable, Realistic/ Reasonable, and Time-bound) objectives are also established for each target. The In-house developed portal (GQAP) is used for online reporting and monitoring of QA/ QC processes.

QA/QC Metrics for Managing IRESP

Timely clearance of material inspections	Timely response to field quality requests	Minimization of IRESP quality risk
Minimization of quality complaints from internal and external stakeholders	Adherence to all applicable quality standards	Continual improvement in effectiveness of the strategic quality plan implementation
Digitization and Decentralization	Monitoring achievement of the objectives and associated targets monthly	

Quantity Surveying in IRESP

The role of the quantity surveying department starts from the inception of the project, from preparing optimal quantities, preparation of initial project cost & cost planning to advising the ideal contract model. It also manages project spending / dispensing / payment recommendations as per the work done, with clear documentation targeting audit

readiness. The eventual surety of the function is to close all the accounts/contracts along with the closure of the project and releasing securities after successful compliance to involved warranties.

Once in a month or as required, project site visits are planned and quality audits are

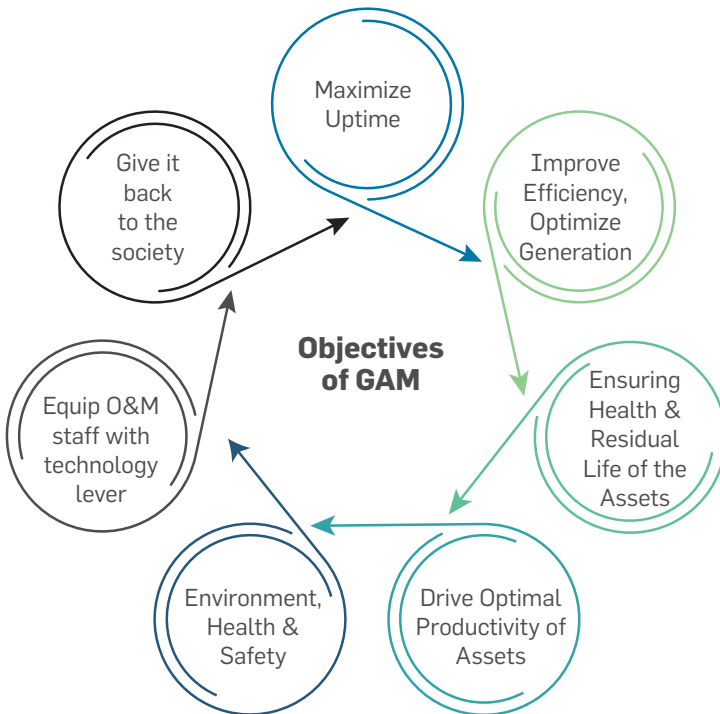
conducted internally by HO QMD. The observation points are documented and monitored till it is addressed. If critical, the issue will be raised as NCR through the deviation management system by site QMD.

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Greenko Asset Management

The Greenko Asset Management (GAM) teams at all locations are adept at balancing long term and short-term performance of the assets, to deliver positive contribution to multi-capitals.

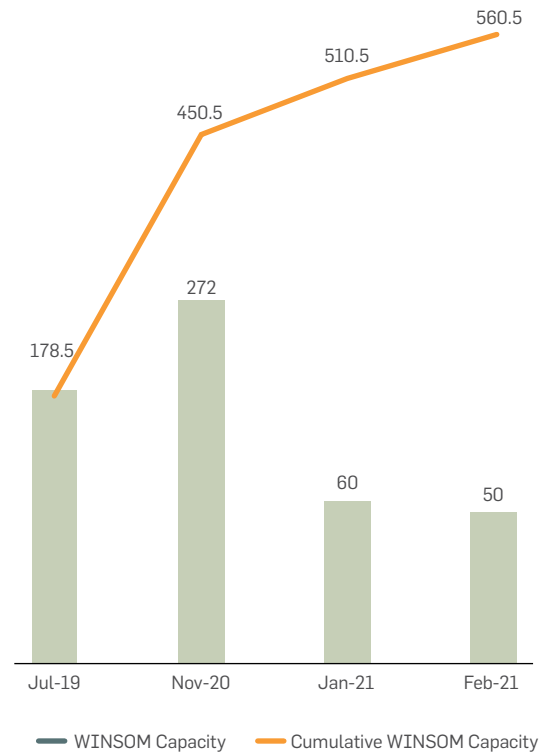
Objectives of Greenko Asset Management (GAM)



WINSOM-Wind In-Source of Operation and Maintenance

In the past, the operation and maintenance activities of Greenko's wind portfolio were solely handled by the Original Equipment Manufacturer (OEM). After a detailed analysis of risks and opportunities, Greenko has implemented an in-source model for maintenance of the wind assets, to maximize the asset performance and minimize the O&M costs. In the current reporting period, the total wind generation capacity covered under the WINSOM program was increased to 560.5 MW. This has encouraged the participation of the group's multiskilled employees, avoiding any stagnation of manpower and bringing in a more independent approach for O&M.

Cumulative increase in the WINSOM Capacity



All the WINSOM sites demonstrated considerable performance improvement and helped in capturing the untapped opportunities to harness energy. It provides the following benefits:

- Implementation of best-in-class asset management practices
- 360-degree care of WTG assets
- Material sourcing and inventory management
- Identifying and addressing technical issues at the earliest

Risk Management

Greenko understands that risks are inevitable while undertaking Construction projects. The project manager at Greenko analyses risks and accordingly, controls are implemented to keep the risk level at nil or minimal.

Greenko plans its strategy based on the following four steps of risk management which prevails in Greenko project management.

- Risk Identification
- Risk Quantification
- Risk Response
- Risk Monitoring and Control

Below are sample of the risks identified by Greenko and the plan to mitigate those risks.

S. No.	Risk Identified	Mitigation plan
1	The concrete grade may not meet the requirements due to an error in weighing of batching plant	i) Regularly visit and verify the loadcell for proper maintenance ii) Pre-define the frequency of checks iii) Identify nearby batching plants to avoid time delay
2	Non-availability of testing material/ spare parts due to unforeseen/ unpredictable conditions (Ex: Chemicals used in lab testing, spares)	i) Maintaining minimum stock (20% buffer) of testing material and spare parts with frequent store inspection ii) Alternate transport arrangement to be planned
3	Manpower (Greenko or contractor's) with special skill sets is not available during project execution	i) No skilled manpower will be leaving the site without any replacement/approval ii) Replacement plan of skilled manpower will be prepared well in advance to avoid any time delay iii) Assessment of skill level of replaced persons to be carried out iv) A pool of the second level to be developed for replacement during emergency
4	Interruption in the availability of reliable facilities for Inspection/Testing	i) Another set of critical equipment can be maintained for emergency use. ii) Identify and list nearby testing facilities to avoid time delays including delivery times.

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Continuous Attention to Environment

The following Environmental stewardship initiatives are taken during project execution and asset management:

- Setting up advance in-house quality labs at project sites for various tests. This will reduce carbon emissions, by way of reduced transportation of test samples to 3rd party labs.
- Conducting remote inspections (video calls), which again will result in reduced carbon emissions, by way of reduced transportation.
- The deviation process is made online to reduce paper usage. Going forward, conservation of paper would occur with the implementation of the Greenko Quality Assurance Portal (GQAP). In this portal, inspection, tests and their reports will be filed online and will be available in real-time.
- Reusing of scrap after testing specimen and samples for various purposes in the project site, thereby reducing waste and land use.

In addition, the vendors are also expected to use to the extent practicable with environment-friendly materials.

Greenko internalises environmental considerations in the designs as much as possible. Below are the few practices that the organization is implementing:

- Designing safe earthing practices for the safety of humans and Wildlife
- Proposing Gas-insulated Switchgear to reduce the land requirement, EMF, impact on flora and fauna

- Proposing the Powerhouse layouts with the best techno-economical solutions
- Proposing CFL and LED lighting in power plants
- Proposing energy efficient Air conditioners in plants
- Considering elimination of asbestos, plastic, etc., and other such eco-hazardous materials as much as possible through innovative designs
- Using 100% pollution-free (viz., Sunlight, Wind & Water) raw materials for the electric power generation in the IRESP

Health and Safety Management

Greenko is committed to ensuring a safe and healthy environment for all people in projects or asset management; employees or contractor/vendor women or visitors. Greenko prepares a Project Specific Health and Safety Plan to protect the health and safety of personnel working in the project. All subcontractors, visitors, or consultants must adhere to the provisions of this Health and Safety Plan.

Greenko believes that: All accidents are avoidable, everyone is responsible for assisting with accident prevention at his or her level on-site, Safety training is essential, Prevention is an integral part of the project management approach.

Greenko Project and Asset Management teams set the objectives and targets for all its projects and assets to implement and achieve this. This is to ensure Legal Compliance, the minimization of risks, and the protection of the workforce and persons affected by company activities.

Energy Value Pools

The integration of RE into the grid is encouraged and rewarded by the regulators which provides Greenko with multiple opportunities to explore new markets and harness new energy value pools.

Energy Value Pools Harnessed

KPI	FY 2020-21	FY 2019-20	FY 2018-19
Saleable electricity (Excluding Import Energy and line losses)	8,861.67 MU	9,969 MU	7,379 MU
Sale of electricity to utilities (PPA / Feed-in tariff)	7,873.50 MU	7,879.18 MU	6,514 MU
Sale of electricity through Wheeling and banking (direct sale to consumers]	6,37.34 MU	620.01 MU	509 MU
Sale of electricity through exchanges	350.84 MU	403.54 MU	356 MU

Projects under Carbon Market Mechanisms

Greenko has been an active participant in numerous carbon market mechanisms and government schemes from the beginning of its journey. The project details that are either registered or in process under various mechanisms in FY 20-21 are listed below:

1. 9.6 MW Jeori Hydro (Technology House (I) Pvt. Ltd) - Registered under CDM Gold standard
2. 50 MW Wind power project in Ratlam, MP - Registered under CDM GS
3. 48.3 MW Wind power project in Gujarat (Kaze Energy Limited) - Registered under CDM GS
4. 44 MW Wind energy project by KWEPL 1 – Under final CDM gold standard validation
5. 180 MW Renewable Energy Project (MP solar) - Under final VCS gold standard validation

No of Plants	Mechanism	Capacity (MW)	Estimated Credits/Year
26	CDM	1,057.55	2643069
7	CDM GS	274.3	1071695
12	VCS	1,398.7	2711734
11	VCS GS	847.8	1924645
2	IREC	166	846006
5	REC	58	17771

In addition to the above, Greenko has sold 19,55,994 VER's and 30,75,013 GS VER's are issued and sold.



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Value Creation and Maximization



Our new energy sources will augment our transition towards energy independence making our project management circular, less energy-intensive and minimalistic in nature

-Sirish Kola
AVP, PMC

In the reporting period, Greenko has identified and implemented several energy efficiency initiatives and Value Maximization Programs across its operating portfolio. The initiatives carried out have increased the operating efficiency of the assets significantly.

Energy Efficiency and Value Maximisation Initiatives across Portfolio

Solar	Hydro	Wind
<ol style="list-style-type: none"> 1. Re-grouping the PV modules to minimize the shadow effect 2. Thermal regulation in indoor and outdoor inverters 3. Real-time string monitoring 4. Rectification of In-house transmission line 5. Drone Based Asset Health Check 	<ol style="list-style-type: none"> 1. Rectification of 400 kV GIS fault 2. Augmenting Power generation by Re-modeling of the Tail Race Canal 3. Design modification of HS lubricating system for Thrust GB and Upper GB 4. Upgradation of Excitation system from Manual to Digital 5. Power Factor mode operation in Auto. 6. Auto operation of units in Gangdari Hydro Power Plant 7. Replacement of Unit 1 Runner with HVOF Coated runner 8. Manual and Auto operation of Governor valves 9. Replacement of Existing M.S Cooling Water Pipeline with Stainless steel. 10. Enhancing Generation of the plant by increasing nozzle opening limiter set point 11. Recovery of VFD panel in cooling water system 	<ol style="list-style-type: none"> 1. Examination of Turbine Actual Power Curve 2. Azimuth Sensor Installation 3. Repairing and reusing of IGBT and other electronic components which are a major cost of ReGen spare parts 4. Leading Edge Up tower retrofit with LEP10 solution for Dalot I Turbines 5. Major Structural Damage Repair of Blade Up tower 6. Drone Assisted Blade Aerial Inspections 7. People Process System



Value Creation Story Inspections during the Covid-19 Pandemic

Summary

Covid – 19 pandemic and the consequent lock down has disrupted the economic activity. As the power supply was an essential service and such operations have to be necessarily maintained and Greenko was able to maintain supply without any interruption. However, Greenko has been able to continue new project execution in the pandemic times.

Greenko requires to visit the vendor's place for material inspections. During the pandemic, it was very difficult to travel, and hence the inspections were carried out virtually. A series of trials were taken and the inspections were completed without compromising on the quality. In this pandemic, virtual inspections helped Greenko to fulfill the organization's functional objective.



Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To conduct virtual inspections and avoid the risk and transportation	Material Inspections	Excellence, Adoption, and Management of Assets	Spread of Covid-19 virus	 



Key Benefits Achieved

- Wherever possible, virtual inspections were conducted which saved time and provided better results. This allowed utilizing the waiting time required for test setup during inspection for other works.
- Not only vendor inspections, but the virtual visual inspection was also carried out through customized cameras at project sites.

Impact/Value Created

Uninterrupted project execution and avoided delays



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Value Creation Story: Re-grouping the PV modules to minimize the shadow effect

Location – Sakri, Dhule District, Maharashtra

Summary

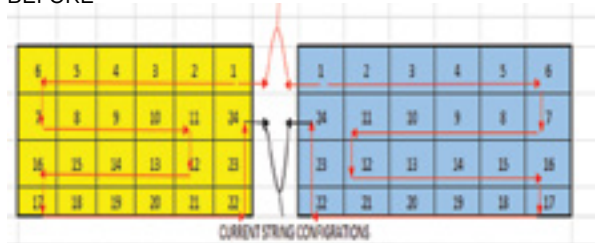
A project of Module re-grouping was undertaken by Greenko Suvaan Energy Pvt Ltd. to minimize the shadow effect in Sakri, Dhule District, Maharashtra. The power generation from PV modules is highly dependent on the incident sunlight and hence it is necessary to avoid the shadowing of PV modules. The String Cable looping was rearranged to isolate the Shadow Effected Bottom Row. This in turn increased the potential productivity of all resources.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To reduce the Generation loss due to the shadow effect	Sakri Town, Dhule district	Energy management Excellence, Adoption, and management of Assets	Generation loss	 

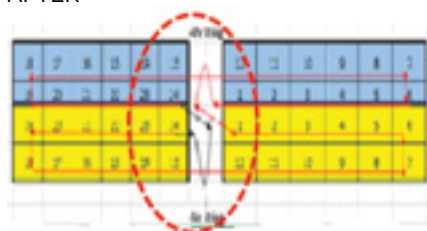
Impact/Value Created

- Increased Revenue Generation by INR 2.5 Cr / Annum (appx.) thereby enhancing their livelihoods.
- Improved Generation by ~ 2 %

BEFORE



AFTER




Value Creation Story: Thermal regulation in indoor and outdoor inverters

Location – Adhavan / RTR site, Tamil Nadu

Summary

A project was undertaken on Adhavan/RTR site by Greenko to increase the generation by reducing the heat losses due to high temperature. The project is aimed at increasing the overall plant efficiency by modifying the air ducts of the inverter.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To increase plant generation	Plant Efficiency	Energy management Technology Adoption	Generation loss	

Innovative approach of implementation

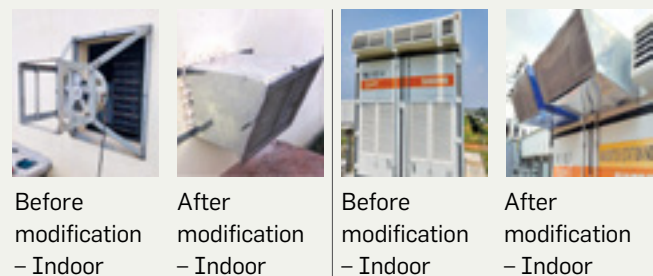
- Inverter Air Duct Modification-Outdoor
- ID fans with Duct and Filters Provided -Indoor Inverter
- Ducts are made by in-house Tx Line Team

Key Benefits

- Reduced inverter operating temperature (On an average 10 degree)
- Ensured the IGBT Longevity
- Reduced internal cabinet temperature

Value Created



- Generation gains by 200 Units / Block in summer
- Fabrication cost: Rs 4000/ Block savings.
- Benefits: ~ 16 Lacs Per Annum



Value Creation Story: Real-time string monitoring

Summary

A project was undertaken by Greenko with the objective of reducing the TAT (Turn Around Time) of string failures and generation loss. The project focused on the implementation of SCADA locally and on the Cloud. This helped in reducing underperformance of assets.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To reduce the TAT of string failures and Generation loss.	Technology Adaptation	Energy Efficiency Technology Adoption	Under Performance of assets	 

Value Created

Avoided Loss = 1.738 MWh

BEFORE STRING FAILURE





AFTER MONITORING STRING



Value Creation Story: Rectification of In-house transmission line

Summary

A project of In-house transmission line rectification was undertaken with a focus on reducing the third-party dependency and improving TAT (Turn Around Time).

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
Reduced third party dependence and improved TAT	Energy Efficiency	Excellence, Adoption, and management of Assets	Equipment failures	 

Key Benefits

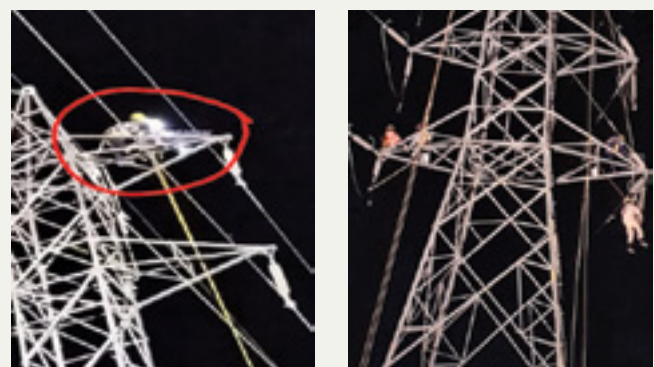
- Outsourcing Expenses: Rs. 20 Lakhs/Year
- Insourcing Expenses: Rs. 14 Lakhs/Year
- Net Benefit: Rs. 6 Lakhs/Year + Intangible Benefits

Value created

- Breakdown Restoration time reduced
- The same team will be used for the entire cluster Tx line maintenance
- The team will be available 24x7 – 365 days

Challenges and Issues Faced

- Identifying Multi-skilled persons



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Value Creation Story: Drone Based Asset Health Check

Summary

A project was undertaken by Greenko to assess the module health using drones. The assessment was carried out through drone thermography and testing the I-V curves for the modules.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
Module Health Assessment through Drone Inspection	Plant Efficiency	Innovation and technology adoption	Degradation of the Asset health	

Key Benefits

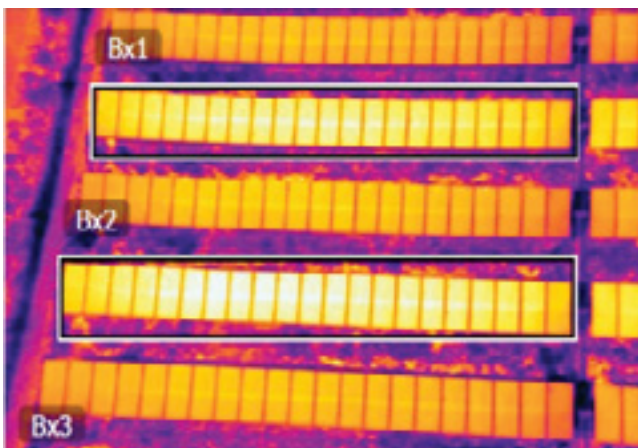
- Timely Identification of Modules with hotspots & replacement
- Identifying the Underperforming Modules /Warranty

Value Created

- Improvement in generation

Challenges and Issues Faced

- Weather condition for flying drone
- After verification, field inspection to identify the location





Value Creation Story: Rectification of 400 kV GIS Fault

Location – Dikchu Hydro Electric Power Plant, Sikkim

Summary

Greenko's 96 MW Dikchu Hydro-electric Project is located in the most challenging Geological, Social, Environmental and Logistical conditions. In a 400 kV GIS, a fault occurred in an isolator compartment of Bay 405 which terminated the operation of the plant. The timely temporary rectification of faults in 400kV GIS during the pandemic restored the operation of the plant and resulted in the generation of 423.95 MU.

The restoration demanded the movement of expert services and spares from Chennai, which proved very difficult during the pandemic. GE experts suggested a temporary restoration by isolating Bay 405 by taking out the Bus bar in connecting compartment and putting a stress shield at the charged end as an alternative.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To restore the Power Generation by partially rectifying the fault in 400 kV GIS.	Plant Efficiency	Excellence, Adoption, and management of Assets	Equipment failure	 

Key Benefits

The timely restoration of power generation in the plant resulted in the production of 423.95 MU of clean Energy. This has also prevented the movement of experts and spares from Chennai to Dikchu during the pandemic.

Challenges and Issues Faced

The challenges faced during the restoration of plant operation are listed below:

1. Pandemic posed several challenges in the arrangement of Service Engineer, Movement of spares from Chennai, GE T & D office
2. Getting permission from District administration



Photos during Restoration



After Modification

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
Value Creation Story:

Augmenting Power generation by Re-modeling the Tail Race Canal in Hemavathy Riverbed project

Location – Hassan, Karnataka

Summary

The project was undertaken on the Hemavathy Riverbed project site by Greenko with a motive to improve Tail race Condition and to achieve improved power output. The slots for remodeling the canal were planned in such a way that the river discharge was minimum and therefore, it incurred minimum losses. 210 Excavators & 210 Breakers with 8 to 10 Tractors were used to clear the approach ramps. The side slopes were excavated under the strict supervision of a Civil Engineer. This project helped in improving the operating head of turbines and therefore, resulted in improved Power Output. The excavated muck was transported to designated locations for safe disposal.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To improve Tail race condition of river bed to improve operating head	Plant Efficiency	Excellence, Adoption, and management of Assets	Generation loss and Revenue loss	 

Key Benefits

- Improved operating Head of the Turbines
- Better Power Output due to improved operating Head
- Increased Revenue

Challenges and Issues Faced

- Selecting the time slot for taking up the work in consultation with Irrigation Department.
- COVID-19 Pandemic
- Apprehension of losing more energy if the Department considered the release of more water to the river
- The depth of the canal made it difficult for hauling long ramps
- Heavy rains during the work period
- Dewatering of seepages in the canal
- Hard Rock in Canal Bed and side slopes

DURING MODIFICATION





AFTER MODIFICATION

Value Creation Story: Design modification of HS lubricating system for Thrust GB and Upper GB

Location – Sikkim

Summary

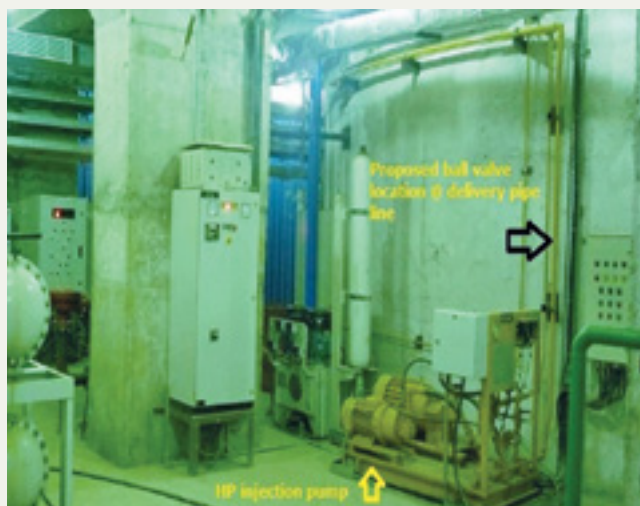
Greenko has developed the 96 MW Dikchu Hydro-electric Project under the most challenging Geological, Social, Environmental and Logistical conditions. The team is devising various innovative technological upgradations to avoid generation loss. One such up-gradation technique was developed to easily attend to the oil leakages without shutting the unit and affecting the power generation. This includes the isolation of the HS lube oil system by installing a ball valve in return oil pipe for easy maintenance in case of oil leakages during operations.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To minimize the unit shut down/ avoid generation loss in case of oil leakages.	Technology Adoption Design Modification	Excellence, Adoption, and management of Assets	Equipment Failures	 

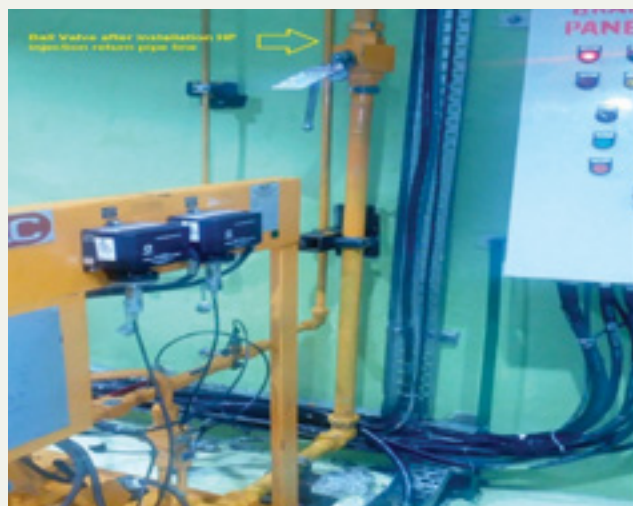
Key Achievements

- Through these design modifications, it became easy to attend to the oil leakages by closing the ball valve without shutting down the entire unit.

BEFORE MODIFICATION



AFTER MODIFICATION




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Value Creation Story: Upgradation of Excitation system from Manual to Digital

Location – Greenko Cimaron Constructions Pvt Ltd, Himachal Pradesh

Summary

At one of the sites, Greenko has installed a digital excitation system to respond instantly to Grid fluctuations and ensure smooth operation by preventing generation loss. Greenko has witnessed a loss of 0.323 MU during last year due to the non-responsive behaviour of the old manual AVY. In order to mitigate these losses occurring during Reactive power tripping and other Grid fluctuations, Greenko installed a new panel with a 2A+2M channel with digital excitation control ABB Unitrol1010. This panel is intended to minimize the generation loss by mitigating Reactive power tripping and automate the Power factor control and Voltage control.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
Mitigation of Reactive Power tripping and automatic Power factor control and voltage control	Technology Adoption Plant Efficiency	Excellence, Adoption, and management of Assets	Generation loss	

Key Benefits

- Plant safety (generator & Exciter) & smooth operation.
- Generation improvement avoiding unnecessary reactive power-tripping which was resulting in 250 kWh per tripping.
- Automatic control over Power factor within safe limits.
- Improvement in Overall financial efficiency

AVR PANEL WITH DIGITAL EXCITATION CONTROL





Value Creation Story: Power Factor mode operation in Auto

Location – Chamba Cluster, Himachal Pradesh

Summary

Greenko in its Tarela Power Pvt Ltd site has an automated Power factor control system. The automation of Power factor control includes the introduction of a separate PLC & Power factor transducer into the existing system. The power factor transducer measures the power factor and sends the feedback (4-20mA) to PLC as input. PLC is programmed in such a way to provide +ve/-ve Pulse of excitation voltage in line with the transducer's input to control the power factor fluctuations. This system modification will stimulate automatic power factor control without human intervention. This increases the operational safety of the systems and reduces human errors.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To automatically control power factor	Technology Adoption Plant Efficiency	Excellence, Adoption, and management of Assets	Generation loss Worker's Safety	 

Key Achievements

- Automation of Power factor control systems to reduce Generation losses
- Improvement of operational Safety of systems
- The risk of human error is avoided

Challenges and Issues Faced

- Materials and Manpower supply for system modification was difficult due to the Covid-19 pandemic.



Value Creation Story: Operation of Units in Gangdari Hydro Power Plant

Location – Jogini, Shimla, Himachal Pradesh

Summary

This project was undertaken by Greenko in Gangdari Hydro Power plant which is run on a river project of 16MW capacity consisting of 2 Francis Turbines of 8 MW each. During the initial years of operation, the units were operated in Auto mode using the TAGP panel. The high OPU temperatures demanded manual operation in later years. The root cause of high OPU temperatures was Unloading time. The designed unloading time of OPU was 30 Minutes, but in AUTO operation mode, the unloading time was 5-10 seconds. To avoid high OPU temperatures, the unit was operated in manual mode all these years.

In FY 2020-21, the Jogini team decided to shift operations to Auto mode again. The modifications were made in OPU hydraulic circuits to increase unloading time and servo valves were replaced with a different brand. Break oil pipeline components were modified to minimize internal leakages. Required Nitrogen pressure was maintained in the accumulator. The calibration, integration of both servo valves with SCADA was done and finally, both units were operated in AUTO mode from SCADA as well as TAGP.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To operate Francis Turbines of GHPP in AUTO mode for Smooth operation and increase the longevity of turbines	Plant Efficiency Technology adaptation	Excellence, Adoption, and management of Assets	Generation loss	 

Key Achievements

- Auto Operation of both units from SCADA and TAGP.
- Auto synchronization of both units.
- Real-time monitoring of all turbine components.
- Availability of data for fault analysis.
- Savings in Service Expenditures

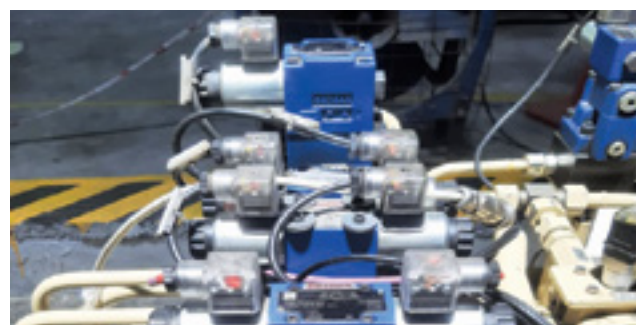
Impact and Value Created

- Resolved OPU High-temperature issue.
- Increased OPU unloading time
- Full auto operation of the plant.
- Enhancement of life of turbine and OPU.

Challenges and Issues Faced

- Installation and calibration of both servo valves without OEM support.
- Auto operation of both units from SCADA workstation without OEM support.
- To minimize OPU internal leakage without OEM Support.

BEFORE MODIFICATION-DC VALVE ARRANGEMENT FOR MANUAL OPERATION



AFTER MODIFICATION- SERVO VALVE ARRANGEMENT FOR UNIT AUTOMATION



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Value Creation Story: Replacement of Unit 1 Runner with HVOF Coated runner

Location – Greenko Budhil Hydro Power Pvt. Ltd, Kharamukh, Chamba, Himachal Pradesh

Summary

The project was undertaken by Greenko Group at its site Greenko Budhil Hydropower Pvt. Ltd. The 70 MW Budhil HEP has 2 Units of 35 MW capacity Generating machines with Francis Turbines. The runners of these Turbines are damaged over time/ Years of operation due to pitting, metal erosion or abrasive action of the silt in water. These damages are to be repaired in time to ensure the efficiency and durability of the turbines/runners. Welding/Metal build on the runners during repairing alters its material composition and thereby, reduces runner efficiency. The original runner has an operational life of 3 to 4 years, but it is only 2 years in case of the repaired runner. After every two years, the runners demand repair and refurbishment works.

To overcome this and to increase the life of runners, HVOF coating was done on the runner after the repair works. The composition of the coating is 86% Tungsten carbide, 10% Cobalt & 4% Chromium. This has resulted in increased runner life, reduced maintenance cost and uninterrupted energy generation.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To enhance asset life	Technology adaptation Plant efficiency	Innovation and Technology adoption	Equipment failures Generation loss	 

Key Benefits

- The life of the runner was increased.
- Reduced maintenance costs.
- Increased machine and plant availability.

Challenges Faced

1. Increased Expenditure
2. Owing to a remote location in hilly terrain and congested roads, there was difficulty in transporting the equipment and material
3. Prolonged time intervals for repair works

BEFORE THE REPAIR



AFTER REPAIR




Value Creation Story:

Enhancing Generation of the plant by increasing nozzle opening limiter set point

Location – Upper Nanti, Himachal Pradesh

Summary

The objective of this project is to increase plant power generation in case of extra water availability by increasing the nozzle limiter set point from 80% to 95%.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To increase the power generation of plant in case of extra water availability	Plant efficiency	Excellence, Adoption, and management of Assets	Generation loss	

Key Achievements

- The units can operate in 5 % COL and the nozzle opening limit has increased to 95 % which was earlier locked at 80%
- The plant can also be operated at 105% COL in case of extra water availability

Challenges and Issues faced

- The site visit of the OEM Engineer was hampered due to Covid-19 lockdown restrictions




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Value Creation Story: Azimuth Sensor Installation

Location – Poovani, Thoothukkudi, Tamil Nadu

Summary

This project includes the installation of azimuth sensors in WTG nacelle near the rotor to improve plant generation and precise angle measurement of the rotors.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To improve the generation of WTG with the help of Azimuth Sensor	Technology adaptation Energy Efficiency	Excellence, Adoption, and management of Assets	Generation loss	

Impact of the Project

The installation of the azimuth sensor in the rotors provides a precise angle measurement. Hence, the rotor facing the wind direction accurately taps the full wind potential to improve generation.




Value Creation Story: Leading Edge Up tower retrofit with LEP10 solution for Dalot-I Turbines

Location – Dalot-I, Rajasthan

Summary

A project was undertaken at Dalot I site of Greenko to enhance the performance of WTG with LEP 10 solutions. It helped to improve reliability, blade performance, and reduction of generation losses by preventing leading-edge erosion.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To ensure performance enhancement by using LEP10 solutions	Plant efficiency Technology Adaptation	Excellence, Adoption, and management of Assets	Generation loss, Equipment failures	

Key Achievements

- Improvement of Performance of Blades.
- Improved Reliability
- Prevention of Generation loss
- Increased life of the turbine

Challenges and Issues faced

- Unexpected weather conditions
- Air Turbulence
- Process selection and Service provider selection for adopting LEP10 solutions.
- Competency of Contractor and Manpower




Manufactured Capital

Value Creation Story: Major Structural Damage Repair of Blade Up tower

Location – Jed Solar Pvt Ltd

Summary

The aerial inspection using drones aided in the identification of damage in the up-tower of the Wind turbine. For the rectification of damage, inspection with integrated endoscopy was done to eliminate the issues with the Setup of the Skylift/ platform. The damage was resolved with in situ repairs of 4 MT panels. SOP/WI was developed for the damage and the method can be replicated in other sites as well.

Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
Repair of Blade Up tower	Technology adaptation Energy Efficiency	Excellence, Adoption, and management of Assets	Equipment failures Generation loss	

Key Achievements

- Repair Time of fewer than two weeks as compared to 30 days, if done by OEM
- Cost savings compared to OEM approach as it eliminated the need for Blade De-erection and higher labour charges for repairing
- Capacity building of in-house teams




Value Creation Story: Drone Assisted Blade Aerial Inspections

Location – All Locations

Summary

Greenko conducts an Aerial survey using drones for 360-degree inspections to augment the ground-based inspections and to improve the accuracy of damage detection. The data captured by the drones are analyzed and the defects are categorized as per the Global Standard of defects. This helps in identifying the damages which would be impossible for the OEM team to detect. The data is further stored for tracking the damage history and for future references.

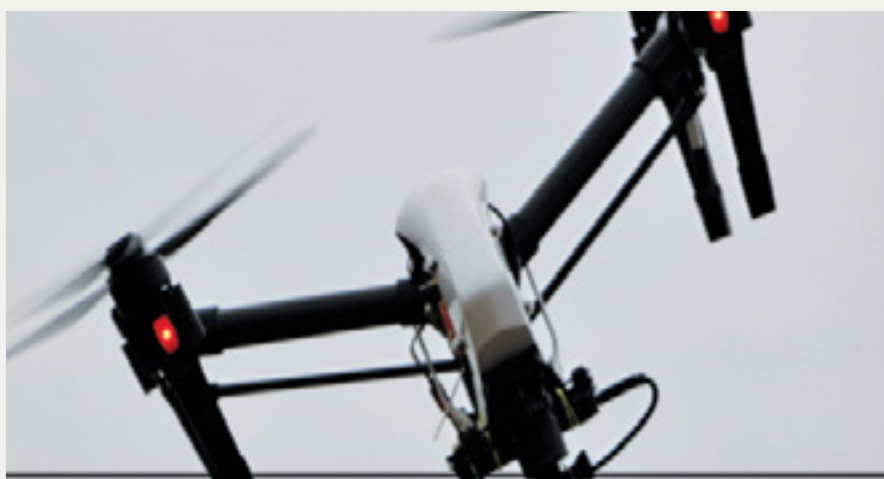
Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To conduct Blade Aerial Inspections for the entire GAM WIND Fleet Blade	Technology adaptation Plant Efficiency	Excellence, Adoption, and management of Assets	Equipment failures Generation loss	

Key Achievements

- 360-degree identification of damages
- Improved Reliability
- Increase in machine availability by 0.30% by avoiding major failure or BD during high wind
- Prevention of Loss of Revenue

Challenges and Issues faced

- Increased Number of WTGs due to acquisition and requirement of additional resources
- Meeting planned schedule of Inspections
- Weather conditions
- Air Turbulence
- Lockdown conditions



Manufactured Capital

Contract and Procurement Management

“

We are constantly working on reducing the amount of packaging and the impact of the materials we use. We have reduced CO₂ emissions from packaging. The biggest impact has been created by changing the material used for solar module packing.

”

—Mohiddin SK
Sr VP, Contracts and Procurement

Greenko is constantly improving its Contracts and Procurement (C&P) management in line with the organizational objectives. Business economic strategy helps in managing the supply chain risks through responsible, transparent, and effective procurement practices. The Group’s contract and procurement functions are centralized and place great emphasis on quality, cost-efficiency, reliability, and resilience.

The C&P team procures all goods and services for Greenko Energy Projects (GEP) and Greenko Assets Management (GAM) ensuring legal compliance, high quality, ethical standards and appropriate risk mitigation processes. Greenko has enhanced its procurement management by employing innovative contract structures for its IRESP projects. Greenko’s understanding of the market and technology helps the organization to be ahead in the technology evolution curve.

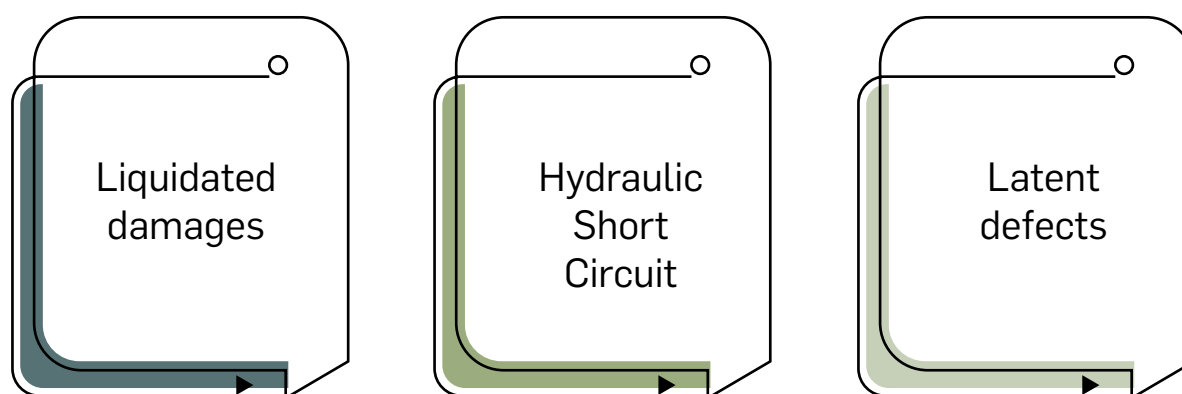
The Group formulates appropriate procurement strategies by evaluating the long-term needs of business units, as well as supply-side market opportunities and risks. This coordinated approach has increased Greenko’s ability to negotiate improved terms from suppliers and manage risks, resulting in tangible commercial benefits for the Group.

In addition, in line with the sustainable procurement practice at Greenko, the C&P team is driven to embrace circularity in its practices. Accordingly, measures are being undertaken to extend the life of the organization’s assets and to address end of life issues of the goods and services procured by the company.

Greenko has been active in securing smart agreements for IRESP projects since its inception. The company is well aware of the importance of the process of procuring equipment. Therefore, the C&P strategy employs International Competitive Bidding (ICB) as an innovative contracting structure that not only allows sharing of risks and opportunities among partners but also makes the process transparent.



IRESP specific C&P Process



Evaluation criteria to identify the appropriate vendor/partner

- Number of similar projects and unit capacities executed
- Number of years of experience in a specific domain
- Number of years of experience of the manpower employed by the vendor/partner in a specific domain
- Engineering and Manufacturing facilities available
- Adequacy of capacity for post-commissioning support
- Financial capabilities
- Technical capabilities
- Conducting risk analysis to determine whether the vendor is stable enough to be considered for a contract



Manufactured Capital

Energy Storage Value Pools-Integrated Renewable Energy Storage Projects



Today the economy is more global than ever and so are the stakeholder concerns. We are bracing ourselves for robust procurement practices for delivering value to our stakeholders, which is a unique aspect of our business. We are also proactively engaging ourselves in better risk management practices and independent approach for resolution of operational issues. I further wish to congratulate all the employees for the resilience and tenacity in the face of the pandemic and bringing home awards and accolades.



-Srinivasa Rao Ch
Deputy COO

With the global energy system going through a rapid and radical transition towards Decarbonization, Digitalization, and Decentralization, the importance of establishing Intelligent Energy Storage cannot be overstated. The inherent infirm and non-schedulable nature of renewable energy generation presents a huge challenge for integrating large RE capacities while maintaining grid stability.

Integrating Wind and Solar energy with a time-tested and proven Pumped Storage Solution presents an optimal, economically viable, and scalable option to supply Schedulable Power On-Demand (SPOD) with both baseload and peak load capabilities. The combination of renewable energy sources such as solar, wind, and pumped-hydro storage allows an uninterrupted supply of electricity that is not affected by temporary shifts in weather and costs equivalent to fossil fuel-based energy.

Pumped Storage Hydro Power Project

Pumped storage hydropower project comprises of an upper reservoir and lower reservoir interconnected with a waterway, a powerhouse which contains hydropower electrical mechanical equipment, and a transmission connection to the grid. This project is operated when surplus electricity is available (which is typically available at night or on weekends when power demand is low or in case of excess solar generation in the daytime) and is used to pump water from the lower reservoir to the upper reservoir. Water stored in the upper reservoir is then released

during peak demand periods, delivering more valuable electricity to the grid. It is now increasingly becoming possible to store and utilize the excess energy from renewable energy sources with the help of energy storage systems such as pumped hydro storage.

Pumped Storage solution provides the necessary scale and long duration of energy storage and life cycle, resulting in affordable SPOD energy over the life of the projects. Developing such Integrated Renewable Energy Projects in Wind and Solar resource-rich locations along with standalone Pumped Storage capacities, without impacting the existing natural systems is necessary to sustainably power the future needs of the nation while maintaining grid stability.

Pumped storage hydro Power Project (PSHPP) provides a zero-emission alternative to conventional carbon-emitting thermal plants. Generating capacity can be quickly dispatched and ramped up to meet demand, compensate for large swings in intermittent generation power injection, and provide contingency reserves to compensate for generation unit outages.

The advantages of PSHPP are:

- Improved interconnector efficiency
- Reduced interconnector investment
- Reduced need for backup generation
- Increased system resilience
- Reduced system stress
- Optimized load profile through the integration of hydro with wind and solar to make electricity more dispatchable.
- Has the capability of providing primary frequency control
- Can support load leveling and energy arbitrage, reducing the overall system production costs by offloading expensive peaking generation during peak-demand periods, and by increasing usage of cheap baseload generation during low demand periods.
- Enabler for Transition to Circular Economy

Integrated Design Management Plan

Greenko follows a Manual for planning and managing the Engineering services. In addition, Greenko has a Master Document / Drawing List (MDL) as a design management plan template, in which Drawing and Document templates are also defined.

The E&M Hydro Department caters to a wide array of requirements in every stage of the project, from project inception to O&M. The Design department performs designing & engineering activities related to electromechanical equipment associated with Hydro & PSP projects. The activities

include the services from concept designs to commissioning of the Hydro & PSP projects and provides support during operation and maintenance.

In addition, the E&M department extends its technical support to the Business Development team, contracts & procurement department, internal quality department, external consultants, and the concerned teams to get statutory approvals from Government authorities.



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Different Stages of the Projects	Functions involved
Initial Stage	Business engineering - technical due diligence , technical pre-feasibility or basic concept reports, preliminary design and cost estimations as applicable.
Planning Stage	Schedule of PMC- drawings & design support for statutory ,technical chapters of the Feasibility Reports / Detailed Project Report.
Contracting Stage	<ul style="list-style-type: none"> ● Consultant /EPC scope finalization ● Design and equipment optimization ● Technical Specification Preparation ● Technical Bid / Offer Evaluation ● Vendor Drawing / Document review and approval ● Factory Acceptance Test (FAT) Support
Execution Stage	<ul style="list-style-type: none"> ● Change Management ● Field Engineering ● Testing and Commissioning ● Technical HOTO (Handover and Take Over) ● Project Completion Support ● Spares inventory requirements for Future O&M
Monitoring and Controlling Stage	<ul style="list-style-type: none"> ● Review of Design Documents and Drawings ● Approval of Design Documents and Drawings ● Formats and Process for control ● Monthly/weekly Progress Reports for monitoring
Closing Stage	<ul style="list-style-type: none"> ● Operation and Maintenance Support ● Troubleshooting of problems ● Root Cause Analysis (RCA) for any abnormalities ● Planning for Training of Operational Staff

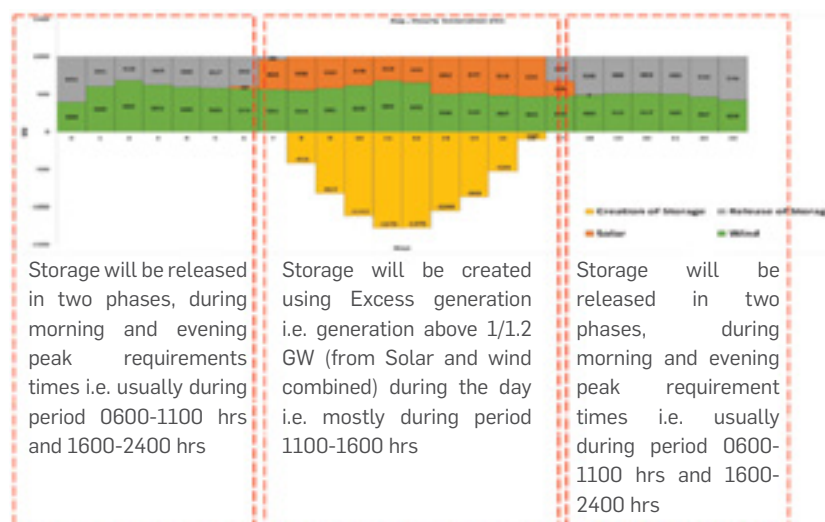
Integrated Renewable Energy Storage Project

The IRESPs are digitally connected storage infrastructure platforms that harness the power of various renewable resources to provide scheduled and flexible power to the grid. The IRESPs will be able to provide on-demand power which can be scheduled based on peak and baseload requirement, thereby assisting with grid balancing. IRESPs are highly efficient with limited storage loss and can provide DISCOMs with ancillary storage and grid balancing services. The IRESP would also allow us to provide off-takers with flexible contract structures to suit their needs.

Following is the description of the integration of solar, wind, and pumped storage projects in providing the schedulable on-demand power.

Both Solar and Wind projects will operate in normal conditions and supply power to Grid during 0000-2400 hrs, with maximum limit of power clamped at 1/1.2 GW

Transmission line capacity requirement will be 1/1.2 GW only for the period capacity of 4/4.8 GW thus ensuring optimal utilisation of transmission facilities



PUMPED STORAGE PLANT MODEL

Greenko has planned to develop Integrated Renewable Energy projects with a total capacity of 48.98 GWh across 4 states of India. The IRESPs are expected to harness the power of solar and wind resources with digitally connected storage infrastructure to provide scheduled and flexible power to the grid.

Greenko's business model of Pumped Storage Plant combined with the Intelligent energy Platform contributes greatly to the circularity of economy and energy security by creating new sharing platforms within the sector.

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Pinnapuram Integrated Renewable Energy Storage Project Overview

Greenko Group has conducted detailed research and evaluated suitable locations for IRESPs in India and has identified Pinnapuram, Kurnool District, Andhra Pradesh for the proposed **Pinnapuram Integrated Renewable Energy Storage Project (IRESP)**. The project has Upper & Lower Reservoirs enclosed by 9.6km long, 42m high Rockfill dams, Power Intake, Pumping Intake, Waterways with Six Tunnels & Penstock Pipes, a Subsurface Power House Complex, housing 8 variable speed reversible TG units.

Pinnapuram IRESP has been conceived as the Largest Gigawatt Scale integrated project with solar, wind, and pumped storage components that can supply Schedulable Power on Demand (SPOD) which will provide Dispatchable & Schedulable Renewable Energy for the first time to consumers across India.

The Pinnapuram IRESP consists of four key components which are as follows,

- The Standalone Pumped Storage Project (SPSP)
- Solar Park development
- Wind Park
- Central Pooling Sub Station (CPSS)

The Pinnapuram IRESP is a lighthouse project for #renewableenergy. The project combines the merits of solar, wind, and pumped storage hydropower. The PSP is used as a green battery to store wind and solar energy and to supply it flexibly, on-demand.

CPSS is connected to evacuate energy nationally to multiple inter-state consumers. Greenko Renewable Energy Management Center housing the 'Intelligent Energy Platform' (to forecast, monitor, balance, and deliver the required energy and storage services) will be an integral part of CPSS.

The IRESP is a self-identified project which can meet the dynamic needs of DISCOMs/STUs through:

- 24 Hours Round The Clock (RTC) Base Load Energy
- 18 Hours Base Load Energy as per Demand
- 12 Hour Peak Load Energy (6 hours + 6 hours)
- Energy Storage Service, Grid Management, Frequency Management & Ancillary Services

HIGHLIGHTS

Status	Pre-construction
Investment	6463.52 Crores
Location	Pinnapuram Village, Panyam Mandal, Kurnool District of Andhra Pradesh
Pumped Storage Hydro	1200 MW (9-hour storage capacity)
Solar	3000MW
Wind	600MW
Central Pooling station	220/400 KV
Length of transmission and distribution line	6 KM long 400 KV Quad Moose line from CPSS to PGCIL Sub-Station
Jobs created:	13000 (direct and indirect)
Key suppliers	<ul style="list-style-type: none"> ● Tata Consulting Engineers ● EDF ● AFRY ● Andritz Hydro ● Megha Engineering
Average annual electricity generation:	<ul style="list-style-type: none"> ● Solar & Wind: 7750 Mu. ● PSP: The turbine model is 3745 MU ● Pump mode is 4964 Mu

Key Elements of the Pinnapuram Standalone PSP

1. Standalone Pumped Storage Project comprises two reservoirs that involved the construction of Rockfill Dam Embankments in existing natural depressions.
2. Asphalt waterproofing would be done for the Rockfill dam. The Asphalt Faced Rockfill dam (AFRD) would provide lowest water infiltration rate, high flexibility and plasticity, minimum maintenance, high damage resistance, etc.
3. Reservoirs are located away from all existing natural water systems and have a negligible catchment area. Therefore, there is no requirement for a CAT plan.
4. Spillways in embankments are also not required.
5. The project envisages the non-consumptive re-utilization of 1.30 TMC of water for recirculation among two proposed reservoirs.
6. Adjustable Speed design with Double Fed Induction Motor Generator to operate at its peak efficiency points under all conditions.
7. Hydraulic short circuit provision kept achieving flexibility from 0-100%.
8. Availability of Spinning Reserve (Condenser mode) to meet sudden load changes in Grid. In turbine condenser mode, the project can generate reactive power to support the grid in case of fault.
9. Double Circuit Transmission Line proposed for Generation/Pumping of Power which will be connected at Pinnapuram IRESP central Pooling station.
10. Gas-insulated switchgear (GIS) is proposed.
11. Part load operations can be performed any number of times in a day without impacting the total life of the machine.
12. The project has no issues related to siltation, flash floods, environmental release, and impact on fisheries.
13. Minimal maintenance is required due to silt-free waters.
14. Pumped storage plant capacity is not impacted by changes in weather during the year and can be operated throughout the year, in all seasons, with the same efficiency.



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Saundatti Integrated Renewable Energy Project Overview

The Saundatti Integrated Renewable Energy Project is also designed as a gigawatt Scale integrated project with solar, wind, and pumped storage components.

The four key components of the project are:

- The Standalone Pumped Storage Project (SPSP)
- Solar Park development
- Wind Park
- Central Pooling Sub Station (CPSS)

HIGHLIGHTS	
Status	Design phase
Location	Saundatti IRESP is located in Belagavi district of Karnataka state
Pumped Storage Hydro	1260 MW (9-hour storage capacity)
Wind	400 MW
Solar	1000 MW
Grid connection	PGCIL/CTU sub-station at Dharwad for further supply into the National Grid



Transitioning Towards a Circular Economy

Greenko believes that using and reusing resources as efficiently as possible and finding value throughout the life cycles of finished products, significantly increases the productivity of the resource and thereby, reduces the cost while preserving and enhancing the natural capital.

In this context, Greenko has adopted a circular business approach in managing its organizational assets.

Greenko has explored circular value pools across its business by deploying a life cycle approach to business. The circularity at Greenko is harnessed at three levels.

Three levels of Circularity at Greenko



The first is the deployment of Sharing Business Models. The IRESP projects are major sharing platforms of storage and other electricity system services. The Group has been working and implementing the sharing generation asset model as also sharing of resources on the margins of the electricity grid.

The next circularity approach is Circular Choices. During the reporting period, Greenko has exercised caution while designing and making equipment choices, keeping in mind how long these assets will deliver value.

The third and final element of Circularity at Greenko is Managing the End of Life of assets and 'everything else'.

Managing 'everything else' at end-of-life is practiced always by the organization's waste management team. They are now charting the 'second life' for each of the organization's asset and their parts at the end of life in the assigned role.

The Group is compiling and evaluating all the inputs, outputs, and potential environmental impacts of various project components throughout its life cycle as per globally accepted standards. For a long time, many samples such as concrete cubes, aggregates (fine and coarse), steel plates, damaged modules, etc. are reused after testing.



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Please refer to the chapter on 'Natural Capital' for more details.

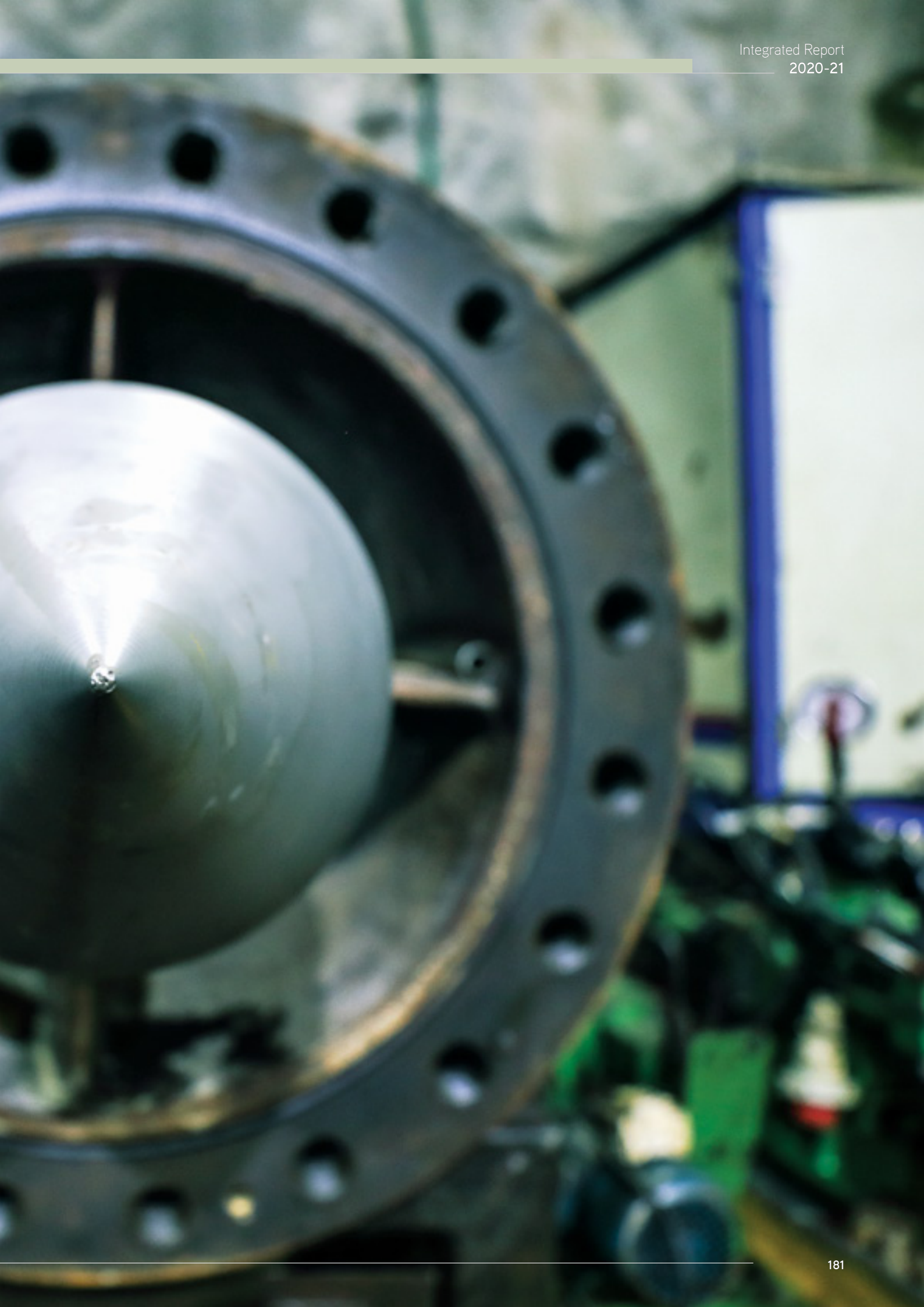
Looking Ahead

Greenko's manufacturing capital consists of three pillars: Renewable Energy Generation Assets, Long Duration Utility Scale Storage Assets and Decentralized Zero Carbon Molecules production and supply. In the coming few years, the focus will be on consolidation of generation assets, efficient and speedy execution of storage projects and exploration of zero carbon molecule opportunities to decarbonize the hard to abate industrial sectors.

We will continue to pursue our strategic approaches- Excellence in Adoption and Management of Assets and Projects, Contracts and Procurement, New Energy value pools, Regenerative and Circular value pools, across all the three pillars of our business.

Greenko plans to take up a circular approach through innovative tasks, programs, and activities specified for the Designing, Engineering, and management of IRESPs and other projects. The programs being encouraged in the Engineering design team are:

- Scheduled brainstorming of technical sessions
- Enhancing leadership skills
- Appreciation for Innovative ideas.



Intellectual Capital

Strategic Approach

In over two decades since Greenko was founded, digitization and innovation have been at the crux of decarbonization and decentralization. Greenko has introduced digitalization, increasing flexibility and enabling integration across entire systems. This has ensured an increase in productivity, smart response to demand and accessibility.

The group has relied upon innovation and digitalization efforts, to capture and transform renewable energy by making it reliable, schedulable and flexible. The group has invested in building an Intelligent Energy Platform and Pumped Storage projects for generating the firm and RTC energy. Investment in advanced analytics, Internet of Things (IoT) and deployment of systems enabled improvement in asset management by predictive maintenance, real-time remote monitoring, and intervention.

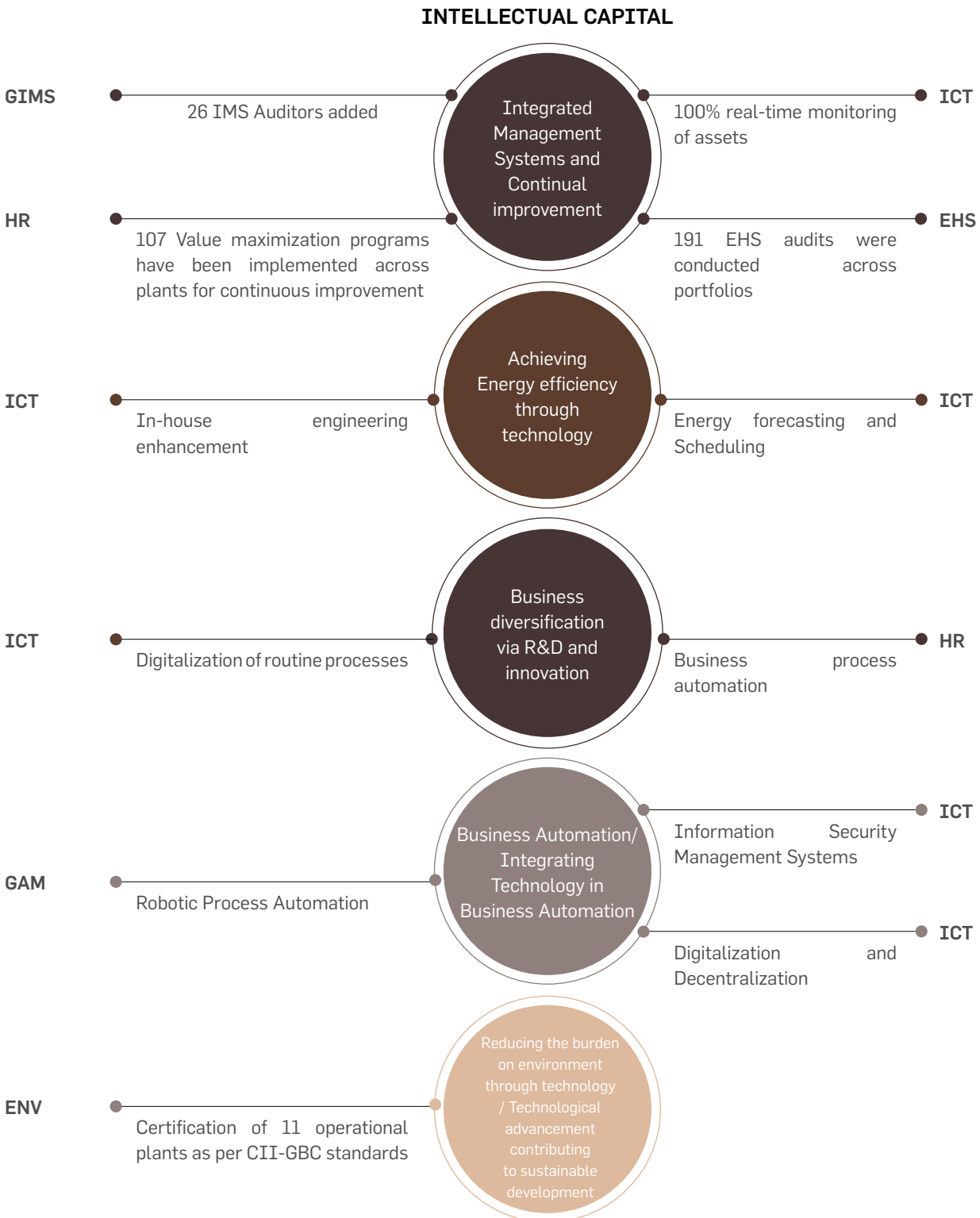
The group's strong focus on innovation and developing in-house capabilities is a strong driver for the growth and performance improvement. Presently, the innovation is centered around digitalization, circularity, climate adaptation and schedulability of electricity delivery. The challenges in construction and operation of long duration storage and decentralized Zero Carbon molecules production and supply across the country have been the focus of the groups' innovation system.



Strategic Focus Area	Strategic Approach	KPIs
Integrated Management System and Continual Improvement	<ul style="list-style-type: none"> ○ Improving business process efficiency ○ Sustainable certification for operational assets. 	<ul style="list-style-type: none"> ○ 462 continual improvement programs ○ 100% real-time monitoring of assets ○ 26 certified IMS auditors added ○ 60 new policies and procedures introduced
Achieving Energy efficiency through technology	<ul style="list-style-type: none"> ○ Enabling robotic process automation (RPA). 	<ul style="list-style-type: none"> ○ Live energy forecasting ○ In-house technology innovation
Improving Business diversification through innovation	<ul style="list-style-type: none"> ○ Innovation in in-house technologies. 	<ul style="list-style-type: none"> ○ Reduction in delay of documentation process ○ 65-70% time saved due to minimal human intervention ○ 24*7 availability of the system
Technology adoption and integration in Business Automation	<ul style="list-style-type: none"> ○ Partnering with R&D institutions 	<ul style="list-style-type: none"> ○ Reduction in Human Errors and proactive approach to employee related requests ○ Digitalization of work processes ○ Identify issues that might present a security risk and propose effective counter measures on site ○ Comprehensive review and validation of documented information ○ Elimination of audit management formats

Intellectual Capital

Integrated Value Creation in Intellectual Capital



Journey so far

Energy system inherently is a complex and decentralization of the energy generation systems to meet the needs of complex network of demand points, comes with its own set of challenges. These include ensuring quality of power, flexibility, reliability, and asset level visibility.

In addition to these issues related to cyber security, integration of variable energy resources among others. These can only be overcome by rapid deployment of digitalization and advanced innovative technologies. In FY 2020-21, the need for digitalization and innovation became evident with the Covid-19 pandemic. Greenko continued to invest in technology and innovation with an eye for future enabled technology that can fulfil the necessities of an evolving energy market.

Greenko's Organization Development Model established in FY 2019-20 has carried on to

FY 2020-21 that governs intellectual capital, to build capability and achieve excellence by expanding, enhancing and fortifying strategies, structures and processes.

The company believes in Business Excellence, Digitalization, Innovation and Systems Assurance as components critical for its transformational journey. The company's performance of intellectual capitals is benchmarked, monitored and improved against these four decisive elements.

Greenko's Organization Development Model



Intellectual Capital

Integrated Management Systems and Continual Improvement

“

We have insulated our business risks by ensuring adherence to systems and processes subjecting them to non-financial audits. This allows for empowerment of our teams and promotes innovation as the business is in a constant state of rapid evolution.

”

-Vidyacharan Astakala
AVP GIMS

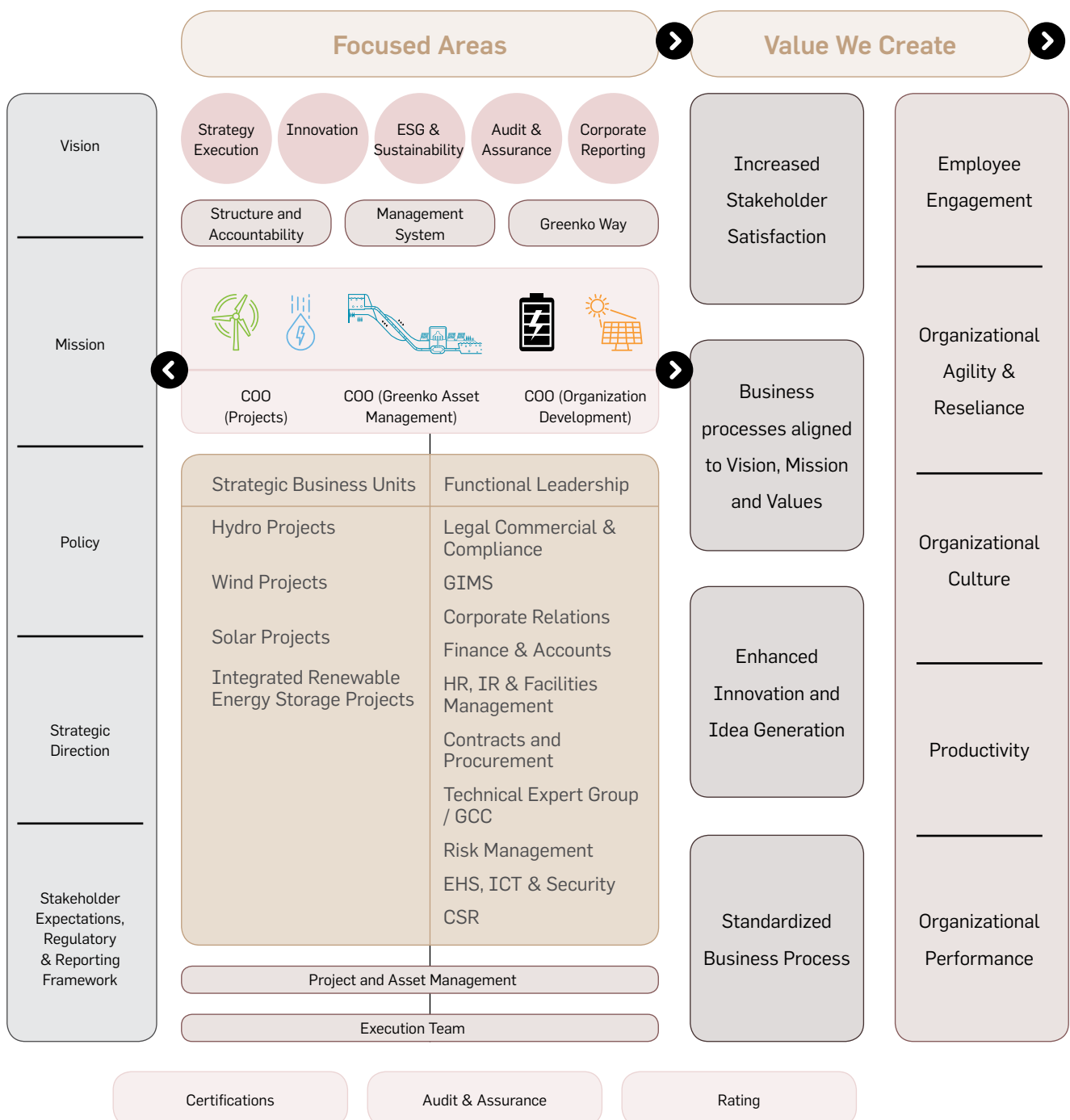
Greenko's Integrated Management System (GIMS) is a continuous improvement and performance excellence platform. The GIMS amalgamates all the management systems and processes across the group's operations to homogenize process management while also sharing, monitoring and controlling systems.

Greenko Integrated Management System (GIMS) operates in accordance with international standards and industry best practices to effectively align its numerous management systems with the values, vision, mission and strategy. Specifically, GIMS works on the establishment, implementation, integration, and maintenance of Quality, Environment, Health & Safety, Information Security, Energy and Social Accountability Management Systems (QEHS-IS-En-SA)

as per the requirements of ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, ISO 27001:2013, ISO 50001:2018 and SA 8000:2014. In addition to ISO standards, ESMS (Environmental and Social Management System) are maintained as per the requirements of IFC performance standards, Sustainability reporting and Integrated reporting is conducted as per the requirements of GRI and IIRC Standards, respectively and integrated into GIMS.

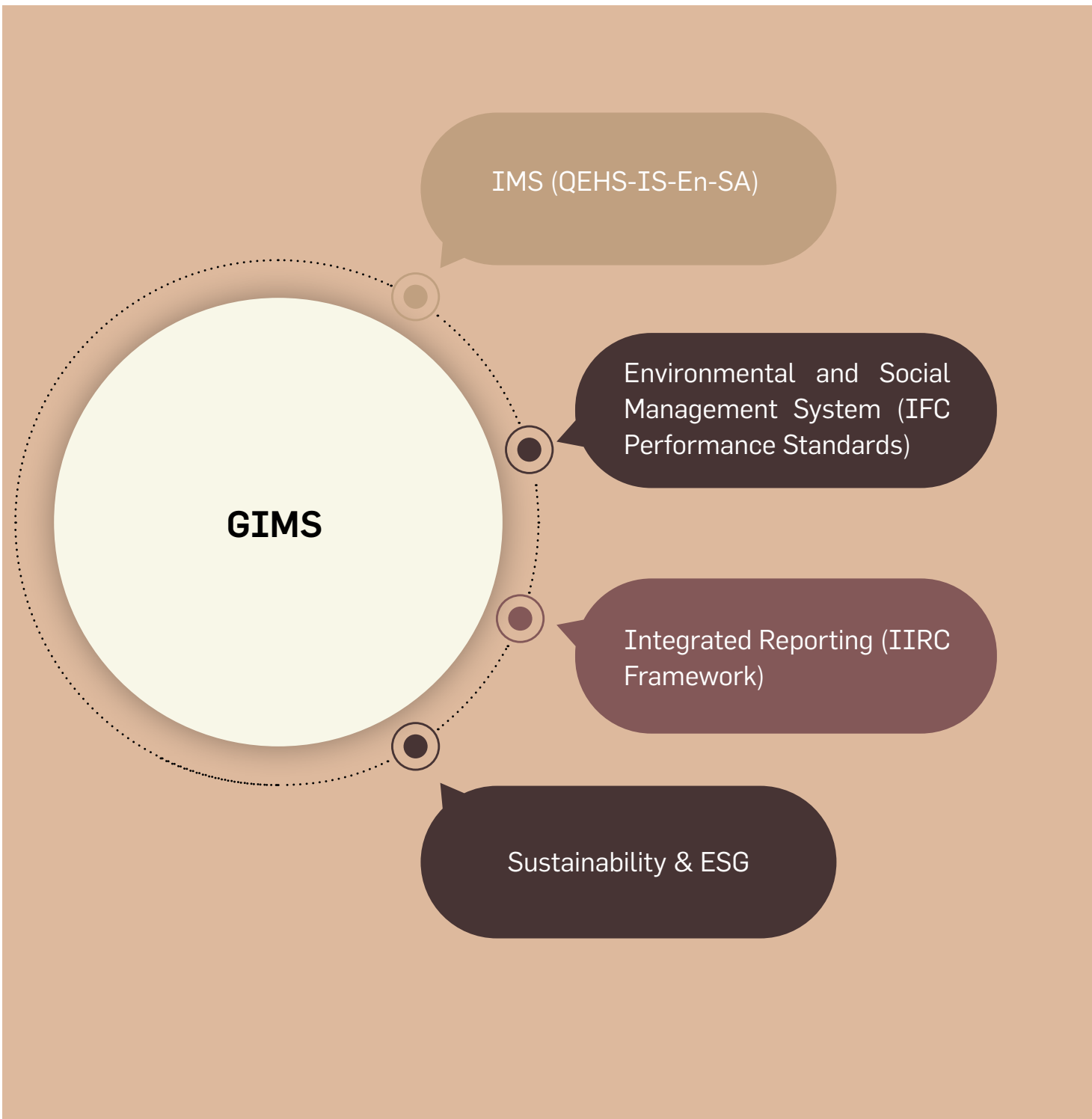


Greenko Integrated Management System Structure



Intellectual Capital

GIMS focused areas



The scope of GIMS includes training, implementation, auditing, certification and reporting as per ISO, IFC and IIRC frameworks.

The group has deployed diverse systems and associated processes across its operations for project management, asset management, information management and sharing, forecasting and scheduling energy generation, real-time monitoring and control of asset performance, surveillance, etc. All these systems and processes are integrated and managed under GIMS.

In order to achieve robust performance management and continual improvement, the deployed management systems and processes are periodically and consistently audited to ensure adherence and effective outcome. The IMS audits are conducted by both internal cross-functional teams and external agencies. The audit findings are promptly corrected.

In the current reporting period, EHS, GIMS, PPS (People, Process, System), OHS, GAM (Greenko Asset Management), and ESMS (Environmental and Social Management System) audits were conducted across portfolios. Contributing to the continual improvement, corrective actions were taken for the audit observations.

GIMS performance across BUs

KPI	Units	Hydro	Wind	Solar	Total
Number of Continual Improvements Achieved	Number	92	112	258	462
Number of Value Maximization Programs Conducted	Number	36	104	241	381
Number of PPS Audits Conducted	Number	13	16	44	73

GIMS performance

KPI	Units	Quantity
Number of policies and procedures revised	No	196
Number of New policies and procedures implemented	No	60
Number of internal audits conducted	No	31
Number of external audits conducted	No	10
Number of GAP analysis audits conducted	No	63
Number of awards received in 2020-2021	No	10
Number of IA Trainings conducted	No	2
Number of GIMS awareness workshops conducted	No	12
Number of IMS Auditors Certified	No	26
Integrated management system certified sites	No	12+1 (HO)
No of GIMS processes automated	No	1
Number of sites covered under Green Company Rating System	No	3

Intellectual Capital

Value Creation Story:
Business Process Review and Updating of Documented Information


Location: HYDERABAD

Overview

To ensure a suitable, adequate and effective integrated management system across all Operational Plants, Projects and Administrative Office functions GIMS has undertaken a project called "Business Process Review". A committee was formed to review and revise the existing procedures, identify and document new procedures. All the process documents were reviewed and revised by the committee along with the process owners.

Following is the outcome of the Business Process review exercise:

- Total Functional Areas covered under the exercise: 20
- Total Procedure reviewed and updated: 208
- Total Documents Controlled using Docu-sign: 208

Strategic Objective	Target Area	Material Topics Addressed	Alignment with SDGs
To dynamically review and update existing Documented Information for adequacy and suitability of current practices.	Process Improvement	Excellence, Adoption and management of Assets	

Key Achievements

Adequacy and suitability of Documented Information

Challenges faced

Engaging relevant stakeholders on a single platform for review of all Documented Information

Achieving Energy Efficiency through Technology

Greenko believes in continuous improvement and innovation. Greenko utilizes technology effectively to enhance energy efficiency there by achieving the highest standards of operational performance.

Following are some of the technology laden initiatives designed to cater to the needs of organization.

Value Creation Story: Energy Forecasting & Scheduling real-time analysis



Overview

As per the government initiative, all power plants in the country must provide energy forecasting to the Government agencies on day-ahead basis. In India, it is especially important as the country is adding hundreds of megawatts of variable renewable energy generated from wind and solar power plants.

Energy forecasting needs to be provided on 15 Min blocks starting from 00:00 Hrs. Block-wise deviation (actual injected units to scheduled units) leads to huge penalties. Greenko engaged multiple Forecasting agencies along with its own forecasting team for generation prediction.

It's a painstaking task to understand/analyse whether the forecasting agency is aligning with near real-time generation. We have developed a dashboard to present scheduled generation, real-time generation, generation from other forecasters, penalties for each time block for each plant, SBU wise & Group wise. This software is extremely useful for the Greenko team and the forecasters, eventually reducing penalties for the company.

The tool also provides automated generation feeds to government agencies.

Strategic Objective	Target Area	Material Topics Addressed	Alignment with SDGs
To reduce penalties by energy forecasting on real time basis	Forecast performance Real-time generation	Energy Efficiency Innovation and technology adoption	 

Value created

Greenko was successful in creating shared value by: -

- Reducing penalties
- Providing live information on forecasters' performance
- Saved time and reduced human errors.

Challenges faced



- Coordinating with various forecasting agencies to automate the data feed to the software
- Obtaining near real-time generation & availability data for all plants.
- Structuring data for different government agencies as per their own formats.

Intellectual Capital

Value Creation Story: PV Module Junction Box Replacement

Overview

Junction box (JB) has a simple but important role in the working of PV modules. It is attached to the back of solar PV modules with silicon adhesive and wired with 4 - connectors together and worked as the power output interface of the solar PV module. Junction boxes have bypass diodes to keep power flow in one direction and prevent power from feeding back into the PV module. It helps connect solar PV modules by cables with MC4/ MC5 connectors.

Strategic Objective	Target Area	Material Topics Addressed	Alignment with SDGs
To connect an array of solar PV modules with cables and MC4/ MC5 connectors.	In-house efficiency	Innovation and technology adoption	 

Innovative implementation approach

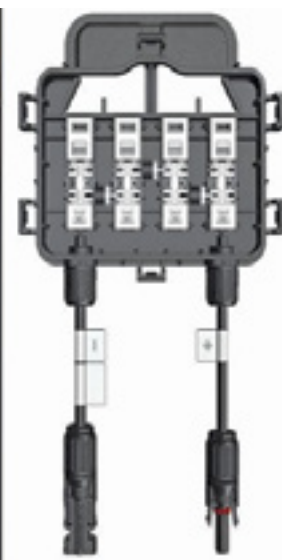
QMD team worked along with Operation & Maintenance team at Ghani Solar Park, Kurnool to replace approximately 1450 damaged JB's in PV modules. A standard operating procedure (SOP) was prepared by QMD team for JB replacement, testing at Solar PV lab and handover of the repaired PV modules to O&M team, including the following steps: -

- Once the PV modules are received with damaged JB's at the Solar PV lab, after cleaning and temperature stabilization at the lab, JB shall be carefully removed.
- An electroluminescence test shall be performed before JB replacement to ensure that it does not cause major damages to the solar cells and is cleared for JB replacement.
- Our QMD team will carefully place new JB's with help of silicon sealant and connect the module terminal to cure it for 36 hours.

- A final electroluminescence and flash test shall be performed and handed over to the O&M team.
- The module with replaced JB's shall be installed in separate string and shall not be mixed in other strings.
- These modules are kept under monitoring.

Value Created

QMD teams have been monitoring these modules along with the O&M team and no problems have been reported and performance has been found to be satisfactory.



Improving Business Performance through Innovation

The foundations for Greenko's transformation beyond GKO 4.0 is based upon promoting innovation and cutting-edge technologies in the operation and maintenance of renewable energy assets. Performance enhancement while continuing to integrate renewable energy sources with information and communication technology, in pursuit of digitalization, has become a pressing priority against the backdrop of the Covid-19 pandemic.

For the FY 2020-21, Greenko introduced Darwin Box HR Management system, Fiori Apps implementation and Information Security Management System (ISMS) to seamlessly enhance the performance of the company.

KPI	Units	2020 -2021	2019-2020
Amount spent on Digitalization & automation	INR	350000	NA
Number of ICT due diligence done for the acquired sites and outcome of the same	Number	2	NA
Amount spent on CAPEX by type (hardware, software and infra)	INR	60,92,634	32,47,639
Amount spent on OPEX by type (hardware, software and infra)	INR	5,83,74,130	6,15,29,317
Total Cost of ICT inventory	INR	7,57,49,009	2,31,51,996
Total number of functional processes digitized.	Number	7	NA
% Uptime of servers	%	99.98	99.98
Average time taken to resolve tickets	Number	Low: 1.7 Days Medium:3.76 Days High: 8.29 Day	Low: 1.4 Days Medium:1.7 Days High: 1 Day
Total Number of ICT equipment failures	Number	1	5%
Number of employees trained on ISMS	Number	350	750
Maturity level of Cyber security	Number	Level 2: Proactive	Level 2: Proactive
Total Number of ICT tickets received and resolved	Number	Received: 8421 Resolved: 8362	Received: 7391 Resolved: 7387
Tickets resolved under Forecasting and scheduling	Number	40	NA
Tickets resolved under SAP-FICO	Number	3575	3952
Tickets resolved under SAP-MM	Number	3137	5393
Tickets resolved under SAP-HR, HCM & SF	Number	82	152
Tickets resolved under SAP-PM	Number	4	0
SAP Training to business users	Man hours	160	404
Total number and nature of confirmed cases of cyber incidents. Analysis of threats, incidents and trends.	Number	3	0
% ICT regulatory compliances (% of renewals within the timeline)	%	95%	NA

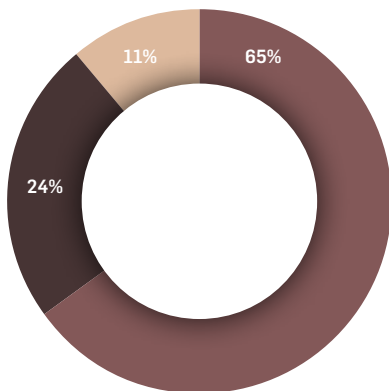
Intellectual Capital

Greenko Innovation Hub

The company believes in and promotes in-house innovation to address the unique challenges of our business. To help facilitate innovation within Greenko, a unique concept of 'Innovation Hub' was initiated during FY 2020-21. It saw an overwhelming response by all departments and participation from our employees.

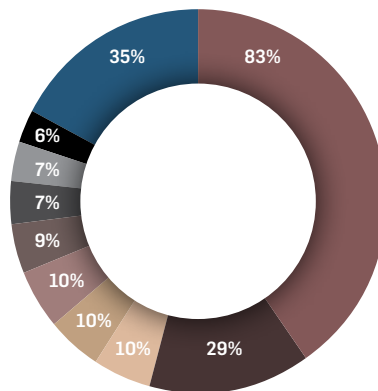
Reporting Phase	Phase-1
Departments Participated	GAM, Projects, Engineering, C&P, QAQC and QSD
Total No of Participants	130
No of Groups formed	20
Total number of Ideas generated	209
Total number of Main Categories	3
Total number of sub-categories	20
Venue	45 office Conference
Number of sessions	5 x 8 hours

Priority Process



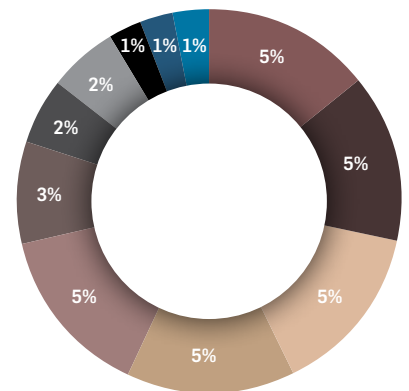
- Business 2 Business
- External Partnership
- Talent Management

IDEAS By Sub-Category



- B2B Process Standardisation
- EP- Industry Collaboration & Network
- B2B Process Efficiency
- EP- Engagement
- EP- Innovation
- B2B-IoT/ Cloud Solutions
- B2B-Business Re-Engineering
- B2B-Digitalization
- B2B-Collaboration
- Others

Other 35 Ideas By Sub-Categories



- B2B Business Opportunity
- Market Research
- TM- Leadership
- TM- Learning & Development
- TM- Re-Skilling and Up-Skilling
- B2B-Automation
- B2B-New Technology Adoption
- TM- Engagement
- B2B-Technology Adaption
- B2B-Mobility Solutions
- EP-Collaboration

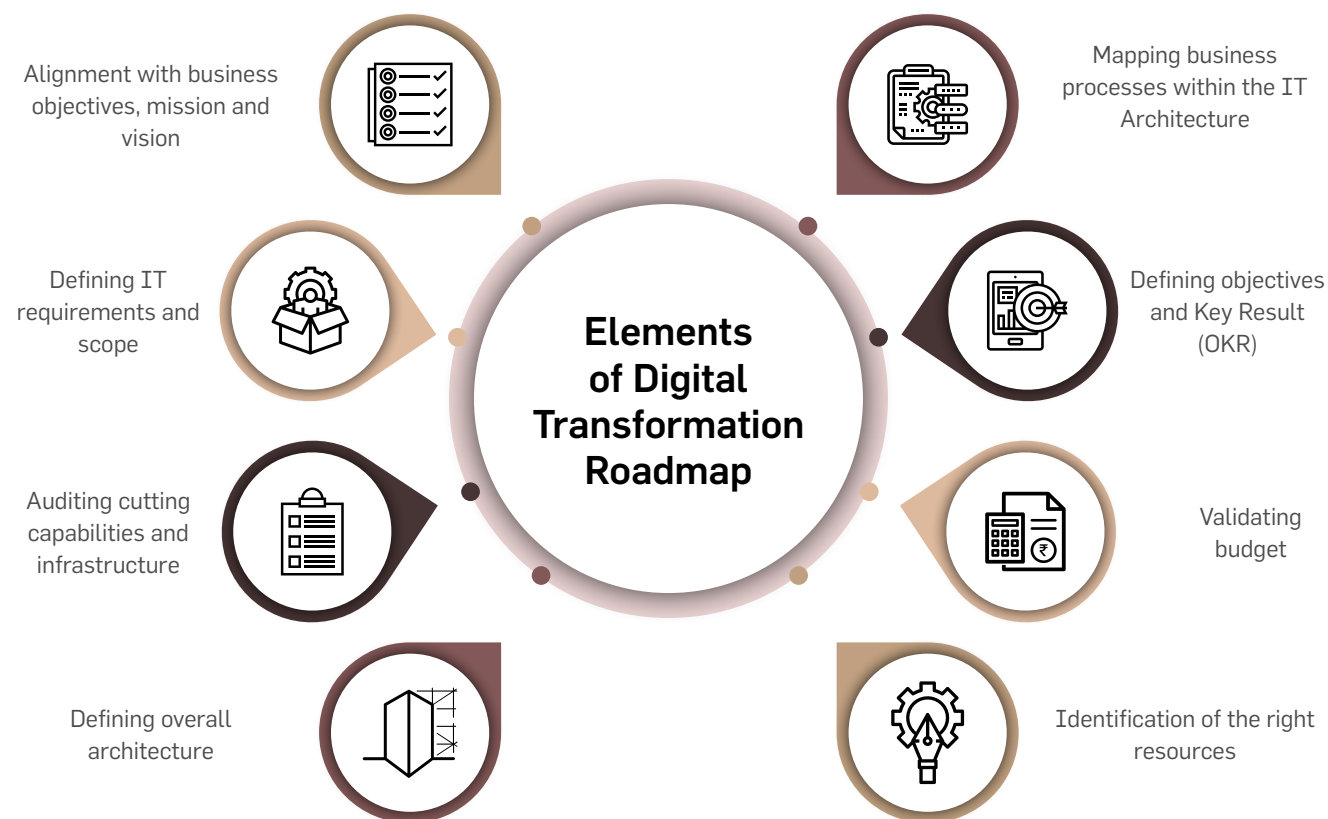
Technology adoption and Integration in Business Automation

Technology Adoption

Greenko group has been at the forefront of adopting technology to transform energy systems. Digitalization of energy systems has enabled predictability, reliability and sustainability. Vision to sustain dynamic growth by utilizing technology to improve business operations.

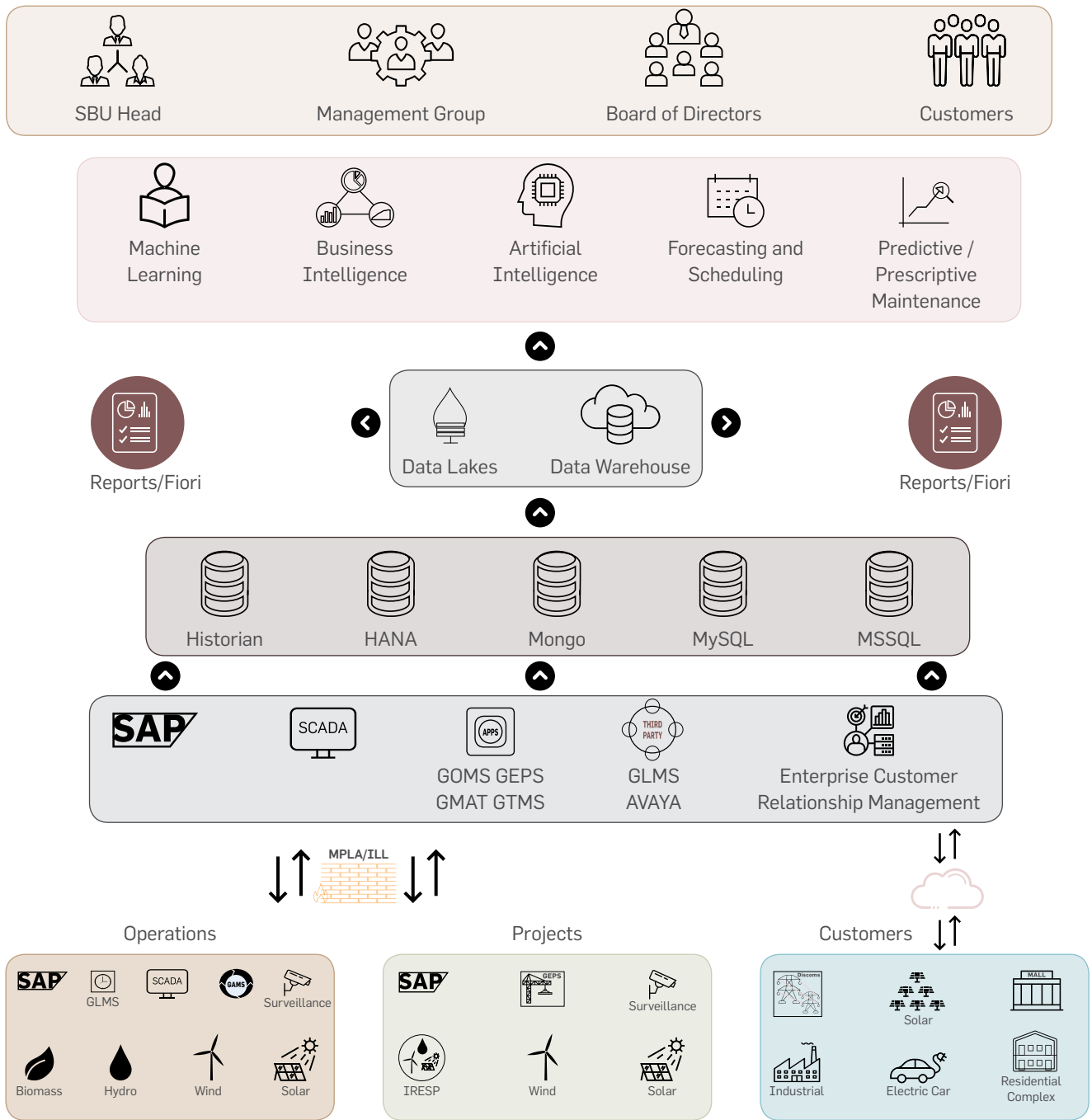
The digital transformation roadmap created the year before has yearned good results. Greenko adopted smart data analytics, forecasting and scheduling of energy models, cloud computing, IoT based SCADA systems, monitoring of assets by drones, recording with historians etc. The use of advanced technologies has provided valuable foresight in operations and reduced downtimes and increased the reliability of remote assets.

Greenko's Digitalization Journey

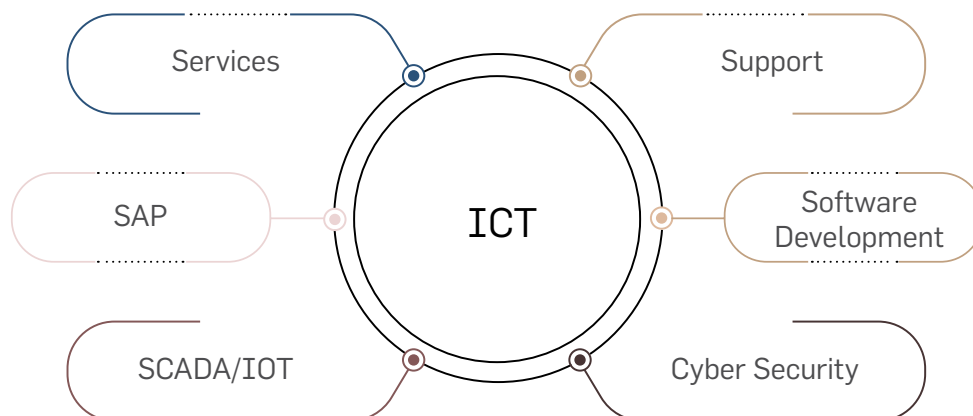


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ICT Model



Functions of ICT





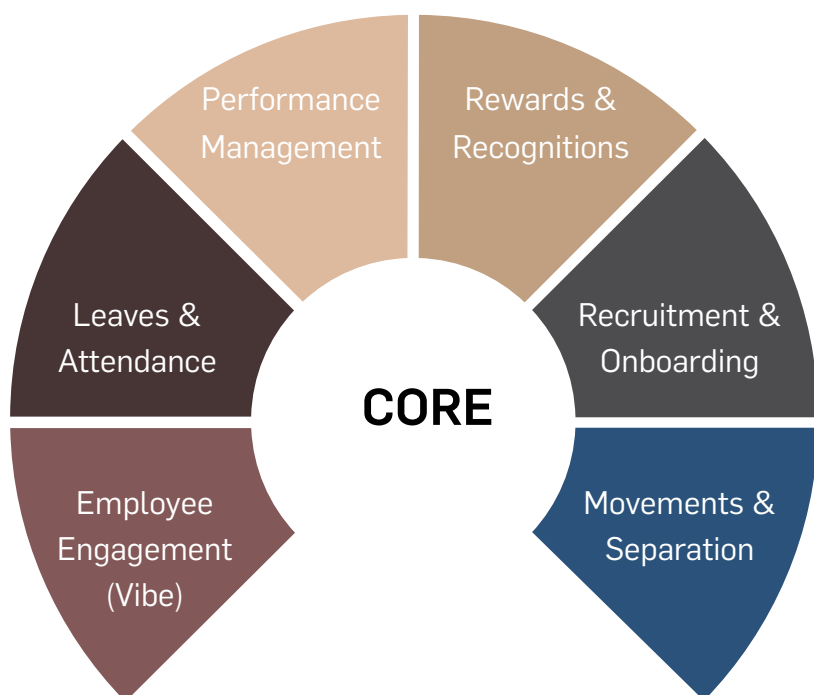
Value Creation Story: Darwin Box HRMS implementation

Location : Across the group

Overview

Greenko took the initiative of implementing Darwin Box HRMS. It carried out Employee lifecycle management through various modules. The implementation was as critical as choosing the right HRMS.

Strategic Objective	Target Area	Material Topics Addressed	Alignment with SDGs
To manage employee lifecycle on one united platform.	The workforce and the employees	Talent Retention Innovation and technology adoption	 



Value created

Greenko was successful in creating shared value by: -

- Ensuring employee engagement through advanced software
- Showcasing proactive approach to employee requests
- Reducing human errors

Challenges faced

The challenges faced during the implementation were:


- Customization of software to address Greenko's needs
- Integration with SAP and other Greenko applications

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Value Creation Story: Fiori Apps Implementation

Overview

Before Implementation of these apps, users accessed the system for any activity within the Greenko network through SAP Classic GUI and required VPN access for SAP access from outside the network. New S/4 Hana Interface has been implemented to enhance user experience and performance.

Strategic Objective	Target Area	Material Topics Addressed	Alignment with SDGs
To modernize the user experience and performance.	Business improvement with Automation	Innovation and technology adoption	

Innovative approach of the project

After Implementation of apps, users can access the system through the web with multiple devices like computers, tablets and mobiles. Users outside our network can also access services through secured web access, which improves mobility, scalability, and productivity.

The apps are light and web based and are easily accessible with minimum bandwidth, from remote areas. Earlier, SAP GUI was required and bandwidth requirements were also higher.

Users can easily access role-based activity from Fiori Apps tiles. Earlier, a user had to remember the transaction code for calling the transaction and performing the desired activity.

List of Fiori apps which are implemented

List of apps	Module
My Inbox	Manager Approval
Display G/L Account line items	FI
Display G/L Account Balances	FI
Stock - Multiple	IM
Supplier Invoice List	IM
Display Customer Balances	FI
Display Supplier Balances	FI
Material Document Overview	IM
Display Financial Statements	FI
Create Supplier Invoice	IM
Post Goods Receipts for Purchase Order	IM
Manage Purchase Requisitions	MM
My Purchase Requisitions	MM
Create Billing Documents	SD
Sales Customer 360 Degrees	SD

Challenges faced

- Identification of suitable apps commensurate with user needs and tailoring functionalities as per expectation.
- User adoption is difficult for Business users who have to migrate to GUI to Apps Training on Fiori Apps.

Value Created

Greenko was successful in creating shared value through the following steps: -

- Harmonized design, structure, content to provide simplified user experience on the digital platform
- A role-based user experience provided end users access to information and functions needed for daily work
- Users could Transfer/delegate approval of work-items to other users
- All kind of approval PR or PO floated into a single workspace - My Inbox app, aiding managers to take decisions.
- Finance Reports like finance statement, GL balance and details, Customer and supplier balances were enabled
- MM users viewed purchase requisitions and managers could assign it to buyers
- Inventory users could view available stock, supplier invoice lists and could perform functions such as receipt issue and invoice posting.
- Enabled monitoring of customer orders, information and bill generation.

Usage of apps

Apps	No of Users
My-Inbox All PR and PO approvals are accessing through Fiori	21
Material Management Apps	4
Inventory Management Apps	4
Sales and Distribution apps	4
Finance Apps	27
Total	60

Paper Usage reduced

Through PR and PO approval app

For 2020-21 Financial year total 8685 PR Created in Group level and approved digitally

For 2020-21 Financial year total 9150 PO Created in Group Level and approved digitally

Transaction execution time was reduced to half.

- Earlier, for the approval process, users needed to log into the system, execute the transaction before the approval. Now, the Fiori app allows users to view necessary details and provide approvals with a single click, anytime and from anywhere.
- Inventory Posting can also be done through mobile applications, with the help of secure web access. It also offers easier navigation facilities.



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Information Security Management Systems

Overview

Information Security Management System (ISMS) is a framework of policies and procedures for systematically managing an organization's sensitive data. The primary objective is to protect information assets against threats and vulnerabilities that may expose the organization to risks.

Proper risk mitigation strategies contribute to a business by ensuring:

- Business continuity
- Operational Efficiency
- Cost Effectiveness



Key Achievements

- **Secures information with Four Layers of Information Security**

An ISMS helps protect all forms of information, including digital, paper-based, intellectual property, company secrets, data on devices and in the Cloud, hard copies and personal information.

The four layers represent the way information flows within and between systems. Securing each of the four layers include: Perimeter Defense, Host Protection, Operating Systems and Application Protection, and Data/information Protection. One method to secure the four layers is encryption.

- **Helps respond to evolving security threats**

Constantly adapting to changes both in the environment and inside the organization, an ISMS reduces the threat of continually evolving risks.

- **Protects confidentiality, availability and integrity of data**

Through a set of policies, procedures, technical and physical controls to protect the confidentiality, availability and integrity of information.

- **Improves company culture**

Its holistic approach covers the whole

organization, not just IT, and encompasses people, processes and technology. This enables employees to readily understand risks and embrace security controls as part of their everyday working practices.

- **Offers organization-wide protection**

It protects your the organization from technology-based risks and other threats such as poorly informed staff or ineffective procedures.

● **Reduces costs associated with information security**

The risk assessment and analysis approach of an ISMS enables the organization to reduce costs spent on indiscriminately adding layers of defensive technology that might not work.

● **Increases resilience to cyber attacks**

Implementing and maintaining an ISMS will significantly increase the organization's resilience to cyber-attacks.

● **Information Security Governance**

The advancement of IoT/IIoT has created new value through the interconnection of all manner of 'things'. However, cyberattacks are growing more sophisticated every day and their range of targets have expanded from traditional ICT to the Internet of Things (IoT) and to OT which encompasses control and operational technology. To minimize risks such as information leakage and business shutdowns that impact the continuation of business itself, risk management as it pertains to information security is one of the most important issues a business faces.

At Greenko, we follow the characteristics of effective security governance which are critical for an effective enterprise information security management system.

1. Considering information security management as an institution-wide issue
2. Making leaders accountable.
3. It is viewed as an institutional requirement (cost of doing business)
4. It is risk-based.
5. Roles, responsibilities and segregation of duties are defined.
6. It is addressed and enforced in policy.
7. Adequate resources are committed.

8. Provision for staff training.
9. Requirement of a development life cycle.
10. Planned, managed and measurable outcomes.
11. Reviewed and audited.

● **Information Security Management**

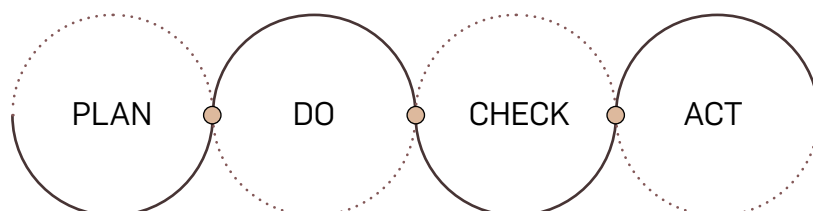
Often Information security governance is confused with Information security management. Information security governance is the system with which an organization directs and controls Information security. Information security management is concerned with making decisions to mitigate risks; governance determines who is authorized to make decisions.

Governance specifies the accountability framework and provides oversight to ensure that risks are adequately mitigated, while management ensures that controls are implemented to mitigate risks. Management recommends security strategies. Governance ensures that security strategies are aligned with business objectives and consistent with regulations.

Governance	Management
Doing the right thing	doing things right
Oversight	Implementation
Authorizes decision rights	Authorized to make decisions
Enact policy	Enforce policy
Accountability	Responsibility
Strategic planning	Project planning
Resource allocation	Resource utilization

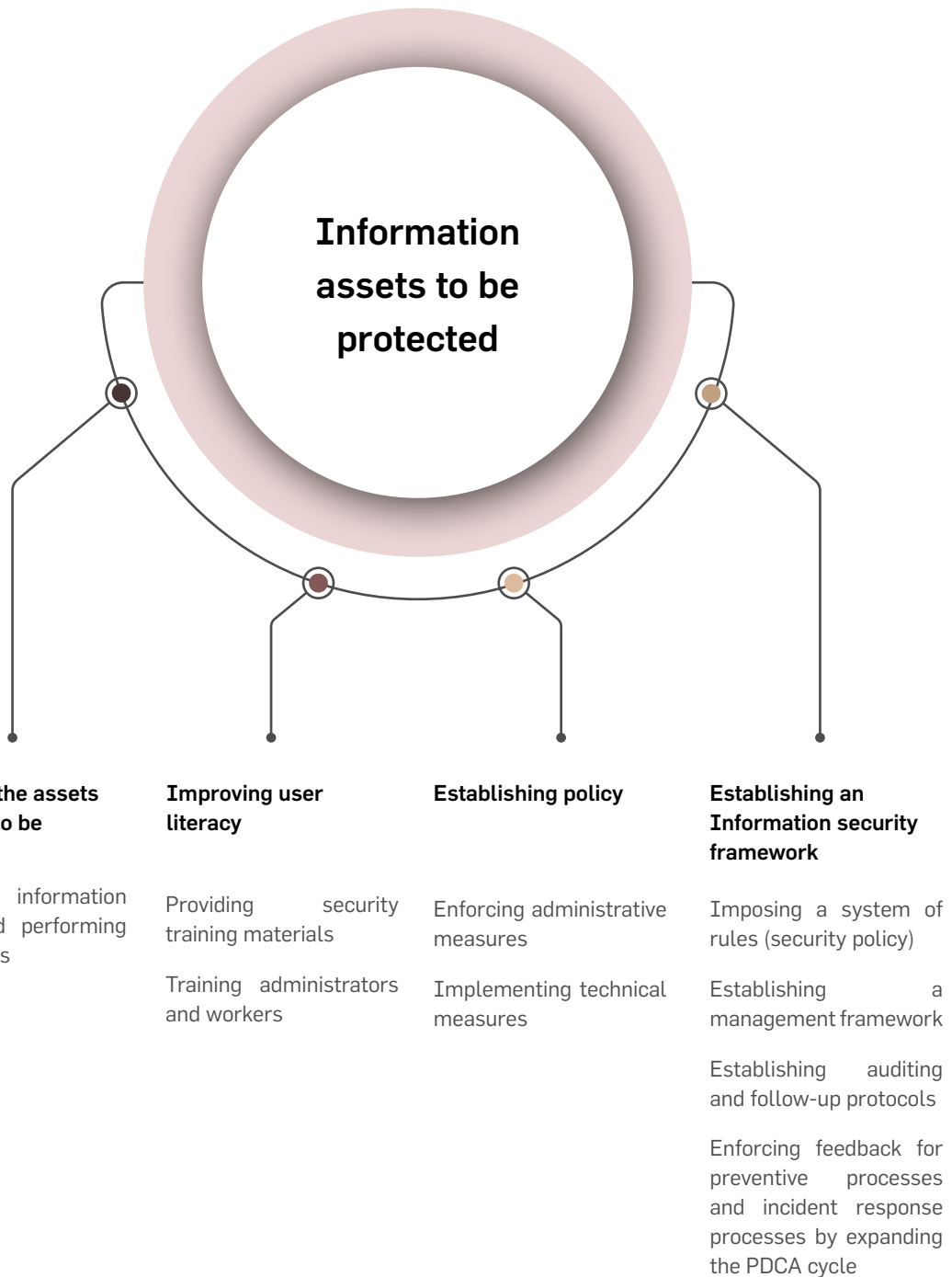
Information security management cycle

Greenko has established a framework that subjects information security management through the PDCA (Plan-Do-Check-Action) cycle. In the Plan stage of the PDCA cycle, Greenko formulates information security management rules and measures. In the Do stage, Hitachi implements those rules and measures. The Check stage entails raising awareness and monitoring of the activity in the Do stage, which leads to the Action stage in which ongoing improvements are made. This cycle takes six months from start to finish.



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life cycle of information asset management



Educating employees on information security

An organization's ability to maintain information security and protect personal and confidential information depends on its workers understanding of the importance of information security and making it a part of their personal ethos as they go about their daily tasks.

Greenko conducts security awareness sessions annually on information security for all executives, workers, and temporary employees.

Category	Target audience	Description
Staff education	<ul style="list-style-type: none"> All employees Temporary employees Employees on secondment 	The importance of confidential information management, and the latest trends in information security
Specific education	Section manager or equivalent	Knowledge someone in a management position must possess in relation, confidential information management, and information security.
	New employees	The fundamentals of personal information protection, confidential information management, and information security.
Specialized education	Information asset manager	Knowledge required for an information asset manager to carry out their role as a manager of information assets including personal information in their division.

On-site security risk assessment

With an ever-expanding pan India presence, the Greenko Group is present in many states and has power plants among its business entities. This environment inevitably gives rise to diverse in-Group network environments and facilities and varied installation and usage environments for IT equipment. There is also communication with outside parties via internet connections, removable media (USB storage) and other means. Preparing for security risks such as spear phishing and malware infection is very important.

To address the risk that comes with changes to the business environment, Greenko has strengthened its assessment framework that uses expert security teams. Specifically, a security team will coordinate with each power plant SCADA/ICT person and implement enhancements from the following perspectives:

- (1) Carry out assessments of all assets and internal facilities that connect to the network of the Greenko Group based on latest developments.
- (2) Identify issues that might present a security risk and propose effective countermeasures on site.

Challenges Faced

- To make everyone understand that ISMS is not an ICT Team responsibility, rather everyone's responsibility at the organization.
- Incorporating ISMS in their existing procedures for non-IT functions.
- Understand asset-based risk mitigation.

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Supervisory Control and Data Acquisition (IoT)

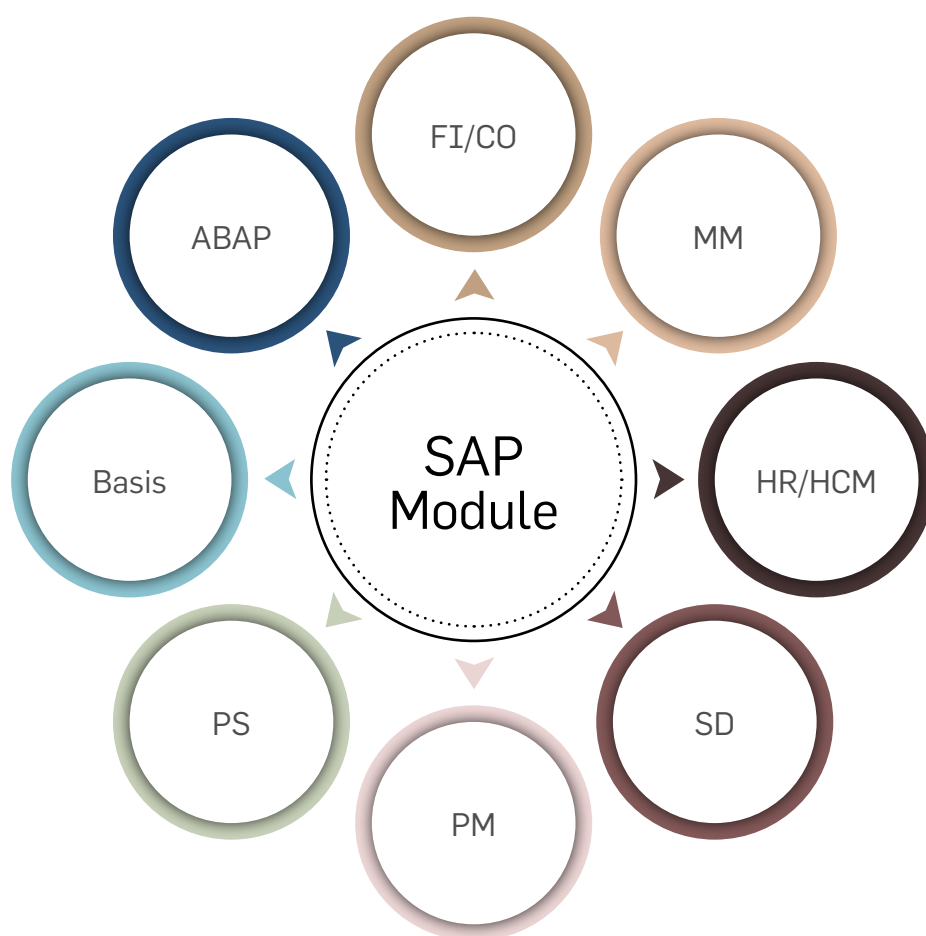
Over the years, Greenko has transitioned towards a more technology enabled company and has been at the forefront to implement Internet of Things (IoT). This has allowed Greenko group to function with utmost ease during a difficult year that included the pandemic. The group's solid digital infrastructure along with possibilities in IoT and Big-Data Analytics have allowed for remote access of data to optimize business operations.

Integrating Technology in Business Automation

Utilizing the right kind of technology is crucial for the company's growth. Greenko has become technologically efficient by using SAP processes, robotic process automation (RPA), business process automation (BPA) and AI-powered automation. These processes are tailored specifically to the needs of the organization and have helped a lot in automating routine tasks and significantly reduced manual intervention during Covid-19, reducing overall operational costs. Allowing automation in business processes enabled Greenko to continue operations with minimum complications during FY 2020-21, while enabling us to work remotely.



SAP Integration and Management at Greenko



Strategic partnerships provide access to industry experts that we can work with and build on each other's strengths to enhance our security. Prudent collaborations have given us a better cybersecurity posture for our operations against the ever-increasing threat landscape."

-Thirumala Raju
Mandapati,
AVP, ICT



Digitalization of BUs

KPI	Hydro	Wind	Solar	Total
Percentage GAM processes automated	65%	100%	96%	87%
Percentage of plants covered under GOMs	88%	100%	98%	95.33%
Percentage of plants covered under Forecasting and scheduling	27%	100%	96%	74.33%
Percentage of plants covered under Telemetry	38%	81%	75%	64.67%
Percentage of plants covered under Historian	31%	48%	75%	51.33%
Percentage of plants covered under IoT	31%	52%	75%	52.67%
Percentage of plants covered under SCADA	46%	100%	100%	82.00%
Percentage of plants covered under SAP MM	96%	81%	100%	92.33%
Number of plants covered under drone usage	0	90%	87%	59.00%
Percentage of plants covered under DMS	96%	95%	100%	97.00%

Intellectual Capital

Value Creation Story: AI – Robotic Process Automation

Overview

RPA (Robotic Process Automation) process has been implemented for automating the process of MDM: Master data management (i.e Material, Vendor creation & extension) in SAP and Forecasting data.

MDM process:

Helpdesk tickets are received for material creation or extension from all user departments like Stores and O&M Team. Tickets are received from both Finance and C&P Team for Vendor creation.

By implementing RPA, we use the software BOT for repetitive works. Users fill predefined templates and BOTs read the data to initiate the creation or extension process after validation.

Forecasting data process:

Forecasting Team has to feed the forecasting data for each state into the portal and email the same to concerned people at regular intervals. Previously, teams performed this task 24/7. After implementing the RPA, the processes were automated for 3 states including Tamil Nadu, Karnataka and Madhya Pradesh.

Strategic Objective	Target Area	Material Topics Addressed	Alignment with SDGs
To carry out Digital Transformation and Automation	Digitalization	Energy Efficiency Innovation and technology adoption	 

Innovative approach of the project

- Team members are trained in handling RPA BOTs.

Key Achievements

- **Better accuracy**

Robots do not make mistakes. They are compliant and consistent.

- **Increased speed and productivity**

BOTs perform the activity three times faster than humans and automates processes.

- **Scalable**

RPA performs a wide range of operations at the same time.

Value Created

Cost savings

For master data management an average of 2 people were require for material/vendor creation and another 2 people were required for validation. After BOT implementation, the manhours for master data creation has been reduced significantly and the resources were optimally utilized in other areas.

By automating the forecast process, we have reduced 6 resources for 3 states and we can utilize resources in other productive areas.


Challenges Faced

- Specialized training required for the team members to handle BOTs. Licenses required for BOT usage.
- Learning challenges faced by team members.

Value Creation Story: Path of Digitization and Decentralization

Overview

Main purpose of digitalization is to obtain real time data, decentralize decision making and eliminate paper consumption to reduce burden on the environment. It enables automation, enhances data quality, collects and structures data to aid easy and quick decision making. Manual process involves a lot of paper consumption. It takes more time to complete a form due to absence of concerned people and it is difficult to analyse the data. We faced many problems with the manual process and it delayed documentation

Strategic Objective	Target Area	Material Topics Addressed	Alignment with SDGs
To digitize the process and enable plants and projects to monitor real time progress	Enhancement of data quality Eliminate paper consumption	Innovation and technology adoption	

Innovative Approach of implementation

Quality issues and details of a project can be accessed at one single place and in real time. It is easy for senior management and business heads to review project progress from anywhere and in real time. Graphical dashboards provide 'Quick Visualization' of project progress and project QA clearances in real time. Rather than manually checking lists, QA clearance for project stage is carried out online.

Challenges Faced

- Delays in documentation

Value Created

Presently, the company has digitized the Quality deviation management process at Greenko Energy Projects System (GEPS). We are working with online QA process through the Greenko Quality Assurance Portal (GQAP) which will be implemented for future projects. Digitization has helped us to save paper and run eco-friendly operations



Value Creation Story: RPA implementation in Greenko

Overview

Greenko is increasingly turning to automation to improve process efficiency, employee productivity and cut redundancy and costs. Adopting automation has enabled streamlining of operations and the deployment of robotic automation tools.

Identified Processes which are automated:

1. Vendor and Material Master Management
2. Forecasting data update

Strategic Objective	Target Area	Material Topics Addressed	Alignment with SDGs
Turning to automation to achieve efficiency, employee productivity and reduction in costs.	The workforce	Innovation and technology adoption	 

Innovative Approach

Robotic Process Automation (RPA) is a program that follows rules and instructions to imitate human actions on applications that involve repetitive tasks. With user-friendly features, it helps to streamline processes easily. It performs common tasks such as queries, cut/paste, merging, button clicks, etc.

Key objectives of implementing Robotic Process Automation are as follows

- a. Improve customer satisfaction
- b. Improve accuracy
- c. Manage controls
- d. Increase efficiency
- e. Reduce monotonous work
- f. Save cost
- g. Skill upgradation of personnel

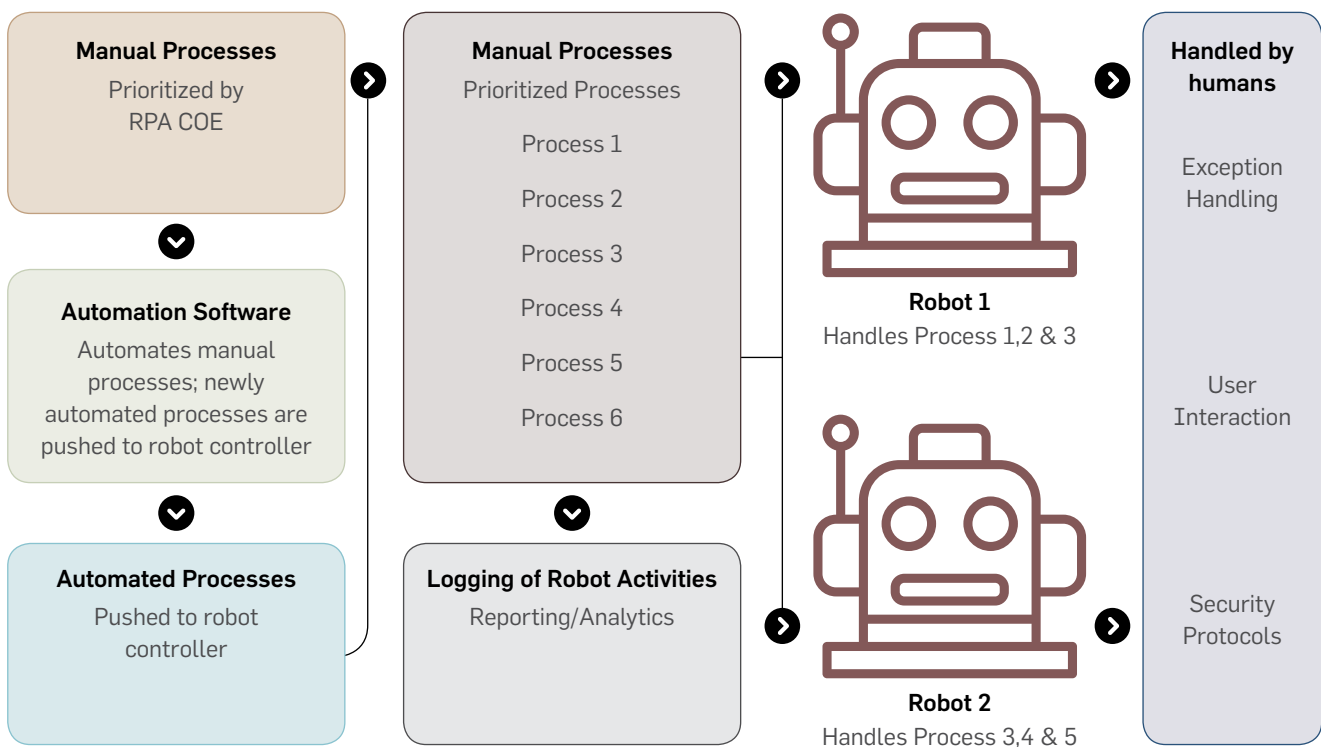
The Center of Competence and innovation was created at Greenko Group in **October 2009**. It deployed the first software Robot (SAP Master data Automation) at Greenko. The

Intellectual Capital

Worldwide practice of using business Robotics, using RPA, demonstrates higher efficiency of the tool in achieving the objectives of business transformation, which is the basis of the concept of strategic development of Greenko.

To further develop and apply RPA at Greenko Group, the project on the diagnosis of business process was implemented and conducted along with external consultants. As a result, the processes suitable for automation were identified, recommendations for the modernization and expansion of the Center of Competence were received. Software robots were developed independently by the RPA Center of Competence at Greenko Group

High-level view of Robotic processes automation



Processes: Vendor and Material Management

Greenko operates with SAP and found that processing vendor and material master record through the system required a large number of manual interventions, in terms of validating data, checking duplication in system and data completeness in requested format. Waiting time for business users, for vendor and material code were also high and volumes of this activity were significantly larger.

After implementing robotic processes automation, vendor and material creation, extension and validation is quick and satisfactory. With process automation, the company has achieved measurable benefits.

Key benefits achieved

1. Around 65% to 75% of the time used for manual work has been reduced
2. 100% Processing accuracy, completely eliminating human errors
3. Wait time for employees significantly reduced to 60%
4. Support time has increased to 75%. After assigning the task, the system processes the activity 24/7 by balancing loads.
6. Data quality has improved
7. Effective Communication to business users on the status of processes

Processes: Forecasting data update

The Company needed to update the generated energy into SLDC (State load despatch centers) in a timely manner and it required a lot of manual interaction. The reconciled data had to be updated in the system and the process was time consuming, tedious, and occasionally had errors due to manual involvement.

After implementing Robotic Processes Automation, reconciled generated units statement updating is quick and satisfactory.

Value Created

- a. 100% processing accuracy by completely eliminating human errors and the quality and speed of processes have improved.
- b. 80% TAT (Tourn around time) reduction achieved.
- c. Forecasting data punching for KA, TN, MP has been completed.



Challenges Faced

Lack of skilled resources: With the growing popularity of RPA, the demand for skilled resources have been on the rise. RPA deployment can hit a roadblock in the absence of skilled resources as its success relies heavily on hiring the right resource.

End-to-end Automation: Sometimes there are processes that cannot be completely automated with RPA. These processes require the use of Machine Learning algorithms, which can be an added cost to the company and the project.

Proper team structure: One of the biggest challenges of RPA implementation is a proper team structure where resources are shared between teams and proper processes are defined for smooth operation.

Wrong use-cases for automation: Identifying wrong use cases for automation is a common mistake that challenges RPA implementation and results in lower ROI. As a result, it is important to make a case for a proof of concept before taking the leap of faith.

Unclear expectations: Not knowing the expectations of the team, management and other stakeholders involved in the RPA implementation can hamper its progress. Without a clear goal, it is difficult to measure the success of technology.

Siloed implementation: Teams working in silos can risk crossing wires with the IT architecture, security, and infrastructure, and this can potentially exclude them from the corporate disaster recovery plan.

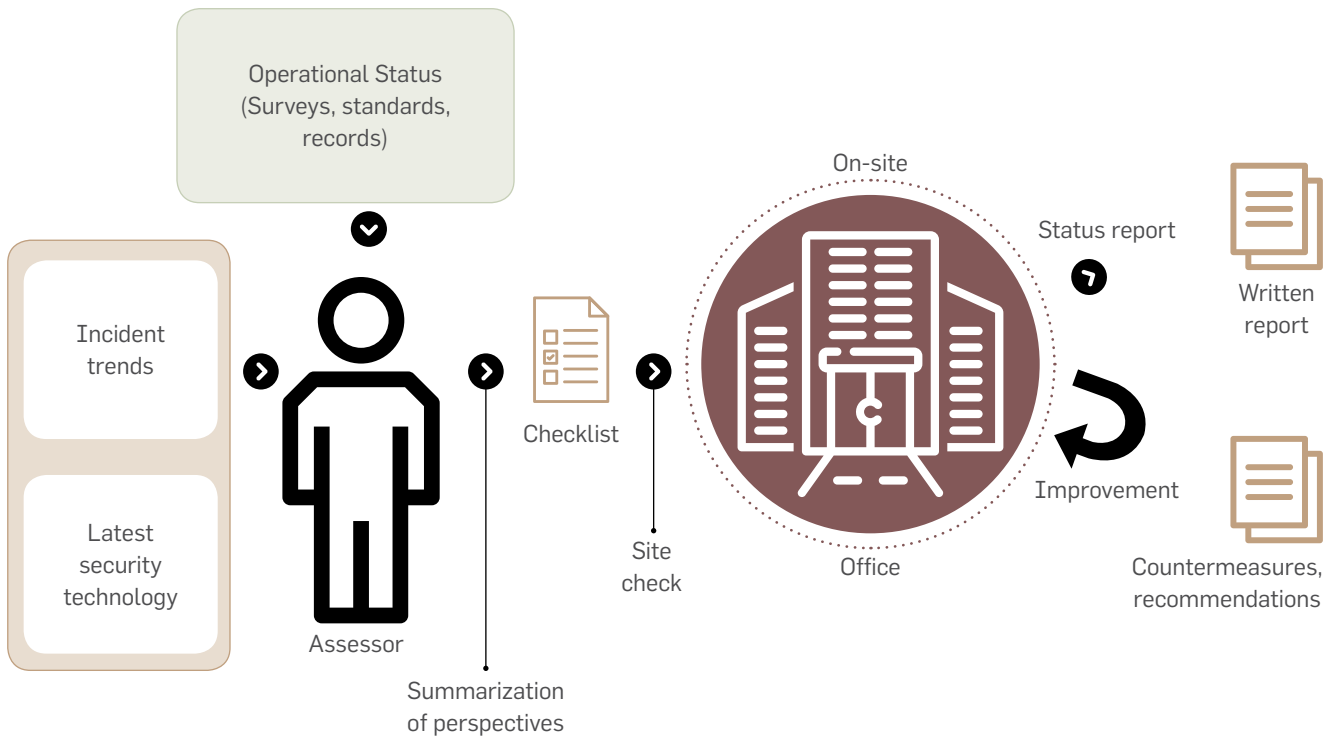
Inconsistent outcomes: Lack of controls and tracking mechanisms for the automated processes can result in inconsistent outcomes, which can jeopardize the possibility of scaling RPA.

Technical ambiguity: Sometimes RPA deployment doesn't lead to expected results due to ambiguity among the technical staff. When people fail to ask important questions related to operating requirements during the implementation, then the automation deployment can go for a toss.

Wrong platform: One of the top challenges of RPA implementation is choosing the wrong platform due to a lack of knowledge of all the processes. Sometimes, the deciding factor is the cost, which can result in companies choosing a platform that doesn't suit their business needs.

Technological barriers: For RPA implementation, the bot needs to interact with the Web to read captcha and detect network or browser speed. Without synchronous management of data, errors may occur.

Intellectual Capital



Value Creation Story: Automation of Audit Management

Location: HYDERABAD


Overview

At Greenko, establishing, planning, implementing and maintaining the audit management was a challenging task, considering the number of Plants, Projects and Functions involved. Hence Greenko has taken an initiative to digitize and automate the audit management process for effective control, easy retrieval of data and greater accuracy.

In alignment with Greenko's Vision of Digitalization, GIMS with support of ICT team has developed the Greenko Audit Management Application (GAMA) to bring an integrated approach to the auditing process as a platform for all Operational Plants, Projects and Corporate Office Functions.

All functions of Greenko undergoing audits and IMS internal auditors shall be provided access to GAMA application through individual intranet login credentials.

GAMA is designed to be an interactive application and supports the Management Vision and helps the Auditors and auditees to schedule, prepare and submit Audit findings, Root Cause Analysis and Corrective Actions.

Strategic Objective	Target Area	Material Topics Addressed	Alignment with SDGs
To digitize and automate the audit management process for effective control of the process and easy retrieval of data from single source.	Process Improvement	Excellence, Adoption and management of Assets	

Key Achievements

- User friendly
- Easy retrieval of audit management data
- Ease of audit planning, scheduling and reporting

- Maintain history of audits at single source
- Effective monitoring of audit management activities
- Notifications/Alerts to Auditees and Auditors

Impact & Value Created

Improvement in planning, scheduling and retrieval of data

Challenges

Create awareness about GAMA among employees, covering all plants and co functions

Intellectual Capital

Assuring Optimum Performance with AI-Powered Drones

As Greenko is moving towards deeper decarbonization, the installation of renewable energy technologies like solar photovoltaic (PV), wind, and hydro are going to increase, thus creating the need for regular monitoring of all assets to ensure reliability and optimum performance.

Greenko has leveraged the advanced technology of unmanned aerial vehicles (UAVs), also known as drones. The Artificial Intelligence (AI) powered drones provide comprehensive coverage, enhanced visibility, site safety, scalability, and improved operational excellence. The drones also assist in predictive and adaptive operations and maintenance (O&M) by providing real-time information.

Solar PV power plants require regular monitoring to assure optimum performance. Drone technology for solar PV system inspection ensures more accuracy and saves significant time in comparison to manual inspections. In the case of manual inspection, a handheld thermal camera is used to detect faults and issues in operations. This can be a time-consuming process and could lead to inconsistencies and unavoidable errors in the inspection data. Greenko has, therefore, replaced manual inspections with automated inspections that use drones equipped with a thermal camera. This has helped in reducing the O&M time, improved accuracy and quality of the recorded data.

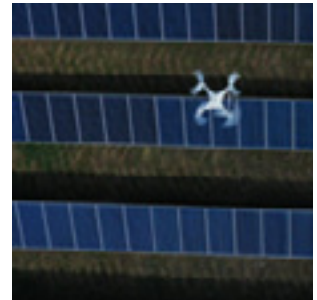
Also, the operational efficiency of the wind power plant can be affected if the wind turbine generators, gearboxes, and blades develop cracks, fissures, and other structural issues over time. Thus, it requires regular inspection to ensure optimum performance of the wind power plant. Earlier detecting these issues and defects were not only time consuming but, was also an expensive affair. Due to the adoption of drone-based aerial inspection using thermal imaging, the entire monitoring process has improved in terms of accuracy, quality, and efficiency.

The drone-based aerial inspection involves:

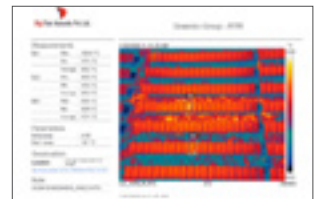
- a) Planning and Acquiring Data to create flight plans, position field teams, and operate drones to collect thermal imagery and record the necessary data using artificial intelligence.
- b) Process Data using data analytics algorithms to analyze and validate the inspection data to ensure accuracy and quality of the recorded data,
- c) Actionable Insights derived from the reports are delivered to GAM operations/Project Hub for further action/follow-up at sites.



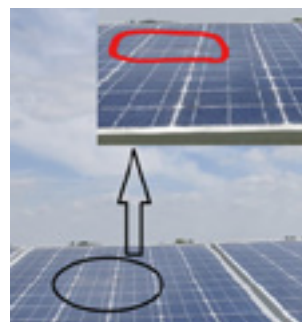
Drone inspection at work at Wind Plant



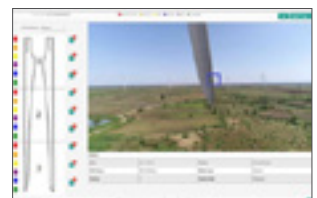
Drone inspection at work at RTR Solar Park



High quality data and imagery captures identify fault location with GPS coordinates



Field verification at identified location showing glass breakage



High quality imagery captures, and the subsequent analysis identified fault location on the wind blades

WIND REPORT

Details	
DATE	2019-11-29
PROJECT	Malys
BUSINESS TYPE	wind
WTG NAME	GR 64 Blades
BLADE NAME	Blade 8
SECTION	3
SECTION SIDE	Section



Issues	Observations	Damage Level
L. Blade TE area Hyd Oil Leakage	TE Side about 3 mts. from Sp. Hyd Oil leakage observed	MEDIUM

Wind Report with detailed analysis and actionable directions.

Looking Ahead

Greenko continues its practice of GIMS which is repository of its systems and processes. While for the last five years the task was to extend the GIMS to new locations, going ahead it will be developing and deploying new systems and processes for the new pillars of the business viz., Storage and Zero Carbon Molecules.

Digitization has to transcend now to digitalization covering manufacturing capital viz., intelligent energy management systems, decentralized new energy solutions' delivery etc. New challenges of cyber security and customer privacy will have to be addressed.

Finally, Centers of Excellence and R&D expertise will be developed internally or through close networks of co creation. This will be important across the three pillars of Greenko's business but more important for the third pillar Zero Carbon Molecules.



Human Capital



We at Greenko aim to explore the horizon of 'New energy solutions' to tune in futuristic demands by rapidly building on our human capital strategically. The ever-evolving learning culture at Greenko inculcates resilience in employees, making them agile & result-oriented. Our People Process & Systems (PPS) aids our employees to deliver performance with an ownership mindset holistically, to make attractive growth. This unique ownership mindset is conducive for young professionals to pursue careers passionately at Greenko, the human development index aids in leveraging the multitalented teams to achieve the goals via a unique transformational journey.



- C. Krishna Kishore
SVP-HR

Strategic Approach

The HR strategy at Greenko is a shared vision, wherein all the functions work in close association to plan and achieve the desired outputs. The organization has clearly outlined the initiatives for recruiting the right talent, onboarding & induction and succession planning. The important aspects of Compensation & Benefits Administration, HR Compliances, Learning & Development are supported harmoniously by the shared services team. The Strategic Business HR Team supports the Projects and GAM operations and ensures HR Support for all the Project and Plant locations, working closely with the site HR Teams.

Greenko's growth and progress since its inception hinges on its 'Human Capital' with varied domain and functional competencies. The organic growth of competencies revolves around the niche Learning & Development interventions across the domains of Hydro, Wind, and Solar, with further augmentation of competencies required for IRESP and Zero-Carbon Molecules' Projects.

Greenko leverages the employees' passion and potential to develop human capital. Further, the Learning & Development interventions complements the efforts.

Greenko believes in adopting best in the sector practices raising its standard in the global energy scenario to the top slot. The group is making efforts to integrate ESG factors in decision making at all levels. Constantly taking efforts in having clear demarcation around financial and non-financial goals with the ESG framework being aligned across the business domains to achieve the business benefits sustainably.



Strategic Approach and KPIs

Focus Area	Strategic Approach	KPIs
Talent Acquisition (for all the three pillars of the business)	<ul style="list-style-type: none"> ● Attract talent early and nurture them for succession planning ● Aiming for improved Diversity across the business ● Conducive & cross-functional environment for high performance ● Recognition of efforts and rewarding performance ● Instilling a sense of ownership for the outcomes ● Health & Safety to remain prime concern across all the business activities extended to the entire value chain- including contractors/ vendors & communities under operations ● Cultural alignment of digital transformation across HR function 	Encouraging a culture of onboarding fresh talents as GETs and training extensively across all the niche domains
Competency Development		Mentoring the young achievers via PPS systems for required skillsets to fill the gaps & climb the ladder at the right moment
		Employee engagement initiatives are given prime importance with the average per capita training hours standing at 43.06 hours (18% increase from 2019-20)
		Impetus on managing diversified asset portfolio, with efforts in building strong technical skills- progression of the learning curve for employees
Reward & Retention		Talent Management for retention has sustained over the years and overwhelmingly, the attrition level of employees for the year 2020-21 stood at 1% (as against 11% in 2019-20). A 99% retention has been one of the best retention levels across the Renewable Industry.
Diverse Workforce		Mainstreaming Gender in policy design & implementation of projects
Succession planning		Succession planning for mapping the skills of employees with future leadership role requirements and training them accordingly
Health & Safety across Value Chains		Extensive training on health & safety aspects by adding new competencies to each repository – enhancing the depth and range of skills to abide by statutory compliance
Digital Transformation in HR		Digitalization of majority of activities for HR transformation including employee onboarding, attendance, helpdesk, payroll, workforce planning
New Energy		Exploring New energy-solutions & nurturing human talent to acquire the core competencies for the desired futuristic growth in this area

Human Capital

Journey so far

The Human capital of Greenko has been groomed to imbibe the organizational values and be resilient to achieve desired business transformations, and exhibit flexibility & tenacity in the most uncertain conditions. Greenko, in its GKO 3.0 & 4.0 phase has spearheaded the process of complete transformation of its HR function from manual to digital and beyond.

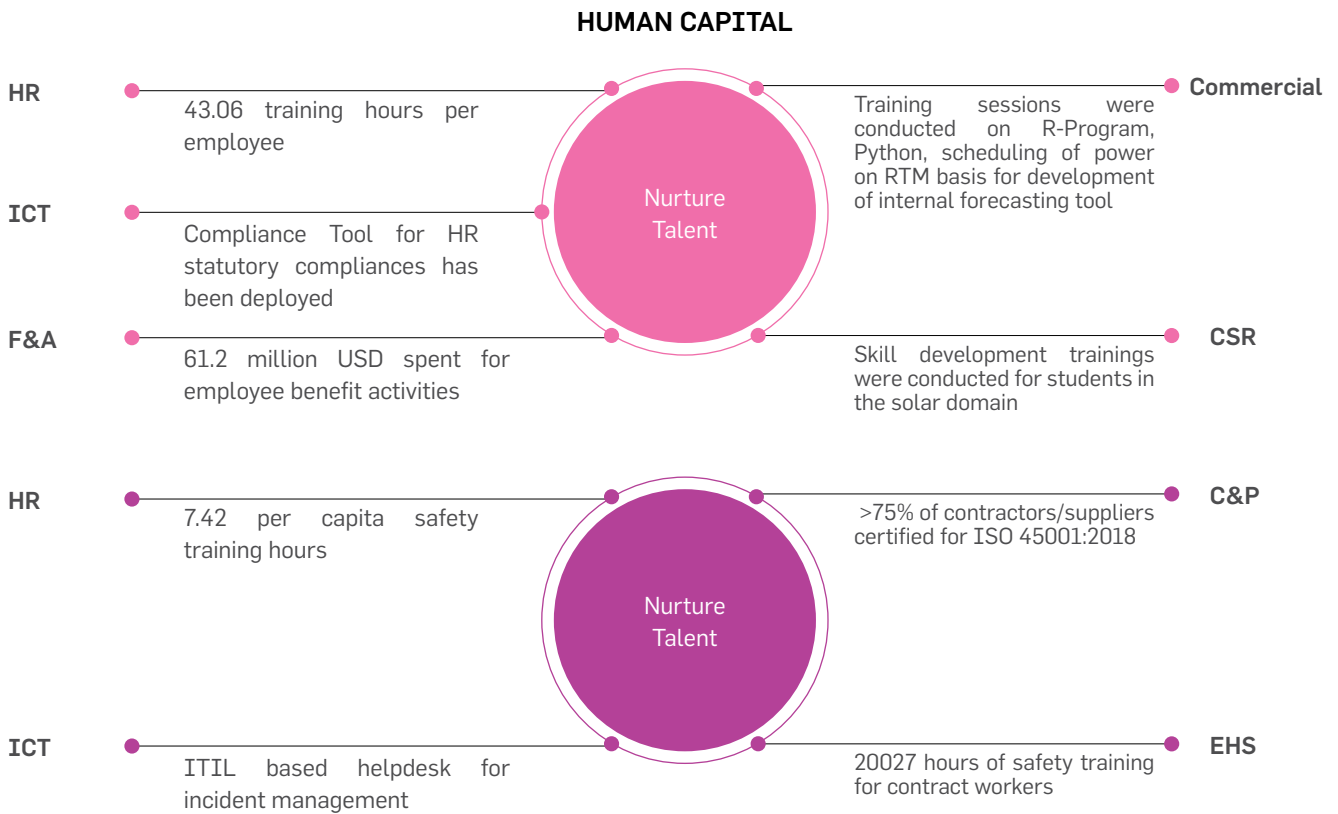
HR Transformation along the Greenko's Transformational journey

As Greenko transformed from GKO 2.0 to 3.0 and moved towards 4.0, it was imperative that the entire HRMS transition to a high transitions digitized platform. Greenko's mission of 'Creating Ownership Mindset' and People, Process, System (PPS), has yielded remarkable business outcomes. The transformation journey of Human Capital Development to keep pace with business transformation 1.0 to 4.0 is presented in the table below.

Greenko's transformation journey in the evolution of its Human Asset from GKO 1.0 to 4.0

Transformation journey	HR 1.0	HR 2.0	HR 3.0	HR 4.0
Transformation period	2006-15	2015-18	2018-20	2020-21 onwards
Key Achievements	<ul style="list-style-type: none"> ● Evaluation of the HR functions, policies, and procedures. ● Deployment of HR Policies and procedures, Payroll Administration (SAP), and Management of HR Records. ● Standardization of HR policies & procedures and development of new policies. 	<ul style="list-style-type: none"> ● Institutionalization of SEEDIT Values across the Group. ● Strategic L&D focuses on grooming existing talent to support growth and expansion. 	<ul style="list-style-type: none"> ● Deployment of a Performance Feedback culture. ● Implementation of PPS Model. ● Campus Hiring at premier institutes (BITS-Hyderabad, NIT-Warangal & Tadepalligudam, NPTI-Nangal & Badarpur, UPES-Dehradun) ● Greenko evolved a detailed succession plan. ● In-house Role and Competency mapping. 	<ul style="list-style-type: none"> ● Interventions for Competency Enhancement- Creation of COEs (centers of excellence) for multiple domains of wind, solar, & hydro with SMEs (subject matter experts0 on multiple aspects of Technology, Operations, and Functions ● 18% increase in training hours/employee from 2019-20 ● As part of GKO 4.0 Digitalization Transformation - the HR function has initiated the implementation of Darwinbox for major HR functions. ● The objective of Digitalization is clear- focusing on Employee as an End-User to smoothen the HRMS.

Integrated Value Creation in Human Capital

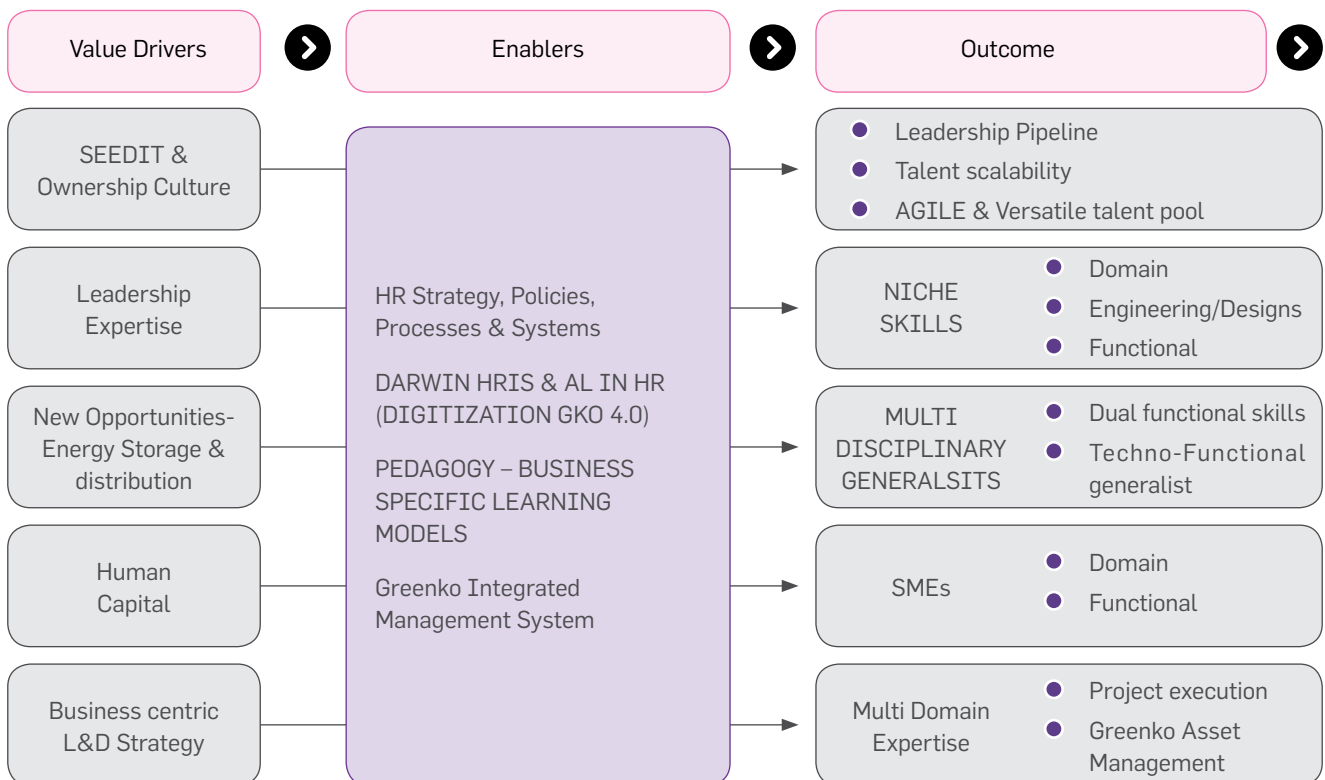


Human Capital

Strategic Framework for Human Resource Management

Greenko has a robust HR management strategy to contribute to achievement of organizational goals effectively. The organization recognizes the available skills and skillset gaps in view of the business ambition to transition and build and operate storage and Zero Carbon Molecule's assets. Further, digital transformation across the HR function is being pursued to ease out all the HRM systems. Special emphasis is given to learning and development initiatives to make the human asset more adaptable and resilient to achieve the set targets in the toughest of scenarios. Greenko's appraisal process is undertaken at organizational, task and individual levels and appropriate linkages are identified. The group is appreciative of the fact that the functioning during the pandemic has been exceptional, due to the adaptability and resilience built into its human resources.

HR strategy for Greenko's Value Creation from 2020-2025



(GRI 102-8)

Greenko firmly believes in the fact that 'happy and energetic' people can build dynamic organizations and successful partnerships. Competent and motivated people are the enablers for achieving goals. Greenko ensures that the dynamism, competency, motivation, and effectiveness of its employees remain high through competency training and several employee welfare initiatives.

As a part of the Digitalization, one more milestone is achieved with the deployment of the Human Resource Information System (HRIS) through the Darwinbox, the entire process has been routed to make the end-user (employees) extremely comfortable with the entire digital platform of HR management.

The Leadership pipeline is developed to meet the Business expansions plans of the Group and thus, opportunities are provided to young talents who have the competence and potential to take appropriate Leadership Roles.

Talent scalability is a critical and ongoing agenda for HR to provide the required number of talented resources for new projects and acquisitions. Since its inception, Greenko has always grown with a mechanism for talent scalability.

The pedagogy to impart requisite domain, functional, technical, and other niche skills are designed specifically as per the requirements of the existing and new business opportunities at Greenko. An agile and multi-talented versatility is built amongst employees across the Group to make them competent. At Greenko the 'Value Drivers' are supplemented by the 'Enablers', thus all the 'Outcomes' will have an opportunity to learn and unlearn with a pursuit to 'innovate' for sustenance and continued growth of the organization.

HR Functions



Human Capital

Talent Acquisition¹

Greenko believes that while delivering multiple values to the economy, society, and environment, the regenerative resilient and circular model will deliver sustained returns to its financial stakeholders. The group follows diverse mechanisms to acquire and manage human talent across its business operations.

The talent acquisition that is not limited to Campus hiring but complemented by grooming the employees to rise to the next level by acquiring the desired competencies. The group follows the induction mechanism and on-boarding process for its recruits.

The new hires during their induction into the Greenko family were made aware the Group's value systems to be inculcated into all the work aspects. The new hires are made aware of the HR Systems & Policies, Prevention of Sexual Harassment at Work (POSH), Greenko Value System (SEEDIT), Environment, Health & Safety (EHS), Greenko Integrated Management System (GIMS) and Information Security Management Systems (ISMS).

During the reporting period, Greenko has successfully hired 181 new talents within an average period of 90 days from the time the vacancy arises.

The group hired a total of 369 Engineer Trainees from 2011 to 2020, over 34% had an experience range of 6 -10 years and 66% had over 5 years' experience. More than 100 employees who started their careers as trainees in the last year, are handling critical roles in mid-level management across the group today.

Learning & Development²

The group's core belief of competency augmentation to be an ongoing process, embedded firmly in the HR ecosystem has resulted in training investment at Greenko reaching a new benchmark of 43.06 Hours per capita (from 35.3 Hours in 2020, 18% increase), even though for the entire year, the WFH model was adopted especially for the corporate office employees and non-project staff. This, we believe, is highest in the renewable energy sector.

The Performance Management System with measurable deliverables through KPIs with a weightage of 50% each for business/functional KRAs and Greenko Value System (SEEDIT) has enabled the group to measure and track the performance. The performance appraisal system at Greenko is also instrumental for training need identification,

succession planning, and career management. The leadership teams have developed resilience and built the mechanism to make sure employees working in multiple locations are motivated with a commitment along with a sense of ownership in a continuous learning environment, keeping in tune with the organizational values.

A Key metric of employee 'Learning Curve' has progressed effectively over the last 10 years, with a humble beginning of 3 hours per capita, per year in 2011-12, to a whopping 43.06 hours per capita in 2020-21, indicating more than 10 times increase in training hours during this decade. This is in keeping with increasing knowledge intensity along the Greenko's transformational path.



Greenko Group - Learning & Development Progression in last three Years: 2018-2021

Learning & Development (Annual Summary)	2018-19	2019-20	2020-21	Progression in 3 years
Training Hours	67,551	94,574	1,13,690	68.3%
Numbers Of Training Programs	860	1,661	4,185	386.6%
Number of Employees Trained	2,494	2,629	2,640	5.85%
Average Training Hours per Employee	27.1	35.3	43.06	58.89%

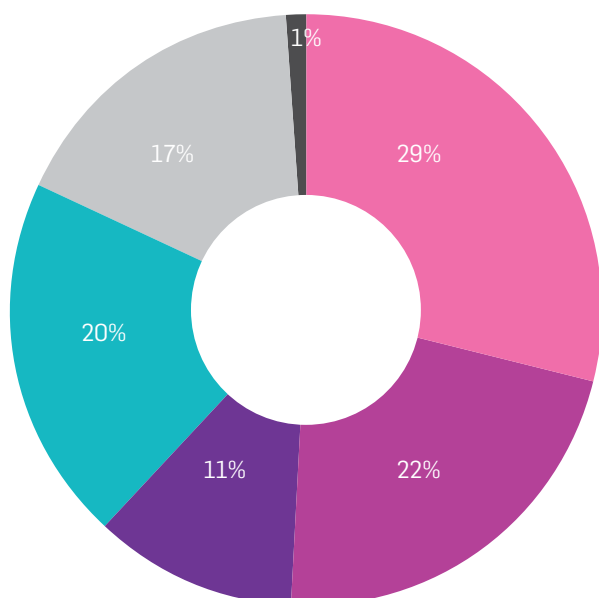
¹(GRI 401-1) ²(GRI 404-1, 404-2, 404-3, 412-2)

The individual (domain wise) training program profile and duration breakup are depicted in the infographic below:

Training Details 2020-21

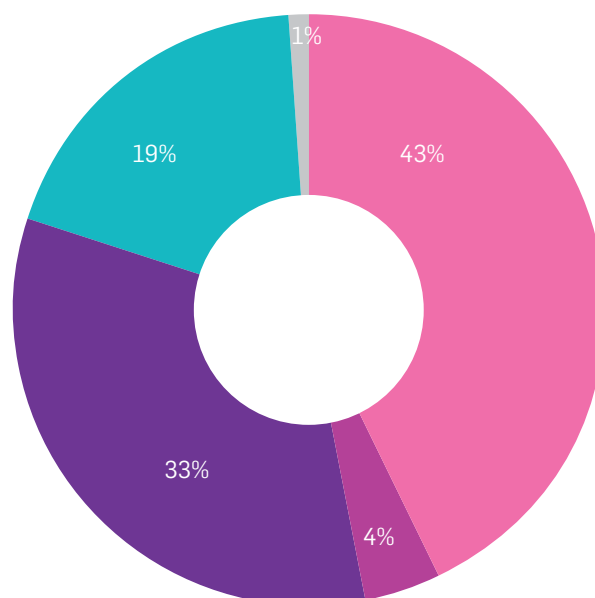
Row Labels	Nos of Training Programs	Training Hours
Admin Office	270	33,583
Hydro GAM	1,679	25,411
IRESP	164	12,456
Solar GAM	1,305	22,226
Wind GAM	752	19,145
External	14	869
Grand Total	4,184	1,13,690

Training Hours



● Admin Office ● Hydro GAM ● IRESP
● Solar GAM ● Wind GAM ● External

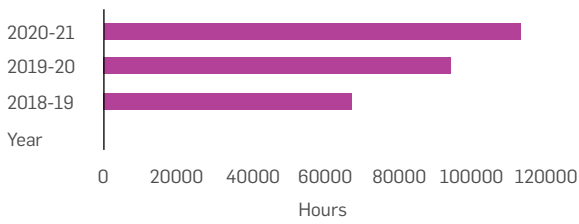
Number of Training Programs



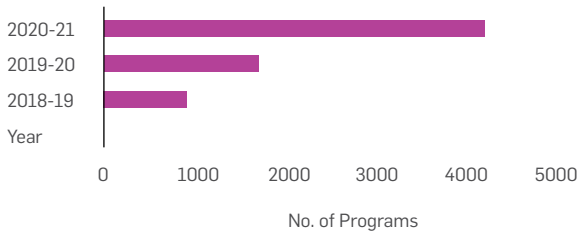
● Admin Office ● Hydro GAM ● IRESP
● Solar GAM ● Wind GAM

Human Capital

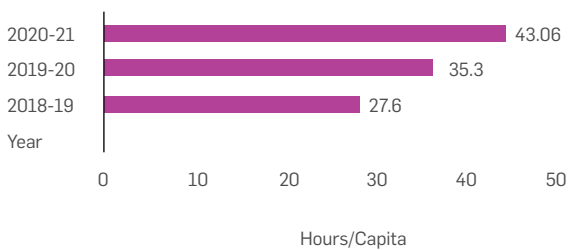
Progression in Training Hours at Greenko



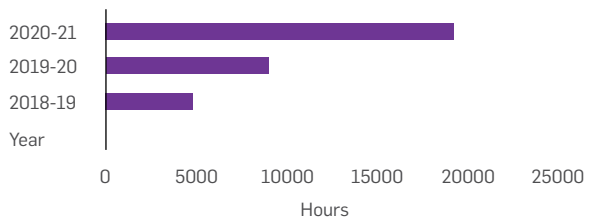
Progression in No. of Training Programs at Greenko



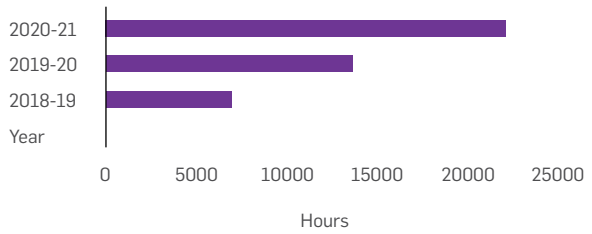
Progression in Per Capita training Hours (average) at Greenko



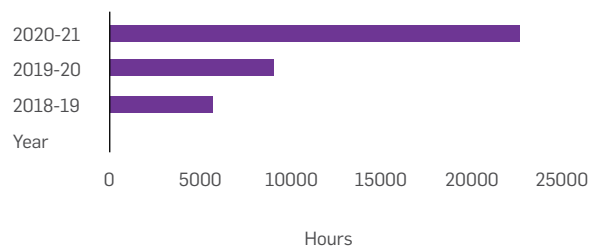
Training Progression - WIND



Training Progression - SOLAR



Training Progression - HYDRO



The training by NICMAR Team in Planning, Designing, Developing has contributed to upskilling the personnel involved in project execution. The training delivered a learning organization, contributed to developing ownership mindset, walking an extra mile, and created an environment for curiosity. In this learning process, the Senior Leadership Executives Presence displayed cohesiveness, collaboration, the intent of delivering the best across the life cycle of the project. .

The journey of 'Upskilling' started for the Project Teams on Virtual Platform, MS Teams from 3rd Sep to 12th Sep'20, spread over 9 days, 45 sessions, 3 Batches, 150 participants, 24 Locations Pan India (North down to South) (450 Man-days @ 7 hrs - 3150 Manhours). 10 Qualified and experienced NICMAR (National Institute for Construction Management & Research), Hyderabad Campus faculty explained the concept of Construction Project Management. The Training focused on the IRESP Construction Methodology and Project Management with reference to Timelines, Quality, Safety during the Project Construction.

Apart from domain-specific knowledge, the training extended to cross-functional areas (Wind for Non-Wind/ Solar for Non-Solar & Hydro for Non-Hydro), training 750 employees for 16564 hours during the reporting period. The noteworthy fact being, as many as 8 engineers were trained and certified internally for the wind Blade Technology domain.

Group Leadership has always encouraged and nurtured a sustainable working culture that promotes regenerative thinking across all levels. Greenko believes in the overall development of an employee, by allowing them to explore different areas of work.



Human Capital

Local Community Skill Development

Greenko is committed to spreading innovation amongst the communities. Thus, the company believes in creating job opportunities for youth in local communities. The company has initiated an Industry Customised Skill Training Program in Solar Energy at its Skill Development Center in Kurnool, Andhra Pradesh, in partnership with Andhra Pradesh State Skill Development Corporation (APSSDC). It is also part of the Industry Cluster collaboration in Renewable Energy Industry for skilling/reskilling/upskilling of the aspirants in Solar Energy. A batch of 30 students are provided both classroom and on-the-job training for one month with the support of in-house trainers.

After successful implementation of this training, Greenko will be planning and contributing to further development of the local youth.

30

No. of students

100%

No. of students placed

The above Program was started in association with the Andhra Pradesh State Skill Development Corporation (APSSDC) as part of the Industry Cluster collaboration in Renewable Energy Industry for skilling/reskilling/upskilling of the aspirants in Solar Energy. The Program, taken up on a Pilot basis, will be a One-month residential Training for a batch of 30 students covering both classroom and On-the-Job-Training. The Certified Training is to be given with the support of in-house trainers and is aimed for a Job Role of a Multi Skill Solar Technician & Engineer covering all the aspects of Solar Energy. A formal inauguration of the above Training program for the First batch of students was conducted on 30th December, 2020.



Training Classroom, Lab, and field



Completion of Skill Training Program on Solar Energy at Ghani Solar Park, Kurnool

As part of the Program, we have successfully completed the training of the first batch of 30 students. Post training, all the students (100%) were successfully placed as Multi Skilled Solar Technician/Engineer in a reputed Hyderabad based Solar Energy company, Premier Energies Photovoltaic Pvt. Ltd, that specialises in module manufacturing. The Program included both classroom and On-the-Job-Training. The Program was conducted with the support of in-house Trainers and under the direction of the Site Management Team at Ghani. As an acknowledgment of the efforts, Greenko was appreciated by the APSSDC, Govt. of Andhra Pradesh for its participation in the skill training program at the Ghani Solar Site.



Industry Customized Skill Training Program on Solar Energy at Ghani Solar Park, Kurnool-2nd Batch

Greenko has initiated a Customised Skill Training Program in Solar Energy, for the second batch at its Skill Development Center in Kurnool, Andhra Pradesh on 22.03.21. The Program started in association with the Andhra Pradesh State Skill Development Corporation (APSSDC) as part of the Industry Cluster collaboration in Renewable Energy Industry for skilling/reskilling/upskilling of the aspirants in Solar Energy.

Human Capital

Human Development Index

Human Development Index (HDI) is a critical metric which measures the competency levels of employees to build a robust brand like Greenko, to eternally meet the divergent needs of projects and asset management. Augmentation of business-centric competencies across the Group is a key differentiator contributing to organizational development. This strategic intervention is designed to avoid any redundancy or sluggishness in the system and ensure circularity of men, material, and machine.

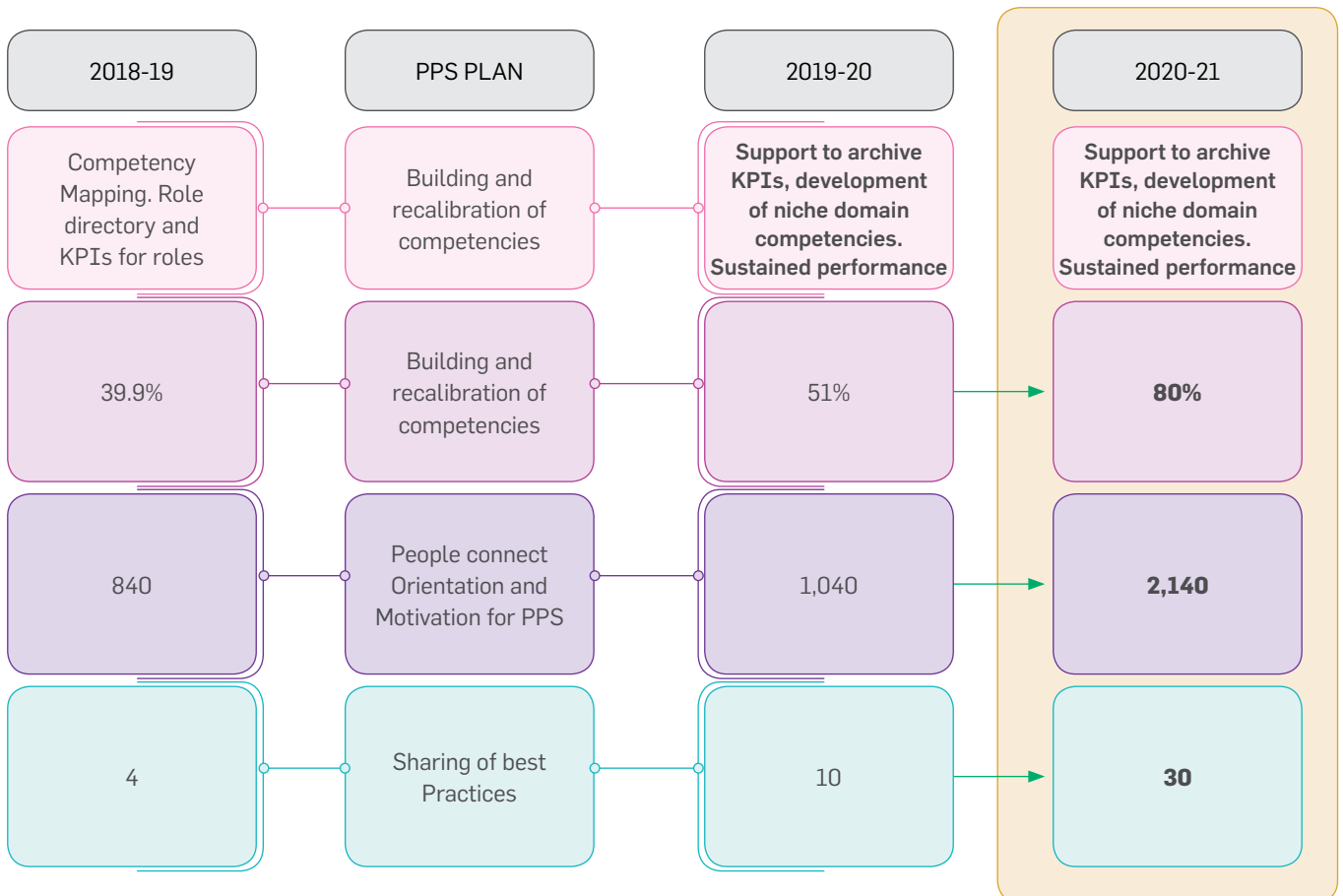
Human Development Index (HDI) weighs the capabilities of the employees with a definite focus to sustain the Plant Operations and to meet the Human Capital requirements.

The group encourages its employees to maintain the highest level of energy and enthusiasm with job rotation, wherein a Change of roles and job enrichment opportunities to move into other Technical and Functional roles to pursue one's passion are addressed through a process for the employees who have worked in the organization for 3+ years.

People, Process, System (PPS)

People, Process, System (PPS) has been a strategic intervention for Greenko's Asset Management (GAM) Businesses since 2018 to monitor & measure the performance of the 'Assets' and the 'People'. The GAM and HR Leadership Team have convened a 'Leadership Conference' to calibrate on the Group's vision, values, and the PPS Model. All the GAM employees have been trained and the HR Team and GAM Leaders have put the PPS Model to work, and the outcomes are 'profoundly positive' for the business.

The PPS progress is presented in the infographic below



The PPS system at Greenko- Comparative Mapping for three financial years

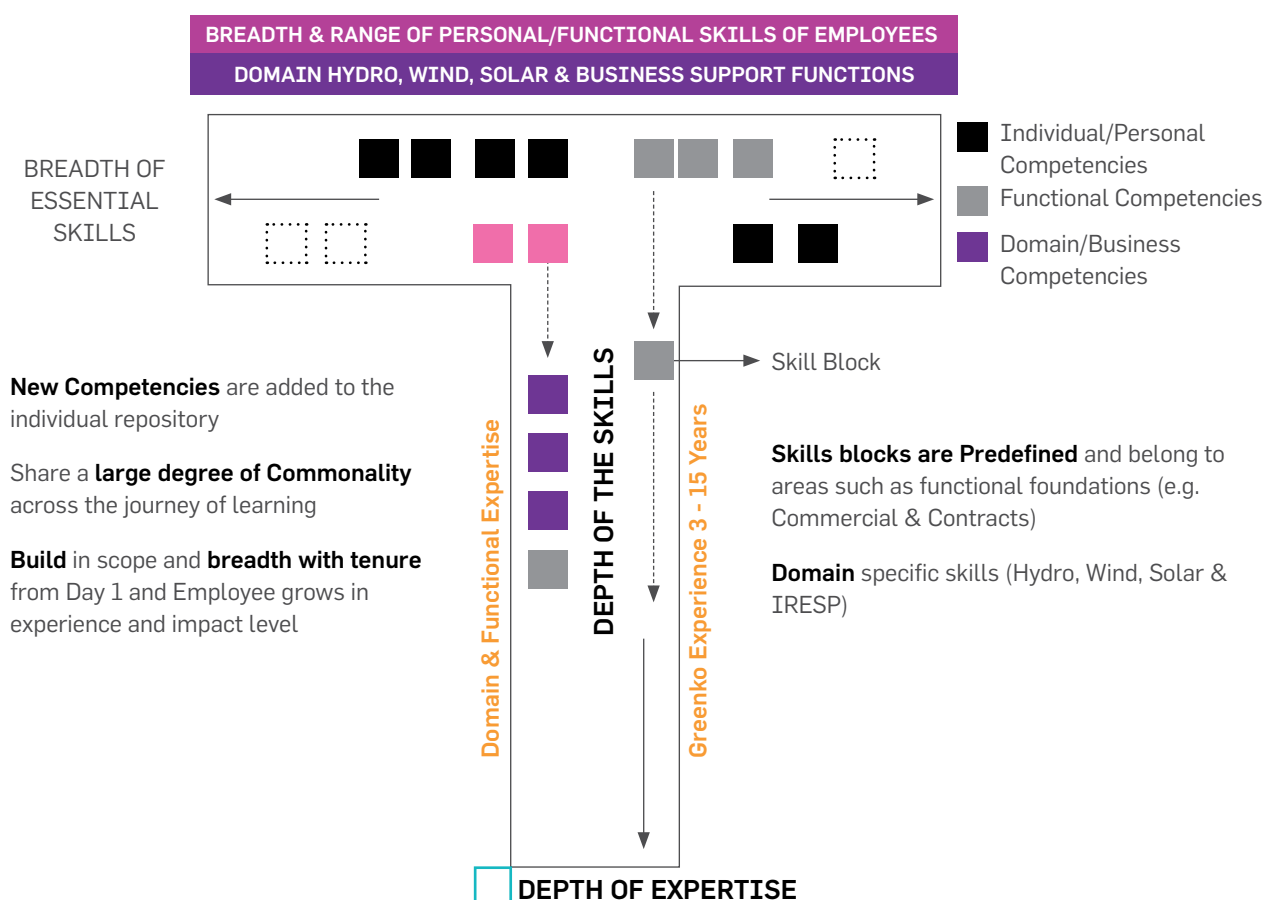
Performance Management System (PMS) was implemented with measurable weights of 50% for Business KPIs and other 50% to measure Business deliverables in alignment with Greenko Values. Also, the KPIs, identified for each of the GAM assets (Hydro, Wind & Solar) and the performance outcomes were measurable indicators for Hydro, Wind & Solar Operational Assets.

Talent & Competency Mapping

Developing multiple competencies for employees in 'Personal', 'Functional', 'Domain & Business' areas have been the hallmark of the HR Department of the Greenko Group. 2590 employees across the Group have been trained over the last 10 years in Hydro, Wind, Solar, and multiple functional disciplines.

The depth and range of Business domain skills were developed progressively since the inception of the Group, which has been cross-pollinated through On the Job Training (OJT), domain and functional training .

A significant percentage (73%) of employees working for Projects Vertical were equipped with a range of competencies to work and execute projects in Hydro, Wind, and Solar. The Greenko Asset Management vertical has multiple Domain and Business competencies (83%) along with functional competencies (Contracts, Commercial & Stores) with a depth of experience. The perspective is depicted in the T diagram below:



Employees select a range of skill blocks where they can go deep to support specific interests and focus areas
Skill Blocks mainly remain the same with tenure, but are excepted to move down the T- developing from basic to mastery level

Human Capital

Employee Diversity³

Diversity and inclusion amongst the workforce are core to Greenko's business. The group believes that diversity at the workplace is a virtue that can generate more visible benefits in the long run, since a diverse workforce displays a better decision-making ability and strong work culture. The group completely abides by the Human Rights Charter of the UN, does not differentiate people based on colour, creed, gender, and people from all ethnic groups and cultures are given an equal opportunity in recruitment, location, promotion, or any matter related to employment based solely on individual performance.

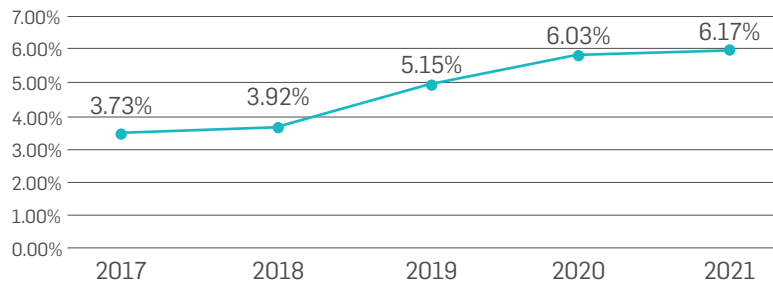
The initiatives at Greenko to promote gender diversity include:

- Mainstreaming gender in policy design and project implementation
- Implementing policies to attract and retain talent and ensure a supportive environment in the workplace
- Supporting women to become agents of change and to challenge cultural and social norms in their environment

Gender diversity at Greenko saw strengthening with 6.17% of female employees in the total workforce compared to 3.92% in 2018. Today, Greenko has become a preferred choice for women to pursue their careers in the Renewable Business Sector. Every year, the company has increased the number of women it employs and today, as compared to its year of founding, Greenko employs 42% more female employees, also approximately 12-13% of the new hires amongst women (in the age group 30 to 50 Years) are offered Mid-Level Management roles. A good number of women employees (6.17%) in the age group less than 30 Years have been hired for the First Level Management position. It is worthwhile to note that the group also makes all efforts to recruit differently-abled people to give them a chance to perform in the mainstream. Greenko indeed believes in a merit-based human asset selection process that is transparent and unbiased.

³(GRI 405-1)

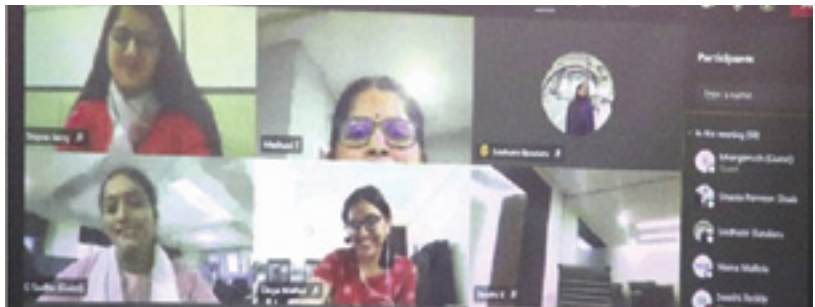
Workforce Diversity Profile at Greenko



Greenko's Strength



Spirit in the Pandemic Times



Women Power Pillars in Decision Making



For sustained focus to ensure equality, diversity, and inclusion across Greenko, the Learning & Development teams conducted 20 training interventions during the reporting period. The women power at work catapulted to 3 times since inception, to be at 6.17% in 2020-21. The group has in place basic welfare policies Viz. Maternity Leave, Adoption Leave, Casual & Sick Leave and Extraordinary Leave for its women employees.

Reward & Retention

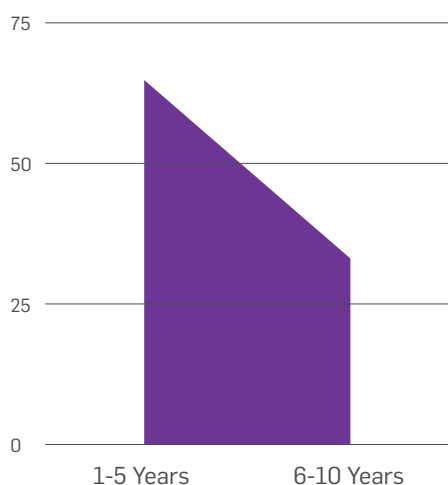
Greenko has established an effective career management and development system, wherein all the employees are given counseling and training to achieve targets in a resilient and disciplined manner. At Greenko, Centers of Excellence (CoE) have been created for the multiple domains of Wind, Solar & Hydro with Subject Matter Experts (SMEs) on multiple aspects of Technology, Operations, and Functions. The table below presents the summary of ELTP (entry-level training program) for 2020-21.

MENTORS & SUBJECT MATTER EXPERTS (SMEs)

Details	Domain Expertise – GAM			Mentors, Coaching Experts & Certified Trainers					
	WIND	SOLAR	HYDRO	ELTP* Mentors	EHS Domain	IMS Certified Auditors	GIMS	Coaching Experts	HR Certified Trainers for L&D Interventions
Mentors	10	6	4	2	3	4	2	2	2
SMEs	60	33	17	100	8	139	8	45	18

The group always ties up with renowned institutions to train the young minds. The Entry Level Trainee Program (ELTP) has churned and channeled career opportunities for 369 trainees since 2011. 34% of those who were employed as trainees have gained an experience of 6 to 10 years and 66% have earned an experience of over 5 years.

YEARS OF CAREER IN GREENKO



66%
1 TO 5 YEARS OF CAREER

34%
6 TO 10 YEARS OF CAREER



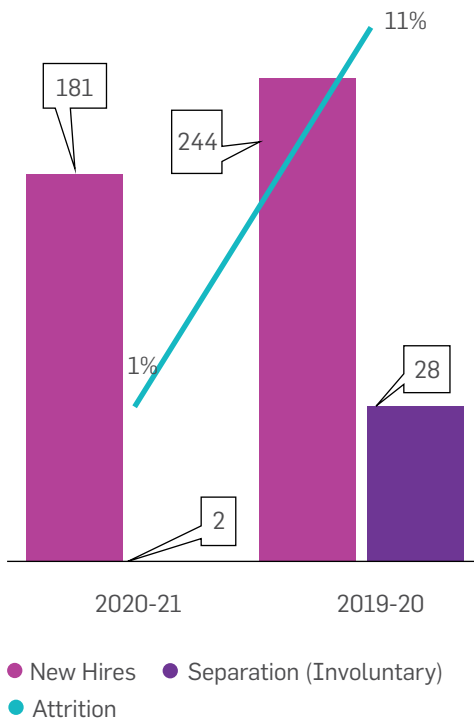
Human Capital

The group maintained a high level of employee retention during the pandemic due to effective measures adopted:

- On-time monthly pay-outs without any salary cuts during the pandemic.
- Paid leaves and disbursement of hikes and bonuses ensuring availability of funds for the employees to address their critical needs during the pandemic.
- Cultural gestures of care and compassion during the pandemic.
- Provision for medical care as a welfare intervention, through Doctors and Hospitals to treat employees and their dependents.

All these efforts resulted in the retention of 99% employees leading to only 1% attrition as compared to 11% attrition in 2019-20.

Comparative Chart on Attrition



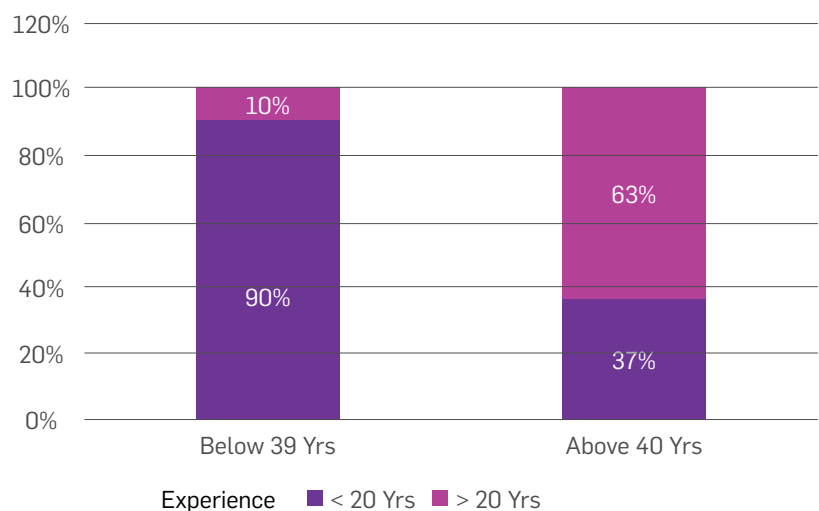
The Average Age of employees at the organization since 2012 has positively improved to 35 years, with the induction of young talent at various levels. Thus, the agility, resilience, and career management at Greenko has set a glaring example for similar business entities, and the group has demonstrated unique capabilities in employee management in the RE domain.

The Hierarchy profile for 2020-21 at Greenko

JOB LEVEL	NUMBER OF EMPLOYEES 2020-21
Leadership Level	5
Core Leadership	14
Senior Leadership	48
Senior Management	104
Second Level Managers	225
First Level managers	776
Supervisory Level (3)	485
Supervisory Level (2)	283
Supervisory Level (1)	479
Trainees (Entry Level Trainee Program)	171
Total	2,590

Greenko has retained a young and diverse workforce and 90% of the employees are in their 30s with an experience of < 20 years and 63% have > 20 years of experience. The core areas of expertise include Domain and Subject Matter Experts, in the age group of over 35 years. This is excluding the experience of the lateral hires. The infographic below represents the employee's age profile with years of experience.

Employee age and Experience Profile



The group lays great emphasis on the well-being of employees across all operational sites, physical as well as mental, especially to harness resilience. The group also focuses on the well-being of employees working across locations including the external stakeholders (community) around the project locations. The group also runs several initiatives/programs to extend educational and medical facilities for employee welfare. These benefits apply to all the employee cadres. Along with it, employees benefit from medical & personal accident insurance, maternity leaves, adoption leaves, and for any extraordinary circumstances can also be availed.

Employee Welfare⁴

Employee welfare across all projects and plant locations are taken care of by the HR function. Children of employees pursuing vocational training are given a fixed remuneration by the company and the workforce is encouraged to pursue higher education. The company also lays emphasis on the education of employee children and contributes to the education of selected children.

In the year 2020-21, for pursuing higher education 155 employee children were aided with 40% support (school kids), while 24 Employee Children were extended support through 50% Tuition Fee Reimbursement. For Higher Secondary Education, while 16 employee children were aided with 50% fee reimbursement to pursue graduation and or any other professional curriculum. To add value for their career development and knowledge on the Business domains, 14 employees have been extended with 100% education fee reimbursement. The data is represented below:

Stakeholder Education Support Initiatives at Greenko

	Nursery to 12		Graduation/professional	Self
Month	40%	50%	50%	100%
Jun-20	36	6	3	5
Aug-20	41	2	5	0
Nov-20	7	8	3	4
Feb-21	6	4	3	3
Mar-21	65	4	2	2
Grand Total	155	24	16	14



⁴(GRI 401-2)

Human Capital

In addition to fostering education, the company has introduced parental leave which includes paternity leave. Greenko has welfare policies on Maternity Leave (26 Weeks), Paternity Leave (5 days) Adoption Leave (12 Weeks), Leave for Miscarriage (6 Weeks), Casual & Sick Leave (18 Days), and Extraordinary Leave (24 Weeks). Providing medical insurance coverage to the family including dependent parents is also a unique feature of Greenko's employee benefit policy. Greenko is always vigilant about human rights-related issues and no human rights violation has been reported in the FY 2020-21.

The organization realizes the need to foster the overall wellbeing of its employees. Therefore, the company provides medical insurance for hospitalization through the Greenko Group Mediclaim Policy. In 2020-21, Group Personal Accident claims worth Rs. 0.009 million were paid. Group Gratuity has also been paid as per eligibility, to 29 employees, accounting to Rs. 1.2 million.

The group has maintained a culture of Greeting employees on various important occasions like birthdays, marriage anniversaries and other occasions, employee engagement. Learning & Development Program

Schedules, Employee Policies, HR Help Desk services, Greenko Leave Management System (GLMS), Greenko Meeting & Action Tracker facilitate seamless work place reducing work related stress. The intranet covers news updates, announcements, knowledge repository, reports, and manuals. The corporate communication vertical also publishes 'Vconnect', a quarterly magazine for employee communication and to provide various updates about the Group

Employee Engagement played an important role to keep employees motivated during the pandemic. With the growing prominence of virtual working across plants and sites, Line Managers, the Leadership Team and the Covid Committee played an integral role in ensuring employee engagement. Although delivery schedules were affected due to the challenges posed by the pandemic and difficulties related to internet connectivity issues and health problems, desired outcomes were largely impacted. A very structured engagement through audio/video calls by the members of the Covid Committee, other Managers, HODs had a significant impact, contributing to employee engagement with a sustained focus on the welfare of employees as well as their families.

The performance of the various assets generating power was not significantly impacted during the pandemic due to the strategic deployment of operating teams with rigorous preventive initiatives by the plant and Health and Safety Teams across the Group. The group also ensured free vaccination for all employees, arranged diagnostic tests, doctor consultations and beared hospitalization expenses for the affected employees.

The communication channels with all employees, across locations, were open round the clock with a daily mandatory call to ensure employee health and safety. It also helped to boost morale and kept employees confident about striking a balance between work and employee health.



Encouraging Ownership Mindset

A culture that emphasizes on 'Ownership' is inculcated amongst the employees in a continuously evolving learning environment. It is imperative for the Greenko employees to be genuinely motivated, committed, and agile without compromising the quality of deliverables and stakeholders' interest. The group's employees have been oriented to be steadfast, resilient, and work responsibly to handle any situation of VUCA (Volatility, Uncertainty, Complexity, and Ambiguity). This is especially true in the current phase of uncertainty looming large over businesses. Greenko's employees exhibited the highest level of commitment and tenacity to achieve business targets. Human values and human rights are never compromised at Greenko, and no violations were reported in the FY 2020-21.

Succession Planning

Greenko believes internal mobility a natural progression and not a major change in one's career; opportunities to progress are extended to workers at all levels, not just managers and team leaders; and technology has enabled streamlined mobility between functions, jobs, and projects as well as geographies.

Greenko has a firm and robust succession planning system, wherein potential successors earmarked for critical roles are identified and groomed. The employees selected for internal role reversals undergo extensive training and skill development to be adequately trained for the new role.

The Leadership Team at Greenko is equipped with multi-faceted Domain and functional expertise and it extensively works to develop vertical as well as functional teams to aid in effective succession planning, as per business requirements. The leadership team is ably complemented by subject matter experts (SMEs) across various domains (Wind, Solar & Hydro) to impart knowledge and to develop specialized skills in future leaders.

Greenko maintains a balance between domains and functional skills, with a ratio of 1:10 (Leader/ Expert /10 employees), making mentoring easy and facilitating the achievement of set targets.

Succession planning is driven by the commitment to encourage innovation and to strengthen a continuous learning culture. Succession Plans are also evolved with definite transparency with complete involvement of Line Managers and Business Leaders.

Greenko focusses not only on hiring the right people but, also on retaining talent and ensuring capability enhancement through effective human resource planning and management and the establishment of an enduring ownership mindset among employees.

Competencies are honed through processes involving the engagement of Line Managers for On-the-Job Training (OJT) and through the Entry Level Trainee Program (ELTP) for Engineering Trainees on subjected related to business domains and Core Engineering (Electrical, Civil, Mechanical, Instrumentation, etc.). Each Engineering Trainee is bestowed with Eight (8) Domain and Engineering Books/Manuals, specially designed to impart knowledge and enhance skills.



Human Capital

Health and Safety across Value Chains⁵



To respond to the challenges posed by COVID 19, we quickly mobilized a cross-functional team and developed a taskforce to ensure the safety of our workforce. We continued to provide power to communities and wanted to create an environment that enables all associates to make outstanding contributions to the company's long-term success, to develop their full potential.



Mohan Rao M
AVP – EHS

Greenko has always maintained an objective of 'Zero Occupational Health & Safety related incidents' across its operations. The group is committed to providing a Healthy & Safe work environment for all its employees, contract workers, visitors, and stakeholders engaged in business operations.

To achieve this objective, the group has conducted a series of risk assessments and surveys across its business units & has identified and recorded core health and safety issues material to the organization. Further, action plans are formulated, and resources are allocated to address these identified risks according to priority.

At Greenko, Business unit-specific health and safety plans are developed, involving BU leads, EHS team and plant leads, which are in line with ISO 45001:2018 standards. Within the H&S system work permits, risk assessment, lockout tagout, emergency response, and monthly reviews are defined, monitored, and analyzed to ensure effectiveness. People Process System audits are conducted across plants for H&S management, by external agencies, to identify system gaps and process effectiveness and improve O&M and EHS results.

Greenko believes that inculcating a healthy and safe work culture among the employees is essential for avoiding unsafe acts and incidents. Behaviour-based trainings form a crucial aspect for developing employee resilience. To encourage safe behaviour among its workforce, to make the employees flexible and adapt to uncertainties, the organization conducted Behaviour-Based Safety (BBS) mentoring by experts at regular intervals during the reporting period. 4954 hours have been spent on BBS mentoring in FY 2020-21, which is 59 times more than the previous year. This enormous growth in BBS trainings clearly indicates the group's focus on the employee's mental health. Periodic medical check-ups are also conducted once in a year. A total of 194 mock safety drills have been carried out. 1528 EHS induction programs have also been conducted in the reporting period.

Greenko conducts several awareness programs and interventions at regular intervals. National Safety Week is also celebrated every year at BUs and competitions like safety slogans, songs, essay writing, safety quiz, etc. are conducted to improve employee awareness. The most safety-conscious worker and staff are recognized and rewarded. The organization also conducts special safety training to inculcate safety culture among the local public and children in communities where they operate. Awareness sessions are also arranged in schools about road safety and home safety.

EHS Audits

Sl. No	Indicators	Units	2020-2021	2019 – 2020	2018 – 2019
1	No of audits	Nos	191	305	137
2	EHS interventions & celebrations	Nos	637	317	160
3	EHS Committee meetings conducted	Nos	888	922	676
4	EHS Inductions conducted	Nos	1,528	2,173	2,455
5	Mock drills	Nos	194	420	294
6	First aid trained persons	Nos	4,954	520	430
7	Emergency response trained persons	Nos	4,954	590	465
8	EHS Walkdown Inspections	Nos	1,779	34	21

⁵(GRI 403-1, 403-2, 403-3, 403-4, 403-5, 403-6, 403-8, 403-10)

Need-based safety training is regularly provided to all Greenko employees and contract workers. The number of hours devoted to the safety training of employees and contract workers could be maintained effectively even during the pandemic (41.1%). The number of hours devoted to safety training of contract workers increased by 26.19% (20027 hours) from 14,781 Hrs. in 2019-20. A pool of competent people is developed in all business verticals by organizing training under the acronym matrix. Special Certification from Global Wind Organization (GWO) on Work at Height Training has been provided for selected wind BU teams to enhance their competency levels in the execution of 'Height Work Jobs'. There were 4954 people received first-aid training during the year, an overwhelming 89% increase over previous years. Subsequently, 4954 people received emergency response training during the reporting period, reporting an increase of 88% over 2019-20.

EHS Leading Indicators

Sl. No	Indicators	Units	2020-2021	2019 – 2020	2018 – 2019
Employees and Contractors					
1	Safety Training hours Internal (For employees of Greenko & Contractor)	Hrs	36777	36730	26027
2	Per capita safety training hours (Including Contract workers)	Hrs	7.42	5.98	13.0135
3	Toolbox Meetings	No	90051	83183	47699
Contractors					
1	Safety Training hours	Hrs	20027	14781	7242
2	Safety Awareness / Campaigns	No	13	13	2
3	Theme Based campaigns	No	12	1176	98
4	EHS Events. (Fire Safety Day, NSD, WED)	No	294	294	294
5	Spot the Hazard Competitions	No	271	98	86

The group maintains updated Risk registers at all plants for taking appropriate action based on priority. As a risk mitigation method, Greenko believes in the hierarchy of controls and has adopted ALARP (As Low as Reasonably Practicable) approach to control different types of risks.

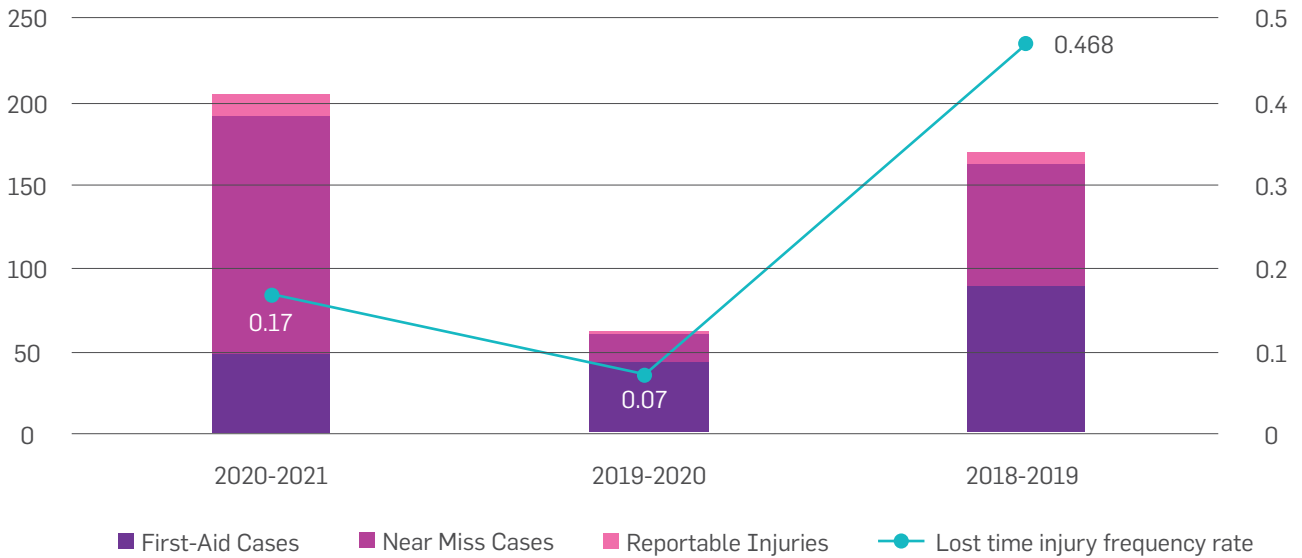
The group is equipped to manage safety related emergency incidences with the help of collaborations with local healthcare facilities and emergency service providers. EHS walk down inspections are also conducted at specified intervals to control unsafe acts and unsafe conditions. Immediate actions are also taken to avoid incidents. During the reporting period, 504 unsafe acts/unsafe conditions were identified by such inspections, which was 1.76 times less over 2019-20.

EHS Lagging Indicators ⁶					
Sl. No	Indicators	Units	2020-2021	2019 – 2020	2018 – 2019
1	First-Aid Cases	No	49	44	88
2	Near Miss Cases	No	142	16	75
3	Unsafe Act / Unsafe Conditions	No	504	890	2694
4	Fatalities	No	0	0	0
5	Reportable Injuries	No	15	1	7
6	Lost time injury frequency rate	No	0.17	0.07	0.468
7	Recordable injuries frequency rate	No	1.24	3.24	3.147
8	No of safety violations recorded	No	13	25	29

⁶(GRI 403-9)

Human Capital

EHS Lagging Indicators



Greenko was successful in implementing Business Continuity plans during the Covid-19 pandemic. The company implemented five basic rules including Social Distancing, Sanitization, Self-discipline, Self-isolation, Safety PPE at all operational sites to continue operations in line with the mandates given by the WHO and MoFW. SOPs and post lockdown Guidelines for all Internal Stakeholders were also circulated. The employees received instructions and conducted meetings with Covid Core Committees and EHS departments on virtual platforms such as Microsoft Teams and Skype. The operations were thoroughly planned and involved minimum number of employees to ensure hassle free movement of critical goods and services. Special care was given to infected employees through the arrangement of dedicated 'Quarantine Facilities' at all locations. Online consultations with medical professionals were also available for affected employees. Covid-19 Vaccination drives were also conducted to encourage vaccination among the employees.



Greenko Security Services⁷



We want to create an environment that enables all associates to make outstanding contributions to the company's long-term success, to develop their full potential



- Satish Babu V
VP – HR & IR

Greenko security services (GSS) takes the ownership of not just physical security but holistically takes care of internal and external environment around the sites as a whole. It also undertakes threat and risk assessments, vulnerability and counter measure analysis. GSS predominantly engages itself in safety and security of Men, Assets and Environment at Greenko. It also functions as an alert mechanism for all current and future safety and security needs with an effective surveillance process through its intelligence network. Operationally GSS is the check and control tool for reconciliation of men and material. Integrated electronic surveillance at Greenko Group functions on multiple window design principles, by providing live monitoring & recording reviews on 24/7 basis to the central Security Control Room located at HO in Hyderabad and to the site-based security control room. All Greenko's operational plants and projects have a mechanism to collect and decipher intelligence at the site. Dedicated resources, who have the visibility and insight on movement and activities at the plant and its vicinity are given the responsibilities. The intelligence reports are sent to the concerned department on real-time basis.

In line with the Greenko vision, GSS contemplates to transform itself by initiating the following:

1. Adopt technologies – Analyse, digitize and automate the GSS operation.
2. Implement Integrated Security solutions.
3. Implement progressive Security and vigilance arrangement based on security risk assessment and risk perception.

GSS has a strategy to conceive Threat Perception Management and is equipping itself to address the following threats to the assets of Greenko

1. People: Assault, murder, kidnapping
2. Material: Theft, pilferage
3. Infrastructure: Sabotage, accidental damages, natural calamities
4. Information: Hacking of IT systems, stealing of information

GSS as a part of its talent management and skill development, is conducting various trainings on guarding and securing its personnel. During the reporting period, 100% of GSS employees received training on Human Rights policies and procedures.

Greenko's GSS trainings on innovative technologies

Security personnel Training details	Person hours
Drone operations and maintenance	240
First Aid	438
Familiarization of IRESP security	184
Integration and Ware house management	95
Executive protection	576
Behavioural	140
Basic guarding, security and reporting	600

⁷(GRI 403-7, 410-1)

Human Capital

Prevention of Sexual Harassment (PoSH)

This platform encourages reporting & resolving complaints of sexual harassment at the workplace. Regular sensitization workshops & awareness sessions are held for all employees, right from their induction into the company. In the reporting period, the major initiatives conducted under PoSH included:

- Awareness across the Group (regular & contract employees) for on roll & Contractual employees, 133 sessions spanning 4341 hours
- PoSH awareness program during employee induction.
- PoSH – Right and Wrong infomercials published on employee computers as an awareness campaign.

- To ensure continuity & employee awareness, published 3-minute PoSH animation video series on the company Intranet as part of its e- learning module.
- Formal & informal quarterly meets were conducted with women employees to pre-empt any harassment issues being faced by them and to ensure their wellbeing.

The group also conducted preventive healthcare awareness programs and regular health check-ups for women employees. Facilities for yoga, gym and sports were also arranged at some locations.



Value Creation Story: Horizontal Implementation of Fire Safety Controls and Trainings

Location: All sites

Summary

This case study summarizes the actions taken by Greenko to prevent fire accidents across all its Hydro Electric power plants.

Risk mapping for all Hydro Electric Power plants were carried out with three main parameters, namely Potential Fire Points, Fire/ Smoke detection & control, People Safety. The details on criterions and action points under each parameter is listed below. Cross functional teams conducted various surveys and mapped the applicability of each parameter in respective plants. The roadmaps and site-specific action plans for implementing the criteria were evaluated with collective inputs from EHS team, BU Heads, Plant coordinators, Design team. In line with this, various training sessions were conducted for the core team with professionals from National Safety Council and Central Board of Irrigation and Power.

i) Potential Fire Points

- 1) Check whether Battery Bank Areas are properly ventilated.
- 2) Batteries and its chargers are checked as per the standard check list.
- 3) Power Cables are checked for its Insulation Values (IR Values) to correct any abnormalities.
- 4) Thermal imaging of Power Cables & Power Cable joints to be carried out at regular intervals to identify and correct abnormalities.

- 5) Healthiness of Plant Earthing is being ensured at regular intervals.
- 6) Critical Power Panels, Generator are provided with Automatic Fire Extinguishing system (CO₂/ Nitrogen/ Clean agent/Water/ any other flooding system)
- 7) Transformers provided with Automatic Fire Extinguishing system (CO₂ / Nitrogen/ Clean agent/Water/ any other flooding system)
- 8) If the answer to the above points is 'Yes', the Automatic Fire Suppression systems are checked at regular intervals to ensure its proper functioning.
- 9) Cable Terminations & Cable Cellars provided with Automatic Fire suppression System & all openings are closed to avoid the spreading of the fire.
- 10) Critical Fire Catching cables are provided with fire retardant coating or with fire retardant insulation.



ii) Fire/Smoke detection & control

- 1) Smoke detectors are installed at critical floors & locations at control room/ Control point.
- 2) Fire/ Smoke detectors are inspected once in a month to ensure its health
- 3) Fire Hydrant System Applicable & Available in the Plant covering critical areas/ floors
- 4) Whether Fire Hydrant Systems across the plant are covering critical points
- 5) Required Number of Fire Extinguishers available and in working condition
- 6) Refilling & testing of Fire Extinguishers as per the Schedule to keep them ready for use.
- 7) Fire Balls installed at various locations for automatic fire Suppression

- 8) Employees are trained about the over usage of Fire Hydrant System
- 9) All Critical deluge valve, other Hydrant Valves, Switches, Isolators are labelled.
- 10) Check whether Isolation Valve of Deluge valve kept open.

iii) People Safety

- 1) Emergency Exhaust Ventilation to remove smoke/ poisonous gases.
- 2) Multi gas detector to check air quality inside tunnels
- 3) Arch Flash Suits & rated electrical hand gloves are available & used for critical activities, as per energy rating
- 4) Arch Flash Boundaries marked, and workers trained about the use of PPE at Arch flash zones.
- 5) Fire Escape Routes provided with Auto Glow exits, marking emergency assembly point.
- 6) Redundant power supply available for emergency
- 7) Fog Lights Available for Emergency Escape during smoke etc.
- 8) Emergency Exit plan of Each plant along with entry/ exit & assembly point at conspicuous locations.
- 9) Emergency Contact Numbers displayed at conspicuous locations
- 10) People trained in first-aid available at the site
- 11) All Employees are trained for emergency scenarios to combat the situation with minimum losses
- 12) Fire Fighting Suits Available at the Plant for Emergency rescue
- 13) Self-contained breathing apparatus available at the Plant for emergency rescue
- 14) For Emergency Rescue & first aid, Stretchers and other required materials are available
- 15) Ambulance/ Emergency vehicle available
- 16) Collaboration with hospitals for emergency mitigation

Strategic Objective	Target Area	Material Topics Addressed	Key Risks Considered	Alignment with SDGs
To build capacity for preventing and tackling fire accidents	Plant Efficiency Health & Safety	Excellence, Adoption and management of Assets	Operational failures, Work place Safety	 

Human Capital

Value Creation Story: Electrical Safety in GAM Plants



Location: All sites

Summary

Greenko has carried out the following tasks at all GAM plants to ensure electrical safety with a concrete action plan to bring down the risks to 'ALARP' (As Low as Reasonably Practicable) levels. This has led to the achievement of 'Process Enabled Outcome' during execution of EHS Process (Electrical Isolation / LOTO System).

- Survey conducted for 'Arc flash Boundaries' across Greenko and arrangements were made to ensure 100% compliance.
- Ensured 100% availability of LOTO Stations, Discharge Rods, HT Rubber Hand Gloves, Insulated Tools, Voltage Detectors, Calibrated Instruments in required number at all GAM Plants.
- Ensured painting of Identification Numbers over all Electrical Installations for easy traceability by the Maintenance Team.
- Imparted regular trainings to working groups involved in Electrical Maintenance & Repair Works of LOTO / Electrical Isolation'.
- Ensured timely replacement of damaged 'Insulating Rubber Mats' in front of Electrical Installations by maintaining adequate inventory.

- Recommendation to follow 'Torque Chart' by the maintenance team to ensure requisite tightness of fasteners pertaining to Electrical Panels/ Installations.
- Provided PTW Folders at identified locations for display of 'Permit to Work Forms', to facilitate Management Staff to verify the safety requirements compliance during site visits.
- Ensured 100% availability of 'Protective Insulation Shields' for exposed bus bars in electrical installations.
- Ensured good illumination levels near all 'Electrical Installations' to safely execute Maintenance & Repair Works by execution team.
- Ensured deployment of Trained / Competent Staff to attend Electrical Maintenance & Repair Works.
- Provided Smoke Detectors with fire alarm at identified locations.
- Strengthened Cable Glanding & Termination Job, Cables Insulation Resistance
- Values Measurement Record maintenance under proactive safety measures.

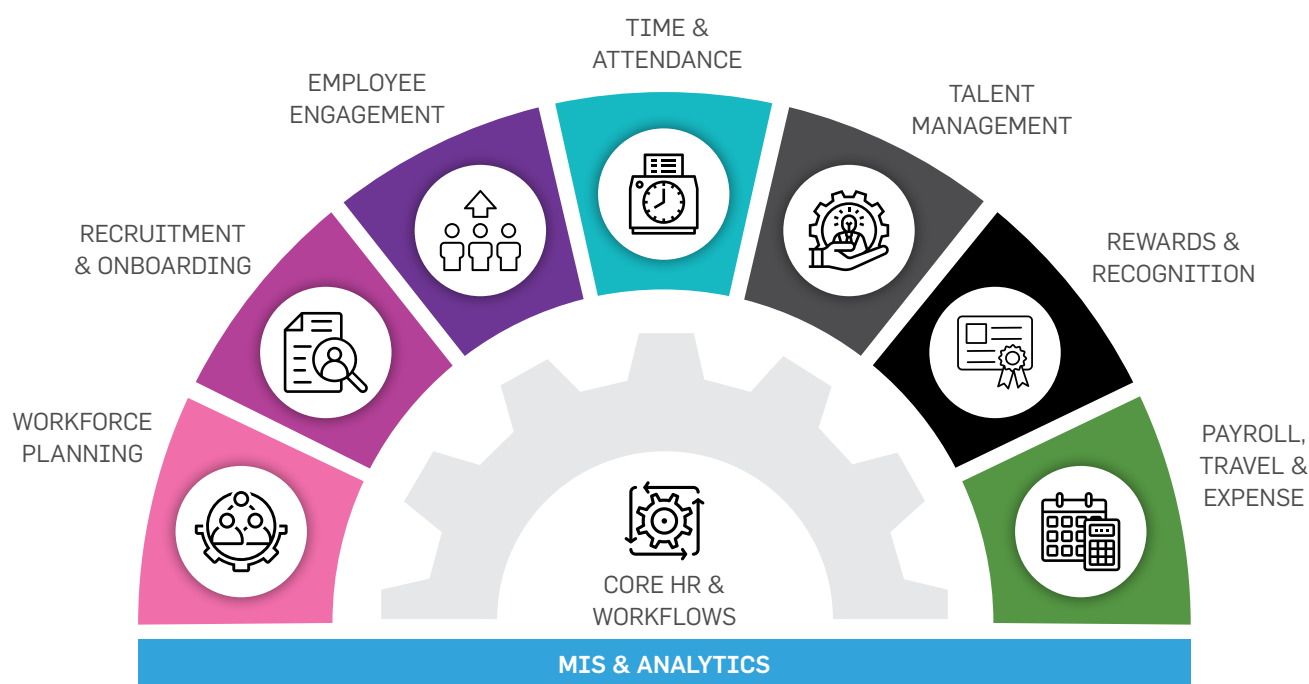
Strategic Objective	Target Area	Material Topics Addressed	Key Risks Considered	Alignment with SDGs
To ensure Electrical Safety in all GAM plants	Plant Efficiency Health & Safety	Excellence, Adoption and management of Assets	Operational failures, Work place Safety	 

Digital Transformation – A Journey towards Greenko 4.0 & Beyond

Greenko understands that Implementation of digital technology is not enough for an HR transformation. The digital transformation must be complemented to organizational culture and adequate training needs to be delivered. As a part of the HR digitization plan, all the HR statutory compliances are integrated through a 'compliance tool' .

Automation/digitalization at Greenko has eliminated the chances of human error and has helped in streamlining the process with less human intervention. It gives the workforce better visibility of the various tasks, can pinpoint pain areas, and suggest improvement measures, increasing the overall productivity. It also helps in managing deadlines and reduces the amount of time needed to complete a task. This has resulted in higher productivity rates for routine tasks, with the additional benefit of freeing up employees' time to concentrate on more complex and significant assignments.

Digital MIS platform for Greenko's HR management



Digital transformation at Greenko via implementation of Darwinbox for HRMS comprises of the following salient features:

Digital Talent Acquisition & Onboarding, Automated Attendance, Mobile-first & Intuitive UI to enhance user experience and adoption, Inbuilt, integrated HR Helpdesk, Interactive Analytics & Comprehensive Reports, Greenko leave management system (GLMS) has also been implemented and being used as on date, however progressively the leave management will be an integral part of the Darwin HRIS.

Human Capital

New Energy Solutions

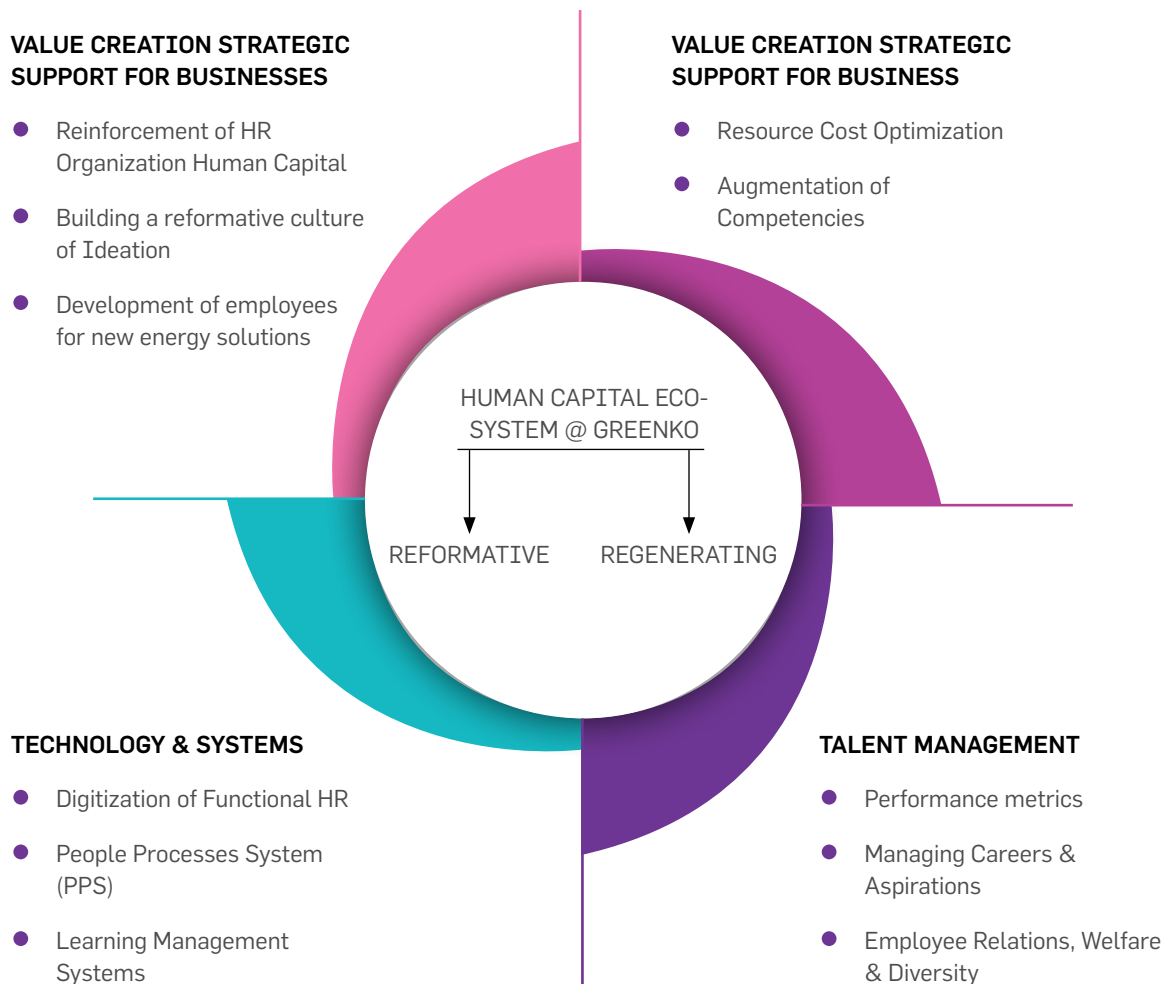
New Energy Solutions will be significant part of Greenko's business in the next few years. The new energy solutions would require different capabilities and structures. The business will require significant chemistry and chemical engineering knowledge and expertise, could have relatively lesser government control and engagement and it will face decentralized business and individual customers. The strategy is to meet the Human Capital needs in the next 4 years will be by augmenting relevant capabilities ; partnering with entities with relevant expertise, developing such capabilities and skills internally by leveraging capabilities and potential of the existing resources.

Greenko's Human Capital requirements for growth will continue to be addressed young trainees from reputed institutes and reskilling the existing multi-skilled mid and senior level management & leadership teams.

A committee of Senior Leaders from Business, HR and GIMS have reviewed the HR policies to contextually improve it in line with business requirements and to introduce best practices for sustaining and improving employee morale.

The HR along with the leadership teams have envisaged and implemented a talent mapping exercise and developed a management and leadership pipeline to be achieved by 2025 and take it ahead. The strategic roadmap to achieve the desired target is depicted in the infographic below:

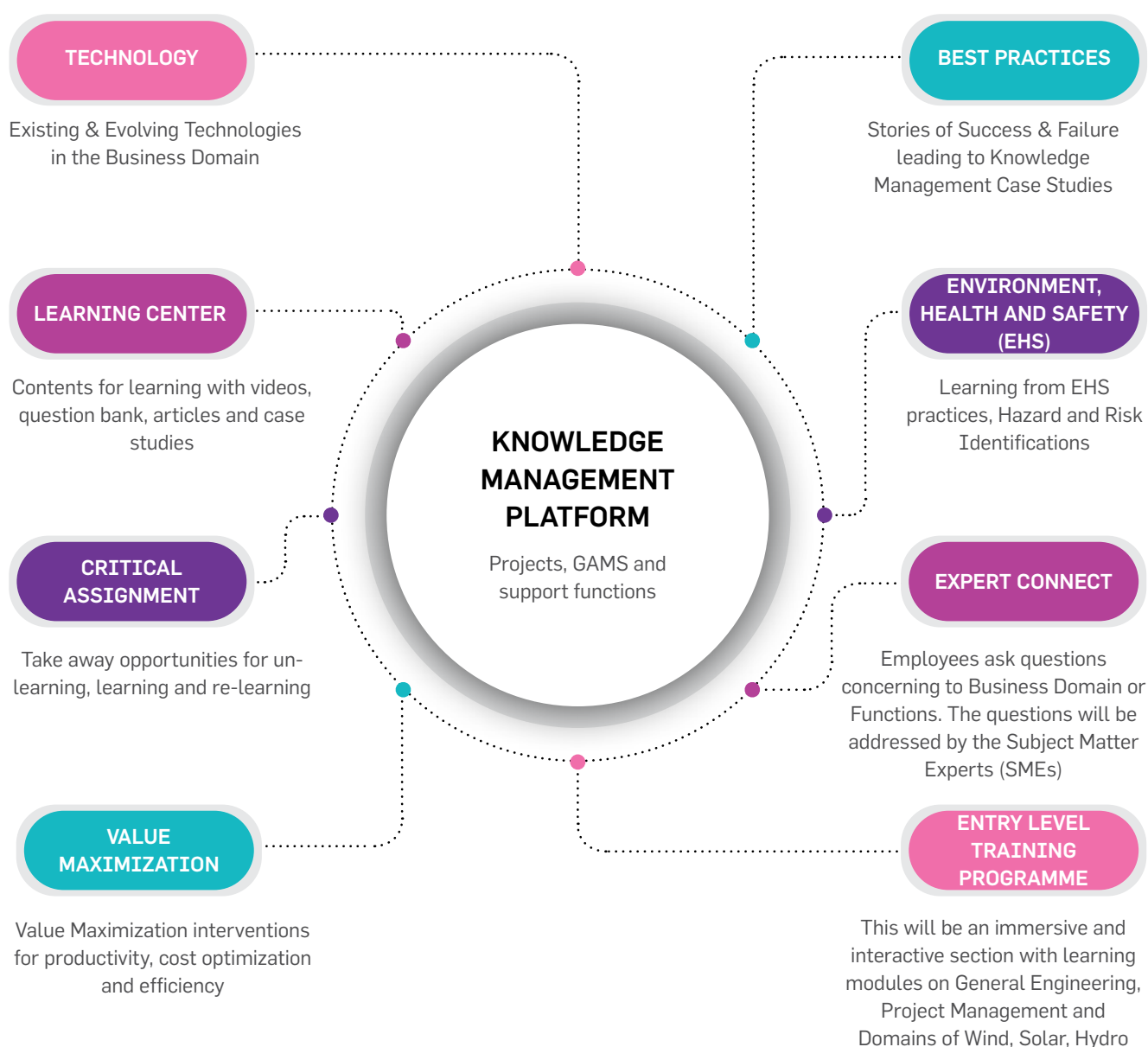
Greenko's Regenerating & Agile HR Eco-System for New Energy Solutions



Greenko's transformational journey towards 3.0 & 4.0 spanning over next 5 years need to be supported with required employee competencies in newer technologies and domains. The existing talent pool must be reoriented with augmentation of niche technical and executional operational competency to ensure Group's scalability as a leading and sustainable player in the industry. To achieve this target, Greenko has set up a core committee headed by the Senior Leadership and Board to engage with the Business Leaders and evolve a strategic Learning & Development agenda till the year 2025.

Given the aspirational Learning & Development agenda to be achieved by 2025, the L&D function will be strengthened with appropriate leadership talent, who will ensure abridging and developing knowledge and skills seamlessly.

Developing the new Centers of Excellence (CoE) & Knowledge Management Repository for existing (CoE for GAM/Projects/ELTP/ EHS) and new Energy Vertical will be a conscious and critical plan of action for the L&D team, working closely with the business leaders. The knowledge management plan along with the initiatives to be taken up to achieve the set targets is depicted in the infographic below:



Looking Ahead

Greenko is conscious that its growth and diversification (by adding two pillars to business) would require significant augmentation of expertise and talent while continuing to retain and grow the existing work force. Greenko aims to continue the value addition for its employees by attracting, training, and retaining multifaceted employee competencies and expertise to groom the future leaders early on.

It also plans on improving its diversity by constantly building a work environment that provides equal opportunities to all gender and ethnic groups. The group understands the responsibility of commitment towards a low carbon economy and hence has started focusing on training its employees early on to explore New Energy systems and acquire skill sets. A strong EHS system at Greenko is continuously improving and evolving to achieve the desired business outcomes without any risks to its entire working environment. In the year 2020-21, Greenko had increased focus on the mental health of its employees.

In a strong workforce of 2590, the group has identified several employees who have a range of competencies in multiple domains, not only that, but most of these identified were found exceptionally talented to work in multiple functions across the business. It creates a favorable environment for grooming and polishing employees and keeping them motivated, agile, performance-oriented & resilient to take the business to newer heights, towards a deeper decarbonized future.



Social & Relationship Capital

Strategic Approach

The relationship with the stakeholders and twining with the society are strategic aspects of Greenko's growth plan. Partnership covering the public, people and the private is the model adopted by Greenko to undertake inclusive development in the regions of its operations. As the business graduates to 3.0 & 4.0, public policy advocacy has become critical. The company and its operations are spread across the country and is located in hinterlands of the country.

Greenko respects and is sensitive to human rights of communities, workers employed by contractors and other vendors and its own employees. Greenko has taken many measures for inclusive development of the communities .

Greenko group has executed numerous community development projects. Some of these projects also enable the community to appreciate the clean energy growth and secure employment in this growing sector. Greenko group has also mobilised communities to develop watershed projects to conserve and steer the proper management of natural resources for the benefit of people. Greenko group has helped various state governments and local bodies by collaborating in various health programs which include helping COVID warriors and donating oxygen concentrators.

Greenko's public policy advocacy has resulted in significant strides in regulations in India that encourages interventions to make the electricity system in India more flexible and involve private enterprise to harness multiple value pools in the energy system.

Stakeholder Trust Reinforcement & Public Policy Advocacy

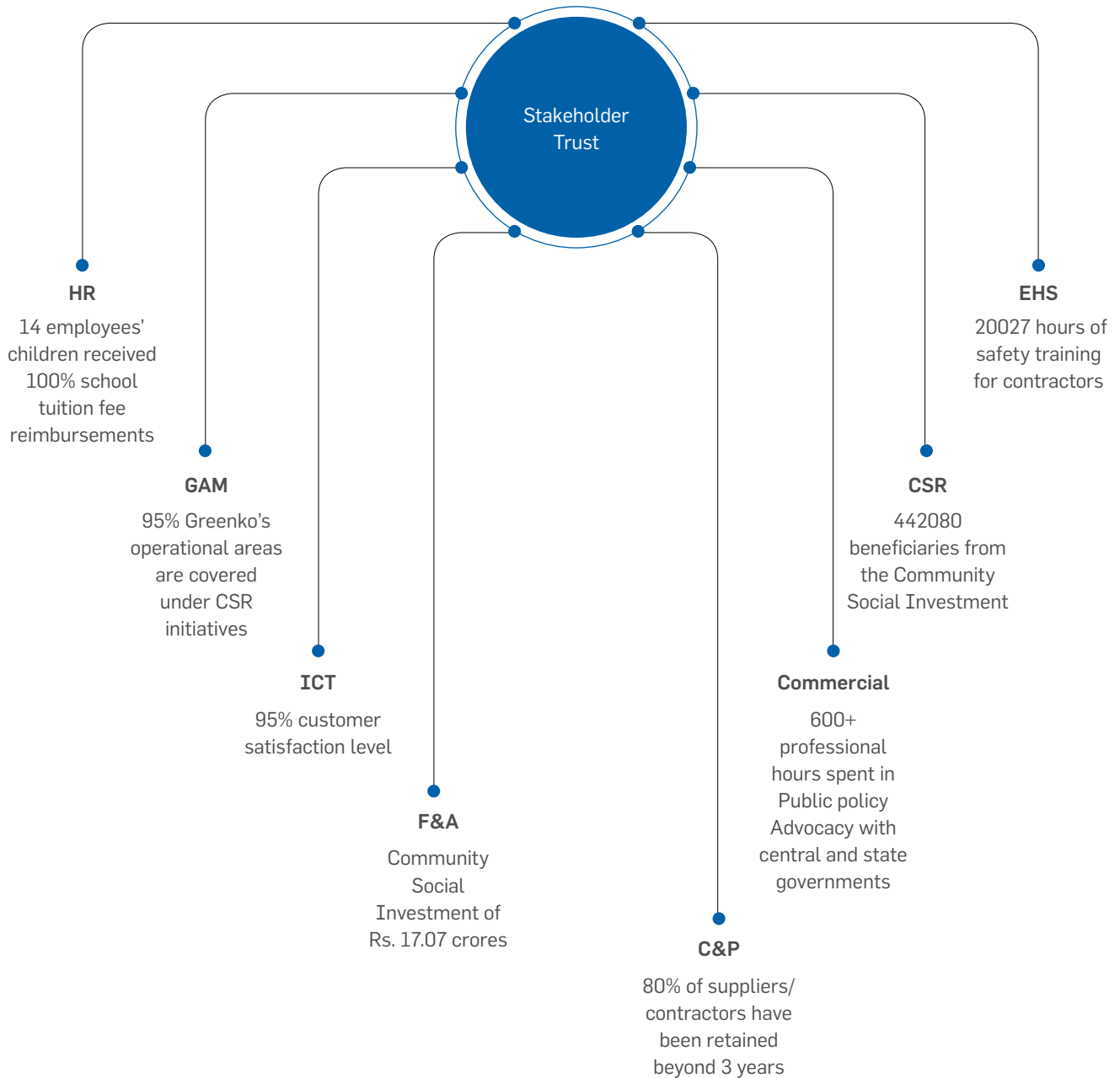
Strategic Focus Area	Approach	Key Performance Indicator
Partnerships	<ul style="list-style-type: none"> ● Participate actively and ethically to contribute in shaping public policy. ● Awards and Recognition ● Contribute strategically in the communities to effect measurable outcomes ● Preserve human rights of every individual and community 	<ul style="list-style-type: none"> ● Partnerships with suppliers/contractors/regulators/customers for long-term affordable, reliable, and clean power ● Smart contracts for critical project management ● Strategic partnership through International Competitive Bidding for risk-sharing and rewarding ● 95% of Contractors are being awarded repeat orders and the same is executed by Contractors as they are satisfied with Greenko ● 10% increase in Strategic Contracts and Procurement

Strategic Focus Area	Approach	Key Performance Indicator
		<ul style="list-style-type: none"> ● 80% of suppliers/contractors retained beyond 3 years ● 4.5 on 5 scale Internal customer satisfaction index-
Public Policy Participation		<ul style="list-style-type: none"> ● Approx. 2 hours every month spent by senior management in policy advocacy related to Security
Branding		<ul style="list-style-type: none"> ● Majority of Strategic C&P members have IIMM professional Affiliations ● Fellow member (F-120084-0) of The Institution of Engineers (India) ● Fellow member (L/6689/HY) of The Indian Institute of Materials Management ● Business (total group) Green Supply chain Award (CII- Hyderabad) ● Innovative and Sustainable Supply Chain Award – 2021
Human Rights		<ul style="list-style-type: none"> ● No reported human rights incidents
CSR / local community initiatives		<ul style="list-style-type: none"> ● Rs 17.07 crore invested in community development ● 285 community development programs ● 3959 people benefitted from 304 hours of employee volunteering activities ● 95% Satisfaction with Covid-19 mitigation measures ● 95% Satisfaction with the Skill development program in Solar Energy

Social & Relationship Capital

Integrated Value Creation in Social and Relationship Capital

SOCIAL AND RELATIONSHIP CAPITAL



Journey So Far

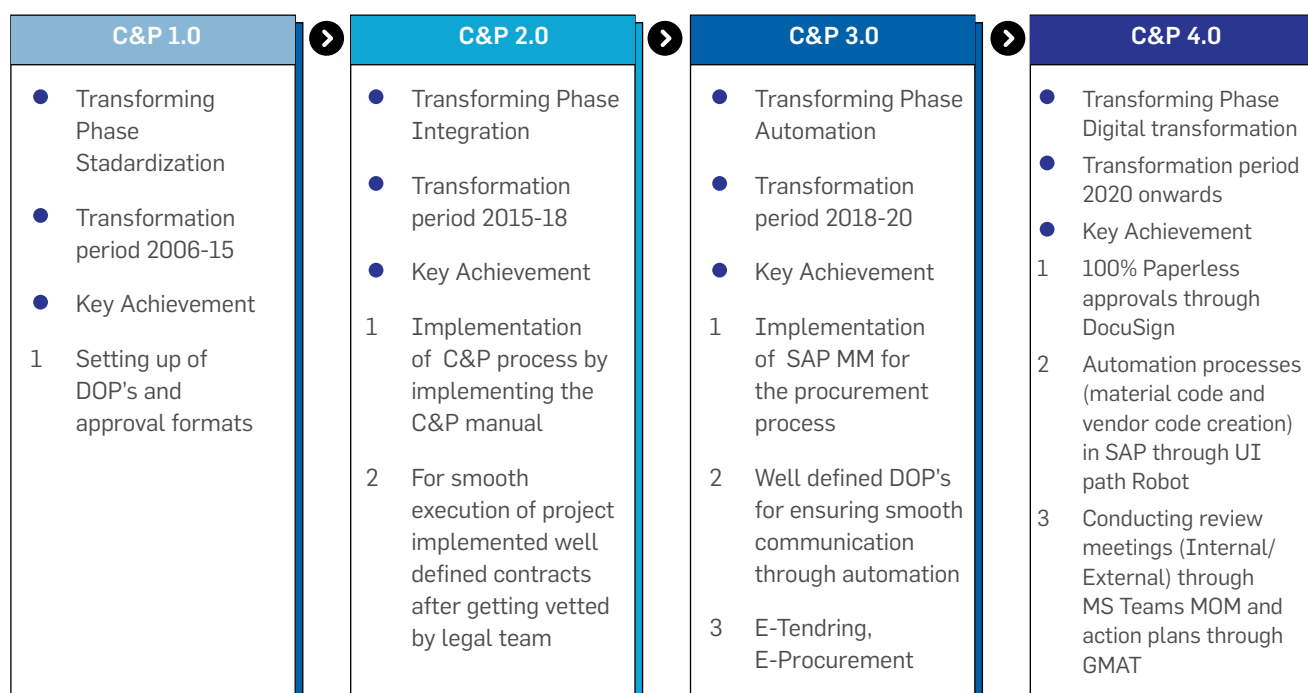
The relationships with critical stakeholders such as communities, contractors, suppliers, regulators, customers have a profound impact on Greenko's business. Greenko, as a responsible business, understands this and utilizes multi-faceted stakeholder relationships to form the basis for strong partnerships which aid the group in creating value and sharing value.

Greenko's partnership with communities, contractors, and suppliers enable it to complete projects within stipulated deadlines, manage assets efficiently and create positive community impacts. Further, the transition from GKO 3.0 to 4.0 requires Greenko to develop new partnerships, engagement models and also transform fully to the digital mode. The transition to 4.0 warrants that the leadership at Greenko must envision the energy assets to be decentralized. These energy assets are efficient, effective in leveraging the society and nature. Transformation GKO 3.0 and 4.0 means a digitally enabled, socially entrenched and environmentally regenerative business. Greenko believes, delivering multiple values to the economy, society, and environment through the regenerative and circular model will deliver sustained returns to its stakeholders.

Greenko works to increasingly engage its Stakeholders in all the company's activities and operations. Throughout the value chain, Greenko interacts with thousands of people and organizations that are critical to its social and relationship capital, a fundamental element for the sustainable performance of the company. Greenko has made advances with measures such as International competitive bidding, smart contracts, going 100% paperless and implementation of Automation Process in SAP. It also conducts reviews through MS Teams meetings to share and deliver value to all stakeholders.

Greenko's C&P transformation

C&P transformation is a radical effort to change, rethink, reinvent and reposition C&P role in the organization.



Social & Relationship Capital

Partnerships



Greenko has been one of the few organizations that has successfully managed to bring in the concept of circularity into the business model. As we begin to provide secure and sustainable energy solutions on a global scale, we coordinate seamlessly with our stakeholders to rejuvenate our business environment.



- Shatanshu Agrawal
AVP - Commercial

Strategic Alliances¹

Greenko strives to build partnerships with suppliers, contractors, regulators, and customers based on trust and shared values that are essential for working cohesively and effectively over the long term to deliver affordable, reliable, and clean power.

Greenko aims to stimulate technology cooperation to enhance the development of alliances, and to assist developing partners, consistent with their respective capabilities and national circumstances and priorities. Greenko enters into partnerships with suppliers and contractors after diligent screening and performance evaluation based on Quality, Delivery, Quantity, EHS compliance, and statutory compliance. It helps the organization's businesses to access capital, technology, and operational advice to become more profitable and sustainable, with an aim of expanding clean energy markets and improving livelihoods to accelerate economic growth. Selected contractors are also given Health & Safety and skill development training. In the reporting period, 13 safety awareness campaigns were conducted for contractors.

Greenko passionately believes that Vendors are the co-authors of their success story. The group believes in trust and enduring partnerships to endorse the high quality and value of the asset being constructed. A pre-qualification exercise is carried out for onboarding vendors, which ensures vendor credentials and capability to execute assignments; adherence to health, safety, and environmental norms; and compliance with statutory requirements, including human rights. The performance of the vendors is

evaluated at regular intervals in a transparent manner & it provides timely feedback for their improvement and development.

Greenko continues to forge strong bonds with contractors/suppliers such as Siemens Gamesa, Risen, Huawei, TATA Power Solar, Toshiba, and ABB. The group has also entered into strategic partnerships with MP Solar Project and Tata Power Solar in 2018-19. Greenko has entered into long term agreements with suppliers for WTGs, Modules, Conductors, Insulators, and SCADA. The group has also collaborated with Tata Consulting Engineers in collaboration with EDF, France for the Pinnapuram PSP project as a review consultant, wherein Megha Engineering has been chosen as a local vendor for civil works, hydro-mechanical works and Andritz Hydro has been roped in for design, supply, erection, testing & commissioning of the electro-mechanical package. The Group has established social partnerships with various Gram panchayats and local communities to effectively carry out its community development programs. Additionally, Arcadis remains the Group's ESIA partner and R.S Envirolinks Technologies is its EIA partner. Other strategic partners of the Group are CII-GBC, National Safety Council, ASSOCHAM, Data Security Council of India, National Solar Energy Federation of India.

¹(GRI 102-9, 102-13)

Responsible Contracts

The project management process at Greenko is unique in many ways. The IRESP or Smart Contracts are categorized into two high-value packages - Electromechanical and civil/hydromechanical. Also, the contract agreement on the lines of IRESP / smart contract principles are based on two aspects, design consultants for civil and hydromechanical aspects & consultants for reviewing the designs from owners' perspectives. This good practice in procurement also takes care of the requirements of the World Bank and Funding agencies.

The project begins with an International Competitive Bidding process (ICB), and provides an opportunity for global players in the bidding process and helps Greenko in shortlisting the most suitable and apt candidate for critical projects.

At the ICB, the terms and conditions pertaining to risks are clearly highlighted by Greenko, so that the vendor is well aware of the probable risks and their mitigation before the contract is materialized – in line with the terms of its IRESP principles.

All IFC guidelines are followed for the tendering process. Before the tenders are passed, transparent technical discussions take place. This leads to understanding the risks, mitigation measures and residual risk beforehand.

Greenko's smart contracting evaluates the offers based on the asset life cycle and in case of any design/technical failure, penalties are levied on the supplier/vendor based on physical efficiency tests.

KPIs FY 2020-21

- % spent for responsible compliance with Greenko CoC suppliers
- **5% increase in Strategic Contracts and Procurement**
- % Increase in contractors in FY 20-21

10% increase in Strategic Contracts and Procurement

- Payment Processing Time (Average in different value bands)

30 to 45 days

- Average payment terms measured in paid days

30 to 45 days

- Percentage of supplier payments made within the payment period

90 % of supplier payments made within the time period, in case of strategic contracts

- Percentage of orders delivered on time

85% of orders delivered on time

- Purchase /contracts order cycle time

1-21 days for supply orders and for all Contracts - 15 to 45 days.

- Supplier development programs

Capital Equipment wise (WTGs, PV Modules, Inverters, Hydro Turbines, Transformers, Conductors etc.,) Vendor development done by visiting vendor manufacturing facilities, through web meetings, Product Evaluation, Exhibitions and Magazines.

- Amount spent on CAPEX

Rs 111.12 Crore CAPEX

- Amount spent on OPEX

Rs 18.64 Crore CAPEX



Social & Relationship Capital

Corporate Partnership

Greenko Group in partnership with WWF India is working towards the conservation of Sea turtles (Olive Ridley) for the project 'Disentangling Sea Turtles'. Aiming to work closely with the fisherman communities in India, the project aims to mitigate threats to marine turtles through advocacy at the government level. Through this project, Greenko aims to mitigate threats to marine turtles. Greenko group primarily aims to work with the fishing industry and fishermen communities of India. It specifically plans engagement activities through various workshops, awareness drives to enable the adaptation of sustainable fishing practices. Further, the awareness programs also extend to educate the fishermen on unethical ways and ghost fishing gears that could have potential impacts on sea turtles and other threatened species.

KPIs FY 2020-21

- Type of partnership (WWE India and Greenko Group) Philanthropic
- Conservation focus of partnership Oceans
- FY2020 budget range (EUR) €25 - €100,000

Supply Chain Management²

Greenko desires to strategize its supply chain model to address regenerative and circular economic considerations. The group balances/negotiates the techno commercial attributes that allow it to deliver a viable, high-quality product that meets all the design specifications quickly and are within targeted prices. The sourcing activities of the business are aligned with organizational goals and objectives at its root. This alignment allows the business to achieve higher business performance with higher efficiency and minimal supply chain risks.

As Greenko targets to reduce its impacts along the value chain, reducing/minimising impacts in the supply chain becomes imperative. Hence, such factors are made part of supplier evaluation process. In addition, working with suppliers to enhance their capability in limited instances, is undertaken.

To enable such thinking in C&P function, monitoring of individual performance is altered and made flexible to accommodate responsible supply chain management including the life cycle aspects.

The changes benefitted the organization in many ways:

- 8 % price savings through the development of new vendors/ cost analysis/negotiation
- 80% innovative ideas implemented, keeping in view the 5R principles of Right Materials, Right quality, Right quantity, Right Time, and Right price.

- Introduction of BoT (Robotic process automation) for automation of Material Master creation and vendor code creation in SAP

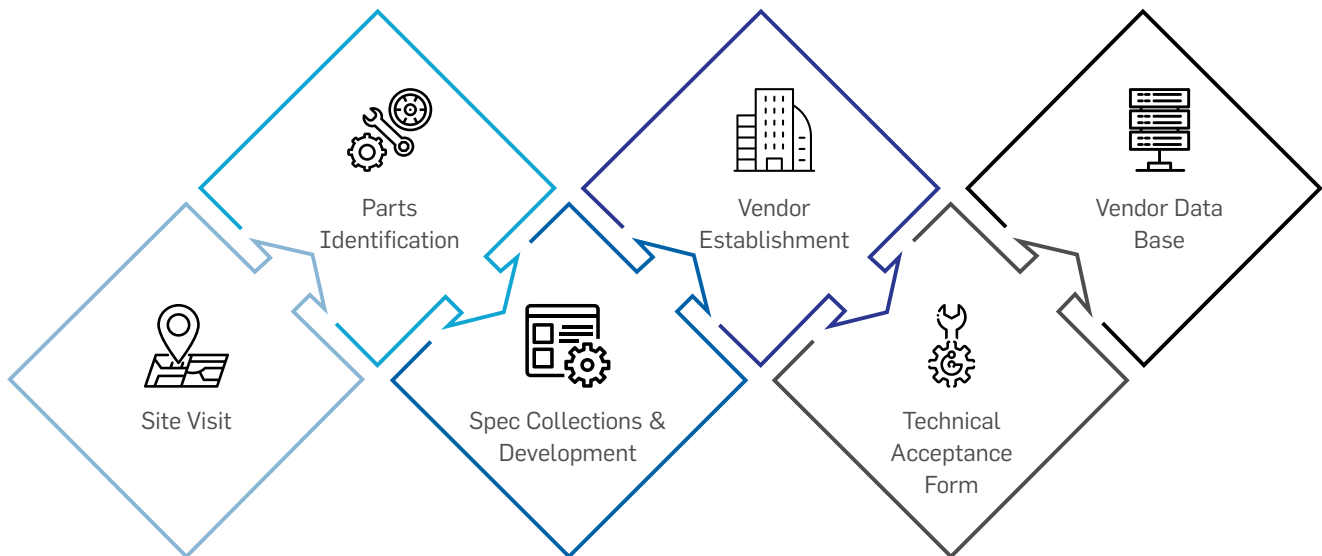
KPIs FY 2020-21

- **95%** of Contractors are being awarded repeat orders and the same is executed by Contractors as they are satisfied with Greenko
- **80%** of our Suppliers are being awarded repeat orders and the same is executed by Suppliers as they are satisfied with Greenko.
- **80%** of suppliers/contractors retained beyond 3 years
- **10** Events in financial year. Discussed Portfolio Road map for next five years and introduced new technology road maps for critical suppliers and contractors.
- **99%** of contracts awarded through an open & competitive process
- **2** long-term agreements entered with suppliers/manufacturers
- **85%** of orders delivered on time
- **100%** of Contractors & Suppliers based on Health & Safety practices
- At least **95%** of critical suppliers to be ISO 14001 certified and RoHS compliant by March 2024
- **100%** Statutory & Regulatory Compliance achieved

²(GRI 204-1)

Smart Procurement

Greenko instituted Smart Procurement initiative for self-reliant sourcing of spare parts without compromising the 5Rs of Right Source, Right Price, Right Material, Right Quantity, and Right Time. The various steps followed for Smart Procurement is listed in the infographic. A special team is formed and assigned a task to visit different sites to ease the execution of Smart Procurement. The team is assigned a task to identify the part codes of the components. The technical data sheets of identified components were collected from different vendors and web channels. These exercises helped Greenko's in-house team to decode and comprehend the specification and other technical details of spares. Through this initiative, the Greenko team was able to identify alternative products in the market with similar specifications. The key benefits of this initiative are Improvement in technical know-how on Spares and Services, Reduced dependency on selective vendors, Better Lead Time of the Spares, Cost Savings.



Social & Relationship Capital

Sustainable Partnerships

Greenko has established a turbine procurement strategy for establishing framework agreements and developing strong relationships with leading turbine suppliers for securing turbine requirements as the Cost of turbine constitutes a significant proportion of hydropower and wind energy project costs. Turbine suppliers are limited and the demand for turbines outstrip the manufacturing capacity, hence establishing such framework agreements go a long way in smooth execution of contracts and procurement related to turbines. To date, the company has purchased hydro turbines for high-head hydropower projects from Alstom, hydro turbines for low head projects from BFL Turbines, and wind turbines from GE Energy, Gamesa, ReGen Powertech, and Suzlon.

Operating equipment for solar energy projects primarily consist of solar panels, inverters, cables, solar mounting structures, trackers, and the evacuation system. Greenko purchases major components such as solar panels and inverters directly from multiple manufacturers. There are several suppliers in the market and those suppliers are selected based on expected cost, reliability, warranty coverage, ease of installation, and other ancillary costs. Greenko's primary solar panel suppliers are Trina Solar, Chint Solar, and Risen. Greenko also sources solar inverters from SMA Solar.

In about 25% instances, Greenko has incorporated supplier suggestions in incorporating the circularity in decision making. In the reporting period, Greenko entered MoU with Tata Power Solar for setting up 180 MW Solar Power Generation system at Shivpuri, Madhya Pradesh. It also entered long term contracts with ONYX Insight to modernize 500 wind turbines.

Greenko had sought ONYX Insight technology to enhance the quality of data from the wind turbine drivetrain to enable the adoption of latest predictive analytics. Greenko is looking forward to adopting machine learning

in addition to predictive maintenance. Greenko has managed to retain 80% suppliers in the reporting period and conducted **10 events conducted in 2019-2020 & and also 2020-2021**, to discuss the roadmap for the next 5 years, again emphasizing the circular approach in Greenko's supply chain management. Greenko also received the One, Sliver Award for green procurement practices for one of the group companies in 2019-20.

Transmission and Interconnection

The availability of transmission infrastructure and access to a power grid or network is critical to a project's feasibility. The relationship and continuous engagement with the transmission utility authorities ensures timely access to transmission infrastructure. Greenko discusses availability with the relevant state utilities and files an application with the relevant authorities to interconnect with the network. Power from wind and solar farms is typically evacuated to the relevant grids through high voltage transmission lines from dedicated pooling stations that result in stable energy transmission and it minimizes electricity grid stability issues.



Customer Stewardship

Greenko values its customers and makes continuous efforts to meet their expectations. Customers of Greenko include state-owned and privately-owned distribution companies, industrial and commercial bulk users of electricity. The distribution utilities who are customers of Greenko often face challenges due to the inherent non-firm nature of renewable energy supplies. Greenko understands these challenges and works in cooperation with them to address and provide electricity on demand by forecasting the schedule to the extent feasible. The performance record of Greenko in providing the power as per schedule is demonstrated by low penal charges. The industrial and commercial bulk users face challenges from

the transmission and distribution utilities and due to frequent changes in regulator determined charges for wheeling, banking, etc. In such situations, Greenko works with the regulator and utilities to provide an uninterrupted and reliable power supply to industrial and commercial customers. Greenko also sells power on the energy exchanges and interact with both the operating exchanges in India to make the trade more effective and rewarding to the involved parties.

KPI's FY 2020-21

95% Contractors Satisfaction Level

80% Suppliers Satisfaction Level

Internal customer satisfaction index- **4.5 on 5** scale

9.5 for Utility Customers

10 for open access clients

Customer Profile

90%

Public Utilities

8%

Private Customer base

2%

Exchange sale Based on the PPA capacity



Social & Relationship Capital

Public Policy Advocacy

“

While the impacts of climate change on business are hard to gauge, Greenko's assets are designed for sustenance in a dynamic geo-political environment. It becomes imperative for Greenko to contribute significantly in matters of public policy formulation in the light of diversified energy sources and the quest for energy independence

”

- Manoj Kumar Tanwar
Vice President – Energy
Regulatory Affairs

“

We are marching towards a Net-Zero economy and Greenko will play a significant role as a global player. At Greenko the commercial management is implemented via robust financial strategies, systems and processes aligning with the organizational vision and objectives, as also regulatory frameworks. The risks are managed by identifying potential threats early on to ensure smooth functioning

”

- Seshagiri Rao N
VP - Commercial

“

It is encouraging to see that governments across the globe are orienting themselves for a net-zero carbon future. The scenario over the past few years has transformed rapidly and continues to grow at a pace faster than ever before with technological interventions. On the back of a strong resolve from management and strategic planning, Greenko is working constructively for policy advocacy with regulatory authorities for an energy-independent future

”

- Yugal Kishore Sehgal
Advisor- Energy Regulatory
Affairs



At Greenko, 600+ professional hours are spent by senior management in suggesting the regulators and policymakers tariff policies, proposed Electricity Act Amendment, etc. The officials at Greenko are constantly engaged in providing constructive feedback regarding government policies & regulations, highlighting the urgent need for storage policy/ mission as also Hydro policy for India.

The efforts are bearing fruit and are visible from hybrid tenders by SECI & proposal for introducing hydro purchase obligation is also on the fast track. Also, the senior management is putting continuous efforts in bringing awareness and importance of Schedulable power (RE on demand) to push RE into replacing conventional fossil power. Greenko has indeed come a long way from

making strategic alliances, developing contractors, earning stakeholders based on trust and shared vision of supplying clean and affordable power to participating actively in regulatory affairs and advocating the Decentralization of RE. The Group has made significant contributions to CERC for significant policy formulation.

Greenko's efforts in policy Making/Regulations are summarized below

For Connectivity Regulations:

- Consideration of Renewable generation asset + Storage as an eligible entity for applying for connectivity to the ISTS network

For Tariff Determination:

- Inclusion of 'Renewable hybrid energy project' and 'Renewable energy with storage project' as eligible Renewable generation asset.
- Inclusion of operational norms for 'RE + Storage' projects to be considered for determination of tariff

- Inclusion of definition of 'Storage including pumped storage project for integration with RE generation asset to be considered as RE project

For Inter-State Transmission (charges & Losses) Regulations

- Rationalization of Transmission charges based on the utilization of the transmission asset by the user

Draft Report on Optimal Generation Capacity Mix for 2029-30 by CEA

- Inclusion of 'Pumped storage projects' as key energy storage asset for emerging energy shifting requirement with the increase in Renewable generation proportion

Social & Relationship Capital

Contribution to Regulatory Policy Matters



Stakeholder Trust



We are in the midst of a significant transformation with respect to the energy scenario. This trend is bringing about major changes to our markets and business structures which is encouraging us to capture the untapped potential of the energy market by delivering long-term value via new energy solutions. It is now more important to review our business strategy from a sustainability point of view to combat the effects of climate change



- Prasad Joshi
Vice President, Business
Development



ESG has always been the core critical to demonstrating long-term value creation. of the projects we develop and operate. On the 'social' side, we feel there is much more that needs to be done in areas such as access to healthcare infrastructure and rural development



- Sandeep P
AVP, Strategic Planning Group



We are becoming more self-reliant by encouraging local supply chain via our smart procurement practices. We have also been able to retain around 80% of our suppliers, thus making us independent and climate-proof in the face of unforeseen supply chain disruption



- Prakash Krishna Chaganty
AVP, Contracts & Procurement



Social & Relationship Capital

Stakeholder Engagement

Engaging with the stakeholders is an essential component of Greenko's sustainability strategy. Such engagements are carried out throughout its operations. The key stakeholder groups include customers, shareholders, bankers, regulatory authorities, employees, suppliers, and local communities. The group follows a specified mode of engagement with each of these stakeholder groups. The establishment of effective two-way communication with the stakeholders, allows the group to create and maintain enduring relationships with all of them. This has helped the group to meet their expectations, thereby providing an opportunity to effectively respond to stakeholder concerns. The table below presents our engagement mode and the areas of interest of various stakeholder groups with whom we have engaged for developing this report.

Stakeholder Group	Modes of Engagement	Area of Interest
Shareholders, bankers & financial institutions	Regular Board of Director meetings, Annual Reports, Communications with CEO, Investor Meetings, Web Channels, Integrated Reports	Group performance, Policy Compliance and major projects, Good Governance and fair Corporate Conduct, Regulatory Compliance, ESG practices
Regulatory Authorities	One to one engagement and Annual Reports, Integrated Reports, Investor group meetings	Compliance, Environmental Sustainability, Risk Management
Employees	Employee engagement interventions, Performance review and feedback, Town Hall meets, One on One meetings, Trainings, Health check-ups, Safety Committee Meetings, Food and Welfare Committee meetings, Inter-departmental meetings, Sports and Recreation activities, Denunciation channels, Reporting Channels, Integrated Reports, Grievance Redressal Mechanism	Career development and management, skill enhancement and building a repository of required skills Occupational Health and Safety, Decarbonization of Energy systems, Increasing production, Grievance Redressal
Suppliers	Contract management and one to one engagement, Web Channels, Forums, Meetings, Integrated Reports	Product quality, Pricing, and availability, technical requirements, environment resource management, safety, pricing, and payment terms, HR Compliance
Local Communities	One to one meeting, Public Consultations, Grievance Redressal Meetings, Focused Group Discussions, etc. Covid-19 Awareness Sessions and Contributions, Web Channels, social media, Integrated Reports, Impact Assessments	Community needs and concerns, rural infrastructural development support, health camps and support, educational interventions, scholarship program support, environment protection, Sustainable livelihoods and plantations etc.
Customers	Customer feedback, one to one Engagement, Monthly, Half-yearly and Annual reviews, Web Channels, social media, Forums, Meetings, Integrated Reports, Customer feedbacks	Product Quality and Safe Practices, Environmental Sustainability.

Value Creation for Community



The essence of CSR lies in fostering strong bonds with local communities by providing them opportunities in earning livelihood and better living standards. This year we have also lent a human touch to our CSR activities by serving the frontline workers, police personnel, employees and communities to the best of our capacity. I am proud that during the peak pandemic, our employees came forward to contribute to this humane cause



- C.V.S. Diwakar
VP, CSR

Greenko's business model contributes to creating long term value creation for the communities in which they live, operate, and society as a whole. As a socially responsible organization, Greenko is committed to serving the neighboring communities and making a positive difference to their quality of life through proactive and smart initiatives in education, health, rural development, environment, and livelihood generation.

Greenko's CSR Focus Areas and Objectives

CSR Focus Area	Objectives
Education	To ensure access to equitable and quality primary and secondary education leading to relevant and effective learning outcomes in rural communities.
Health	To ensure safety of work force and endeavor to bring accessible healthcare to rural communities.
Rural Development	To improve the living standards of rural people in an equitable and sustainable manner through creation of social and economic infrastructure and basic community services and facilities.
Livelihood Enhancement	To ensure access to skill training for the local youth and provide economic opportunities for sustainable livelihoods for rural communities.
Environment	To ensure that the group activities respect, promote and advance internationally recognized environmental principles and commitments.

KPIs FY2020-21

4,42,080

Beneficiaries from the Community Social investment

285

Community development programs

194

Community development support requests addressed so far

Rs.17.07 CR

Community Social Investment

82

Co-creation projects done through the participation of local community / local bodies/ line departments

304

Hours volunteered by employees

230

Community development support requests received

14

Plantation programs

95%

Community satisfaction index

95%

Operations covered under CSR programs

260

Skills upgraded amongst community (No. of beneficiaries)

³(GRI 102-12, 203-1, 413-1)

Social & Relationship Capital

Value Creation Story: Industrial Skill Training Program in Solar Energy

Location: Kurnool, Andhra Pradesh

Summary

Greenko with an objective to enhance skill competencies of local youth and to provide them economic opportunities assisted APSSDC in conducting Training programmes on Solar energy in Kurnool, Andhra Pradesh. The main objective of this Program is to impart industry best training to the youths and to avail them various apprenticeships, and placements. The training was inclined towards the job roles of Solar Technician & Engineer covering all the necessary aspects of Solar Energy.

Implementation

The above Program is taken up on a pilot basis with a one-month residential Training for a batch of 30 students, each covering both classroom and On-the- Job-Training (OJT). The Certified Training is given with the support of Greek's inhouse trainers. The collaborative program includes the following steps:

- Identified focus sectors for training candidates and fill identified skill gaps
- Identified job roles for imparting training to the candidates duly utilizing in-house training capacities.

- Mobilizing, screening and selection of the candidates from different districts across the state of Andhra Pradesh.
- Provided curriculum, trainers and training space along with necessary infrastructure for the training.
- Preparation of soft skills module to train the candidates for basic linguistic skills, basic computer literacy, office etiquette etc.
- Provided On-the-Job training to candidates for the identified job role.
- Provided joint certification to the candidates.
- Facilitated the placement of the candidates who successfully completed the training



Program Achievements

The training was conducted in two batches and the details are given below:

Batch No	Job Role	No of Students Trained	No of Students Placed	Name of the industry, location
Batch I (30 Dec 20 to 30 Jan 21)	Multi Skill Solar Technician & Engineer	30	30	Premier Energies Photovoltaic Pvt. Ltd, Hyderabad
Batch II 22 March 21 to 7 April 21)	Multi Skill Solar Technician	30	20*	ORB Solar Energy Solutions, Ongole

*Due to the second wave of Covid-19 the placement could not be completed for remaining students



Value Creation Story: Sustainable Livelihood improvement through integrated watershed programs

Location: Beed District,
Maharashtra

Summary

Greenko and NABARD carried out the Integrated Watershed Development program under the Watershed Development Fund (WDF) scheme in Pimpalgaon Ghat and Marathwadi taluks of Beed district. A long-term vision was developed to align CSR with the watershed program for enhancing the agricultural outputs of this drought prone regions and improve livelihoods of the community. This program involves the repair and de-siltation of existing Water Harvesting Structures (WHS) and construction of new structures. Capacity building programs through Trainings, Awareness, Visits, on Water Management practices were also conducted.



Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To establish Watershed Management programs and create sustainable livelihood for local communities	Deulgoan, Pimpalgaon and Marathwadi of Beed district, Maharashtra	Water Management Community Development Initiatives	Water scarcity, Decreased Agricultural output Poor Economic conditions	 

Key Achievements

The key impact of the first Mid-term study conducted using GIS and Remote Sensing technologies are summarised below:

(i) Change in Annual Land Use Land Cover Class

Annual Land Use Land Cover Class	Area (Ha)		Net increase in area (Ha)	% change in the net area
	Baseline year (2017-2018)	Impact assessment year (2019-2020)		
Double Crop	382	440	58	15%
Triple Crop	187	255	67	36%
Vegetation	596	668	72	12%

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(ii) Economic impact

As per the estimate, above mentioned increase in area under double and triple cultivation has increased gross income by approximately Rs 45 Lakh per annum



Farm Bund (FB) with pipe outlet



Water Absorption Trench (WAT)



Water stored in de-silted Check Dam



Micro-Irrigation system



Drinking water system



Value Creation Story: Community Drinking Water System Powered by Solar PV System

Location: Haveri district,
Karnataka

Summary

Greenko with the help of Tadas Wind Energy Private Limited (TWEPL) and Lalpur Wind Energy Private Limited (LWEPL) effectively carried out Hybridization of one of the Bore Well Pump with the Solar system in Jekinakatti Village. This helped in achieving uninterrupted water supply and induced a cut in electricity bills.



Strategic Objective	Target Area	Material Topics Addressed	Keys Risks Considered	Alignment with SDGs
To provide uninterrupted drinking water supply through hybridisation of one of the bore wells	Jekinakatti village of Haveri district	Community Development Innovation and technology adoption	Irregular Water Supply	 

Key achievements

- An innovative solution to ensure hassle-free drinking water supply to the community and the Govt. High School was introduced.
- Irrespective of electricity supply in the village, now the Panchayat is fulfilling partial water needs of the community by operating the Solar Hybridized Bore Well for about 3 hours a day.
- Reduced dependence on electricity for the supply of drinking water and reduction in electricity bill for pumping drinking water.
- Promotion of the use of Green Energy.



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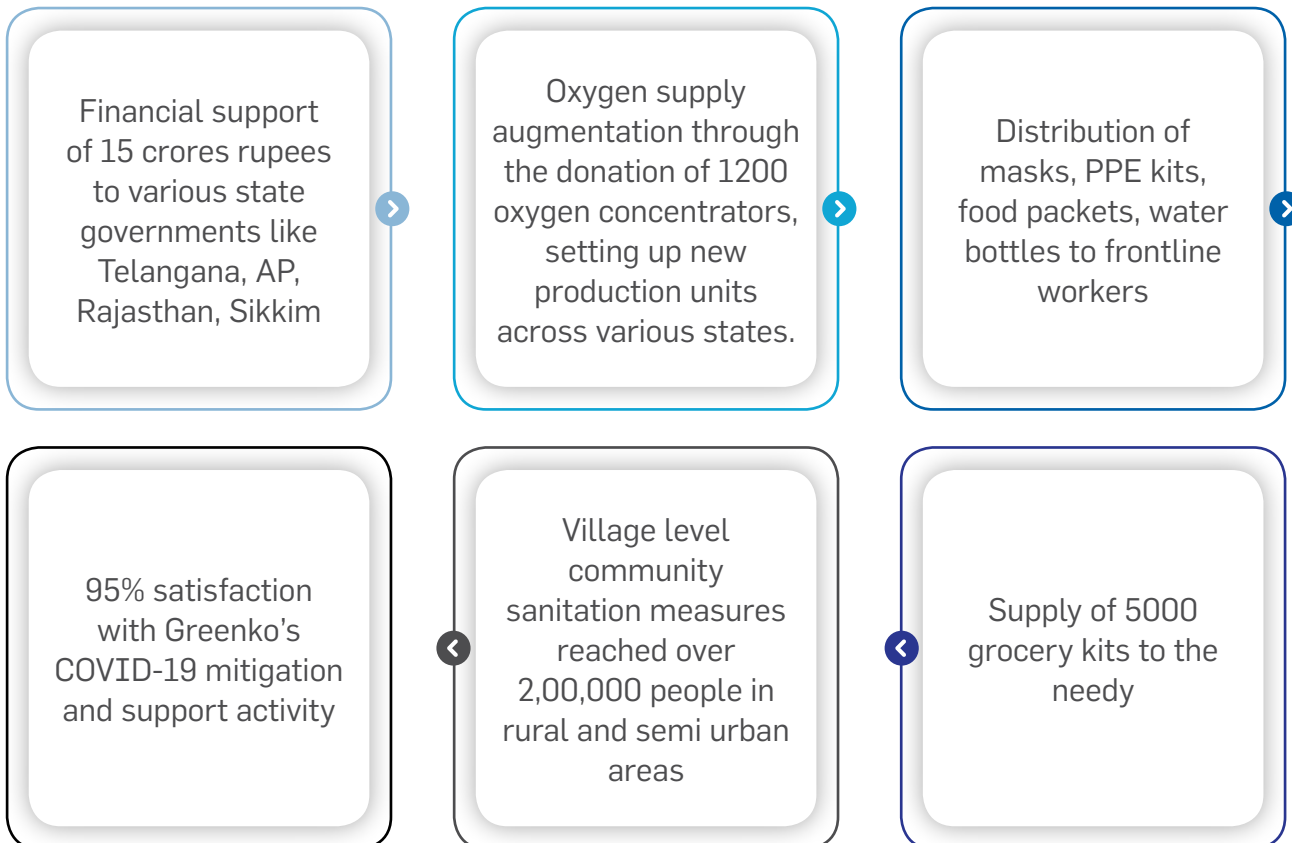
Greenko's Covid-19 Interventions

Corporate Social Responsibility (CSR) efforts have become essential amidst the raging COVID-19 pandemic, where businesses are trying their best to cope with a global health crisis, resulting in unprecedented restructuring of resources in terms of both speed and scale of mobilisation. The pandemic has affected both personal and professional lives across industries of all scales and types, thereby multiplying relief efforts through the cooperation of all kinds of entities.

Greenko recognised the global challenge and severity of the crisis in India and

- has setup a Covid Response Task Force as per the evolving situation and managed ~1000 employees
- launched a multi-pronged response across its operational locations that covered financial and material aid, healthcare initiatives and community engagements.

Greenko's Covid-19 Community Interventions Dashboard



The following sections provide a brief on some of the COVID-19 relief efforts implemented in the last one year.

Financial Contribution to Government

In March 2020, during the first wave of Covid-19 in India, Greenko prioritised the need to offer financial aid to the Central and State Governments to support their efforts in tackling the challenges posed by the Covid-19 situation and its consequent socio-economic impact. A significant Covid-19 outbreak in India resulted in an acute shortage of ventilators, personal protective equipment (PPE) kits, masks and gloves, as well as Covid-19 testing kits.

Greenko provided financial contribution of more than Rs 15 crore for Covid-19 relief efforts, channelized through the Prime Minister's Relief Fund, Chief Minister's Relief Funds of Governments of Telangana, Andhra Pradesh, Sikkim, Rajasthan and Madhya Pradesh.

As Greenko deeply cares for its people and communities located at its operational presence, financial contributions were also made to the local District level authorities to carry out the relief efforts locally. The above support aided the relief efforts in procuring healthcare equipment and most critical items including ventilators, personal protective equipment (PPE), testing kits, gloves, and N95 masks etc.



Financial Support for State Government of Himachal Pradesh

Social & Relationship Capital

Oxygen Supplies during the Second Wave

The second wave of Covid-19 pandemic that began in March 2021 reached catastrophic proportions in the month of April and one of the most pressing concerns has been a shortage of medical grade oxygen for treating patients. Identifying the requirement of Oxygen suppliers and understanding the evolving situation, the Covid task force at Greenko activated its global supply chains and focused on strengths to bring in critical oxygen support infrastructure and equipment.

The focus was on expeditiously procuring the much-needed oxygen concentrators, oxygen cylinders, medical grade oxygen plants and cryogenic oxygen containers. As one of the largest clean energy companies in India, the company has established reliable and medium-term supply chains quickly by navigating the diplomatic, geopolitical and logistical channels and airlifted over 1200 medical grade 10 lpm oxygen concentrators to multiple states in India. The above support has created over 1200 oxygen beds in remote locations and saved thousands of lives. In addition to providing Oxygen Concentrators at the State level, as per the emerging needs, Greenko has also supported the efforts to improve health infrastructure at the local level, specifically at its operational presence by providing oxygen concentrators for regional Covid Care Centers, ventilators, oxygen cylinders, Oximeters, hospital beds for local primary health facility and District hospitals. To address the possible challenges in next waves, Greenko has revived 60 TPD medical oxygen plants near Hyderabad that would be producing over 45 tonnes of medical oxygen within a record period of one month in coordination with the local industrial corporation. This augmentation has enhanced the overall capacity of Telangana by 40%. In addition, the installation of Oxygen generation plant of 500 Liters/min in Govt Hospital, Kurnool is in progress.

Providing Oxygen Concentrators to State Governments of Telangana & Tamil Nadu



Support to Corona Warriors

As the country was in an extended period of lockdown during the first and second wave of Covid-19, in an exemplary display of grit and determination the staffs of Health Department, Police Department, Municipal & Sanitation Workers and other Government staff were fighting against the COVID-19 pandemic. Responding to the needs of frontline workers to stay safe and recognize the sacrifices made by them Greenko has supported over 10000 Corona warriors in various states of Maharashtra, Andhra Pradesh, Telangana, Sikkim and Himachal Pradesh by providing masks & sanitizers, PPE Kits, readymade food packets, drinking water and other energy drinks

Distribution of PPE Kits and other support to Corona warriors



Social & Relationship Capital

Greenko's Covid-19 Interventions

Greenko Group has unlocked their global supply chain network to airlift critical oxygen support systems into India.

Build & Operating 60 TPD medical oxygen plant in Hyderabad in the state of Telangana.



Appreciation from 6 Heads of State for timely support

Greenko has received appreciation from six state governments for the timely intervention during the Covid-19 pandemic.



Distribution of Covid Relief Items to the Community and Students_Ratnagiri_Maharashtra

Social & Relationship Capital

Fighting Lockdown Induced Hunger

In the midst of the pandemic with the government lockdowns and closure of economic activities, a large number of people - specifically the daily wage labourers and people below poverty level, were found to be suffering due to lack of food and it posed a fear among the authorities that was probably bigger than the pandemic itself. Greenko believed food distribution remains a key social security measure to reduce food deprivation, especially in emergency situations. Therefore, Greenko distributed groceries and essential food items to needy people in different states and villages of its operational presence.

Grocery such as rice, oil, dal, sugar and vegetables were distributed through the Village Panchayats, local MLAs and employee volunteers. So far, the Company has provided over 5000 Grocery kits and helped the poorest of the poor to cope with the lockdown induced hardships.

Distribution of Groceries to the Needy



Response To Community Sanitation Needs

Preventive healthcare directly improves health, well-being and productivity of community and lack of sanitation and hygiene practices have an undeniable link to the spread of diseases like COVID-19. Greenko reinforcing its commitment towards its battle against COVID-19, has initiated relief efforts at community level by providing hygiene kits, masks, sanitizers, thermal scanners for vulnerable communities located in and around its operational presence. Greenko's village level community and school sanitation measures reached over 2,00,000 people in rural and semi urban areas.

Awareness For Containment and Prevention

Apart from distribution of hygiene and safety essentials, building community knowledge on safety constituted an important pro-active engagement with local communities. Greenko has constantly engaged in spreading awareness about maintaining proper hygiene, cleanliness and social distancing by conducting awareness and informative sessions with the help of employees.

Greenko's awareness programs



Looking Ahead

Greenko is constantly working towards CSR targets and goals set for 2021. The goals set under the above-discussed focus areas that are in line with the SDGs 2030 are as under.

- **Education:** To be able to make a difference to about 15,000 students through its interventions in government-run schools, among children and the community near their operational presence.
- **Healthcare:** To be able to provide access to quality Health care to over 50,000 people living in communities around operational presence.
- COVID-19 mitigation measures and contributions
- **Rural development:** To be able to improve the living standards of over 100,000 people mainly by way of improving the basic amenities and rural infrastructure in the neighbouring villages.
- **Livelihoods:** To be able to provide an opportunity for improving the livelihoods of over 25,000 people mainly by way of providing skill training in the neighbouring villages.
- **Environment:** To be able to plant and care at least 200,000 trees in and around the group's operational presence and neighbouring communities.
- **Impact Assessment:** To conduct a third-party impact assessment of CSR interventions and SROI of the projects commenced and delivered by Greenko.

Further, Greenko looks forward to defining the array of potential benefits for both the communities and for the people. Through smart partnering with suppliers, customers, regulators, and the government, community benefit is not only a reasonable objective, but it also ensures long-term success. The group will continue to implement its CSR project with consistency and strong determination in times to come.

Natural Capital

Message from CSO

Dear Stakeholders,

This year has been disruptive and exciting. Our robust business continuity systems enabled us to continue our operations. The pandemic, its consequent social and economic disruption has offered unique opportunity to the economy and society to revisit the foundations. At Greenko, we have harnessed this opportunity to put together building blocks for the New Energy Transition.



The ambition of Paris Climate Agreement to limit the global warming to 1.5 degrees, is driving governments, cities, businesses, and entities at large to transition to a new paradigm of energy, industrialization, production and consumption. Greenko's business model is designed to address this challenge of deep decarbonization that is inclusive, self-reliant, and ecologically sustainable, in partnership with business and government. Greenko's three pillars of Energy, Storage and Zero C Molecules' Assets support "Race to Zero" emissions and thus avoiding cataclysmic social and economic disruptions due to global warming beyond 1.5 degrees. Greenko's solutions are curated for transition away from fossil energy and carbon chemistry with minimal reliance on carbon capture and storage, thus ensuring just and environmentally friendly transition. While the business model and solutioning of Greenko are aligned with sustainable development pathway, we are sensitive to the need for diligence and care during project planning, execution and operations. Accordingly, we are committed to Racing to Zero ourselves – ten year's earlier by 2040. We are signatories to Climate Pledge and are working on a roadmap along with our partners in the value chain and co signatories of Race-to-Zero. In our operations gate-to-gate, the GHG footprint is minimal, and we would ensure zero emissions in the next few years. Our business vision of Decarbonization, Digitalization and Decentralization, requires us to grow our energy, storage and Zero C Molecule assets at a pace commensurate with our Net Zero pathway. In this growth of assets, we will focus on low carbon input materials. While we will be the catalysts in moving the ecosystem along the value chain to decarbonization, our ability to procure low carbon equipment and machinery will depend on adoption of decarbonization by countries, cities, and

businesses. Besides, climate stewardship along the supply chain, we will adopt circular approaches in the management of our assets - extend the life of assets, sharing models and recycle, reuse, remanufacture during and at the end-of-life of assets, to fulfil our climate pledge.

As we transition and grow, we will continue to adhere to our diligence practices of Environmental and Social Impact Assessments (ESIA) at the stage of design of our projects and interventions, Environmental and Social Management Systems in our operations, embedded in Greenko Integrated management Systems. Further, during the reporting period, we have developed the ESG framework delineating our ESG priorities, our position on each ESG aspect and thereon objective and targets. Salient aspect of the ESG framework is increased role of the governance in stewarding responsible environmental and social practices. The climate stewardship and circular economic actions are the fulcrum of our Environmental pillar. The Diversity, Equity and Inclusion (DEI), Health and Safety, Retention and Innovation and Customer Relationship will be the foci of the Social pillar. The Governance pillar will have focus on increased Board's role in stewarding ESG and Enterprise Risk management including Cyber Security.

In our last and this Integrated Report, we have outlined the results of physical and transition risk on our operations and mitigation measures that we have undertaken. Going forward, climate risk as also material environmental and social risks will be a constituent of our Enterprise Risk Management and will be periodically reviewed by the Board. The ESG objectives and targets will be dovetailed into KPIs and remuneration/incentive mechanisms.

Greenko platform is agile and can resile to be fit-for-purpose. In March 2020, when the pandemic hit India. Greenko set up a Covid Response Task Force and prepared a multi-pronged action plan to respond quickly to the evolving situation. Identifying the requirement of oxygen and understanding the evolving situation, the Covid Task Force activated its global supply chain relationships and focused on strengths to bring in critical oxygen support infrastructure and equipment. The focus was on expeditiously procuring

the much-needed oxygen cylinders, oxygen concentrators medical grade liquid oxygen plants and cryogenic oxygen containers. The company airlifted over 1200 medical grade 10 liters Per Minute Oxygen Concentrators and created over 1200 oxygen beds in remote locations and saved thousands of lives. The concentrators were distributed to rural hospitals in coordination with the state governments. Today the revival of a defunct 60 TPD medical oxygen plant in Hyderabad which would be producing over 45 tons of medical oxygen has enhanced the overall capacity of Telangana by 40%.

At the workplace, we implemented disinfection and social distancing practices and provided workers with personal protective equipment. Employees leveraged technology to minimize personal contact, even in dealing with external stakeholders' like vendors, contractors, suppliers, regulators and customers.

Greenko's business directly contributes to UNSDG 13-Climate Action and UNSDG 7-Affordable and Clean Energy and UNSDG 12-Responsible Consumption and Production goals.

We recognize that the planet is at the brink, and we must re-envision our relationship with nature. We contribute to the conservation and restoration of nature at our sites and across the interconnected planet.

We continued our IR journey to be a more equitable, inclusive, and transparent company. Across the enterprise, we held more than 4 formal IR conclaves, certified around 250 Sustainability Practitioners. Going forward, we see challenges in achieving our own ambitious climate goals which include decarbonizing supply chain and managing assets post its life. Further, we must engage and partner with governments, policy makers, regulators, and businesses in managing energy transition and "Racing-to -Zero" to decarbonize both energy and industry. We look forward to your continued engagement to strengthen the endeavour towards green and safe "Our Common Future"

Dr. Rambabu Paravastu
Chief Sustainability Officer



Greenko's business directly contributes to UNSDG 13-Climate Action and UNSDG 7-Affordable and Clean Energy and UNSDG 12-Responsible Consumption and Production goals.



Natural Capital

Strategic Approach

The business models of Greenko are closely integrated with value generation from natural resources. Management of natural capital is always embraced in Greenko’s decision-making process, risk mitigation plans, strategic planning, and during the entire life cycle of Greenko’s projects from design to operation and closure. The Group is in pursuit to extend the life of the projects and assets by integrating such measures as a part of asset management and also aspires to provide a second life for all its assets to align with circular economy principles. Greenko is determined to develop climate-resilient assets by periodically analysing the physical and translational impacts of climate change on its project infrastructures.

The annual meetings at Greenko revolve around the discussions on shifting to a circular economy from take, make, waste models and on circular resource management. Greenko has set up various short and long term goals to emphasize the actions to protect and preserve natural resources. The environmental stewardship programs at Greenko are aimed at minimizing the operational impacts, conceptualising business models in line with new climate normal and circular economy, protecting biodiversity, and emphasizing digitalization across the operations as the first line of defense.

Strategic Focus Area	Approach	Key Performance Indicator
Mitigating impacts on nature	<ul style="list-style-type: none"> ● Conduct ESIA and adhere to ESMP in letter and spirit ● Monitor and measure social and environmental benefits of each project intervention ● Preserve proactively land and water resources in the regions of operation. ● Adapt to climate change at each site 	<ul style="list-style-type: none"> ● Direct & Indirect GHG emissions avoided ● Water used for operations ● Wastewater treated and reused for gardening, plantation etc. ● Wastes / Effluents generated ● Rainwater harvested ● Air Pollutions avoided
Ecological Restoration	<ul style="list-style-type: none"> ● Identify and manage life cycle impacts of projects 	<ul style="list-style-type: none"> ● Contribution to Biodiversity conservation
Climate proofing the business	<ul style="list-style-type: none"> ● Map second life and end of life for every asset post its half-life 	<ul style="list-style-type: none"> ● Assets covered by the climate-proofing plan
Extending life and Managing end of life		<ul style="list-style-type: none"> ● % of assets- second life or end of life is identified ● % of assets covered under LCA and Life Cycle Management Plan

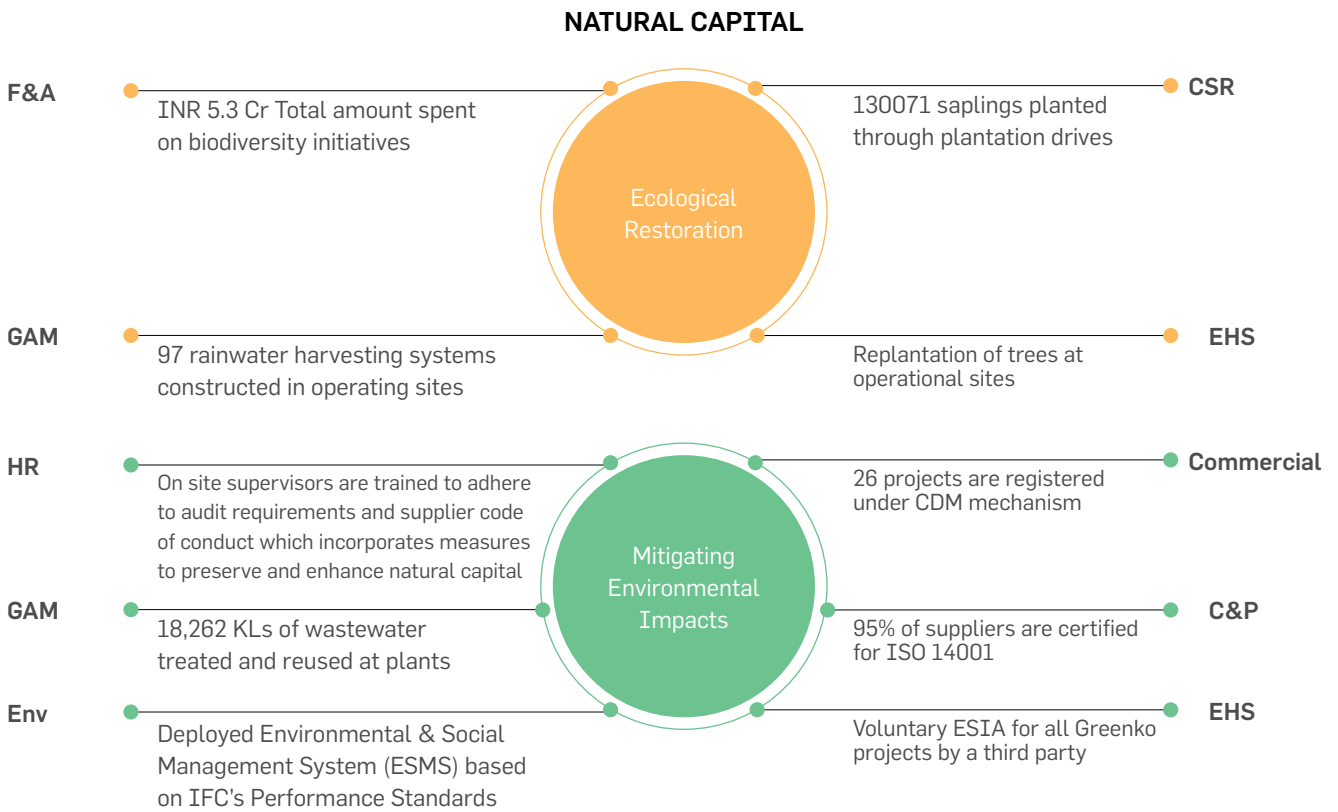


Journey so far

Greenko has identified its business aspects that would profoundly impact the environment, the risks they pose to the Company's business, and the opportunities they offer. Greenko's business is designed to harness the opportunities while mitigating the risks. The organization has carefully designed various stewardship programs to manage the identified environmental impacts. Greenko considers Climate action and management of energy, water, and waste as key elements of its environmental sustainability program across its operations. Greenko has undertaken various projects and has contributed to the conservation of terrestrial ecosystems and natural drainage systems at the operational sites and has initiated several community watershed development programs. Greenko understands and believes that timely and sufficient availability of natural resources is imperative for the continuity of business operations and hence the Group is proactively working towards the preservation and conservation of ecosystems in and around its operational areas and elsewhere in eco-sensitive zones and habitats of threatened species.

Natural Capital

Integrated Value Creation in Natural Capital

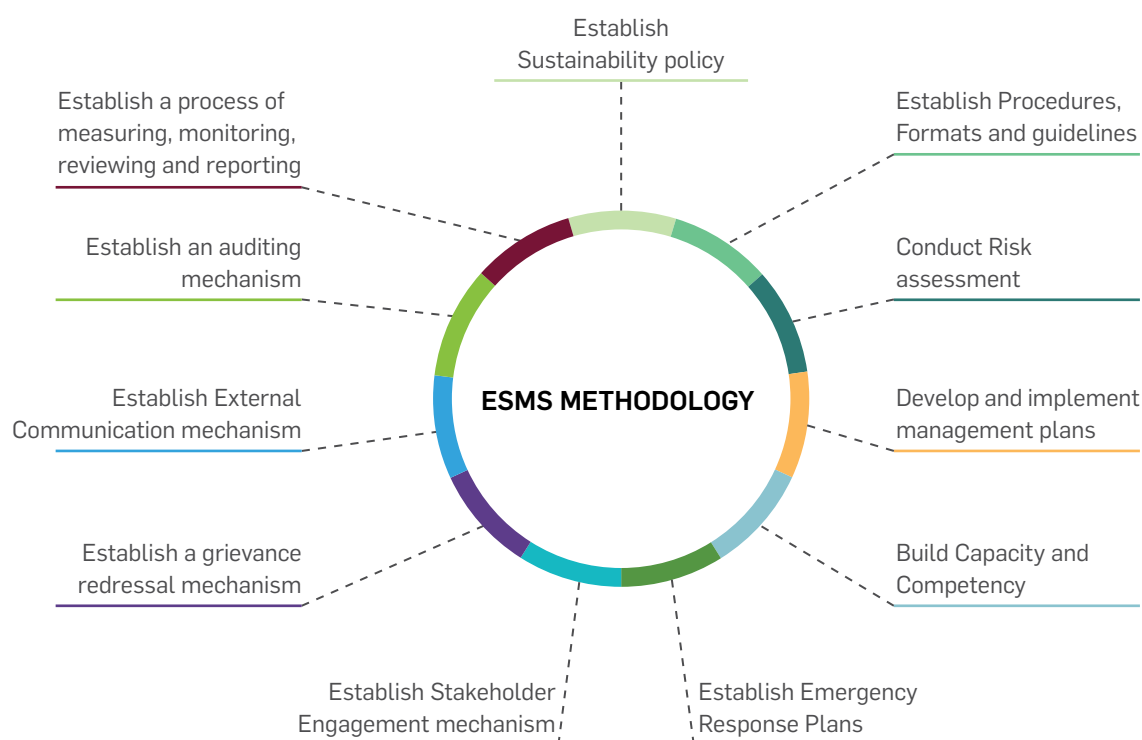


Mitigating Impacts on Nature

Environmental Impacts & Mitigation Measures

Greenko endeavors to develop projects with minimum environmental impact and thereby conducts preliminary assessment during the project planning stage for promoting broader mitigation and conservation strategies. The Group strives hard to understand the direct and indirect impacts of the projects on the surrounding ecosystems and focuses to streamline its operations efficiently to nullify the impacts to a great extent.

Greenko conducts Environmental and Social Impact Assessment (ESIA) study before project development, in line with the requirements of ten Equator Principles; eight International Finance Corporation (IFC) Social & Environmental Sustainability Performance Standards (PS); and IFC Environment, Health and Safety (EHS) Guidelines. This study helps the organization proactively identify the adverse impacts of its operations on environmental resources. The impacts identified from ESIA study are addressed through ESMP mitigation measures. Greenko adopts the following methodology for the implementation of ESMS.



ESMS progress during 2020-21:

- Revised ESMS manual and ESMS procedures.
- Implementation of ESMS in progress at 86 sites.
- ESMS training provided to 160 participants covering 3 SBUs and 1280 hours of training hours.

Natural Capital

Responsible Sourcing

Greenko Group is combining its efforts, expertise, and experience in improving the sustainability characteristics of its supply chain through its Green procurement initiatives. The Group makes efforts to procure green alternatives from suppliers by continuously holding engagements with them and by incorporating Ethical, Environmental, and Social principles and values in its procurement strategies. This initiative helps Greenko to evolve a broader perspective and to establish long-term cost-saving opportunities. The major activities discharged as a part of Green Initiatives are as follows

- Creating awareness among vendors/suppliers on environmentally preferred goods and services
- Making at least 95% of critical suppliers ISO 14001 certified and RoHS compliant by March 2024
- Inclusion of environmental specifications and evaluation criteria as per emerging technologies in centrally managed procurement
- Developing a collaborative approach to optimize information-sharing, consistency and performance measurement, and Life-cycle analysis

During the reporting period, Greenko has accomplished significant progress in responsible procurement of standard equipment and appliances. This initiative also helped Greenko to adopt energy-efficient fixtures and guidelines. Further to this, proper planning for transporting raw materials by consolidating packages from various vendors, has significantly reduced scope 1&2 GHG emissions up to 50%. The internal movement of logistics from warehouses to flight loading areas is monitored and optimized to reduce GHG emissions. Greenko also ensured that its major suppliers (95% in all) are upgraded to ISO 14001 certification and are RoHS compliant. Greenko also includes Environmental criteria and specifications in

its procurement policy and creates awareness among its vendors on environmental traits of preferred goods and services.

Green Alternatives Procurement

- Procured Energy Efficient Equipment including Energy Star labeled electrical appliances
- Encouraged energy efficiency retrofits to move towards securing a BEE (Bureau of Energy Efficiency, India) 5-star rating

Green Initiatives

Initiatives to improve the circularity of solar assets

- Greenko Group has initiated discussions with manufacturers of PV Modules and Inverters, regarding the inclusion of circularity and life cycle approaches throughout their value chain.
- Purchase offer evaluation included circular value assessment during (description & details)
- After assessing PV module manufactures, Greenko has placed orders on the merit of life cycle assessment and management.

Contribution to Climate Change Mitigation

Through delivering renewable energy to the grid and open access customers, Greenko has avoided 12.47 million tons of CO₂ emissions. In addition, the group has, till date, registered 26 Clean Development Mechanism (CDM) projects with UNFCCC.

Greenko addresses the physical climate change impacts on its business performance and sustainability. The Group makes imperative efforts to mitigate and minimize climate change risks on stakeholder lives and ensures promotion of sustainable well-being. The impacts of extreme weather events like floods and cyclones on the critical power infrastructures were studied in detail, and plans to build climate-resiliency in the operations of assets are being implemented.

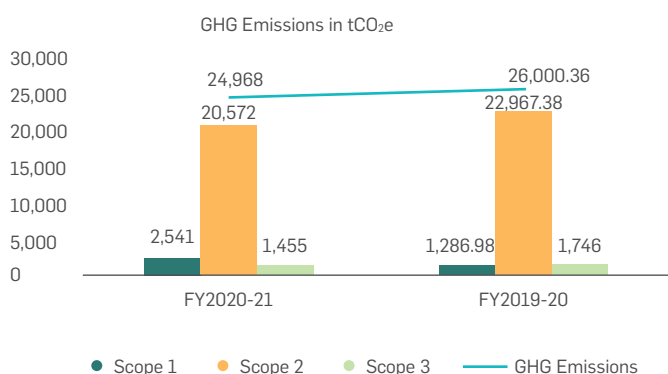


(GRI 306-2)

Direct and Indirect GHG Emissions

Scope	Emissions (tCO ₂ e)	Coverage
Scope 1	2,541	a. Stationary combustion - Diesel consumption in DG sets b. Mobile Combustion – Fuel consumption in company-owned vehicles c. Fugitive emission - SF6 leaked in circuit breakers
Scope 2	20,972	Electricity purchased from the grid
Scope 3	1,455	a. Employee and monitored contractors' business travel b. Employee commute

Scope wise GHG Emissions in last two financial years

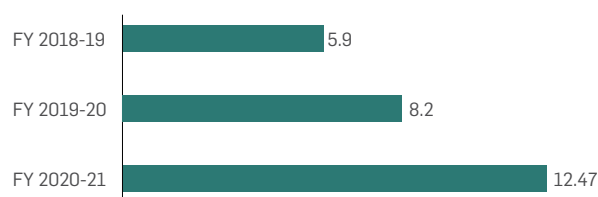


The scope 3 emissions estimates are limited to only business travel and component. This obviously is a very small fraction of scope 3 emissions. Greenko will assess and compute the scope 3 emissions covering all the 15 categories and report the same in the next year report.

GHG emissions avoided

KPI	FY 2020-21	FY 2019-20	FY 2018-19
Direct and Indirect GHG emissions avoided	12.47 million tons of CO ₂	8.2 million tons of CO ₂	5.9 million tons of CO ₂

Direct and Indirect GHG Emissions avoided (in MtCO₂)



(GRI 305-1, 305-2, 305-3), (GRI 305-5)

Natural Capital

Emissions avoided

Emissions Avoided in (tons)	FY 2020-21	FY 2019-20	FY 2018-19
Nitrogen Oxides (NOx)	75,787.2	47,851.2	34,439
Sulphur Oxides (SOx)	1,13,680.8	71,776.8	52,376
PM10	15,473.22	9769.62	7,031

Material Consumption & Conservation

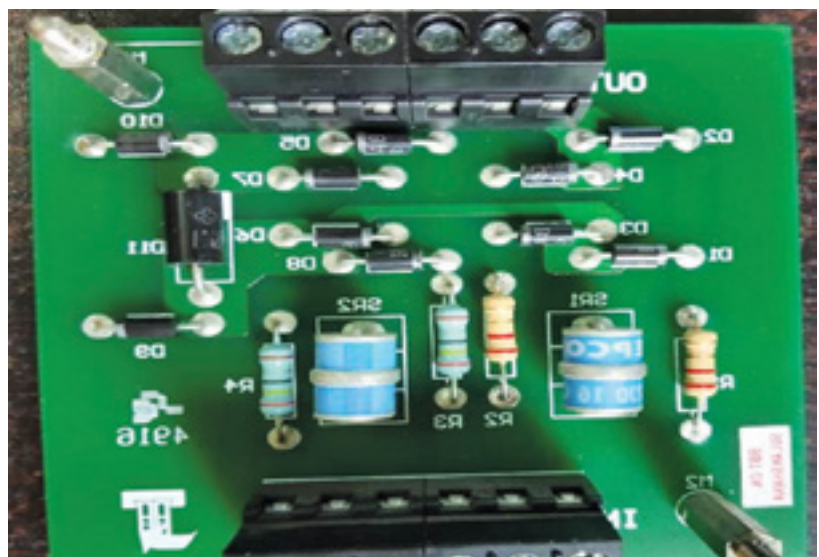
Wind, Solar, Hydro plants do not consume any input fuel for power generation. Thus, the fuel consumed in these plants are primarily used for O&M purposes. The material consumption during the reporting year for the above is presented below

Material Consumption	Units	Hydro	Wind	Solar	Total
Lubrication Oil (engine oil, gear oil etc) consumed	liters	6332.25	74374.5	1655.7	82362.45
Turbine Oil	liters	23186	33323	15	56524
Transformer Oil	liters	22498	4426	26585	53509
Grease	kg	598	21080.9	1182.5	22861.4
SF6 Gas	kg	34	24.5	12	70.5

Greenko has instituted a Material conservation program that aims to reduce the consumption of raw materials, consumables, packaging materials and also strives to increase the use of recycled or bio-degradable materials. At all the GAM plants, Greenko recycles scrap refuse, consumables, and packing material as a part of its material conservation program. Following are some of the initiatives taken up:

- Short unproductive DC cables are removed and reused in other areas which resulted in an 8% reduction in the requirement of new cables.
- Optimum use of Packing Material by manufacturers/ suppliers, other protection materials significantly resulted in a 12% reduction in packing material in the year 2020.

- At Zuvan Solar site the Electronic PCBs were repaired and reused for SPDs of SCBs and Inverter Cooling Fans.

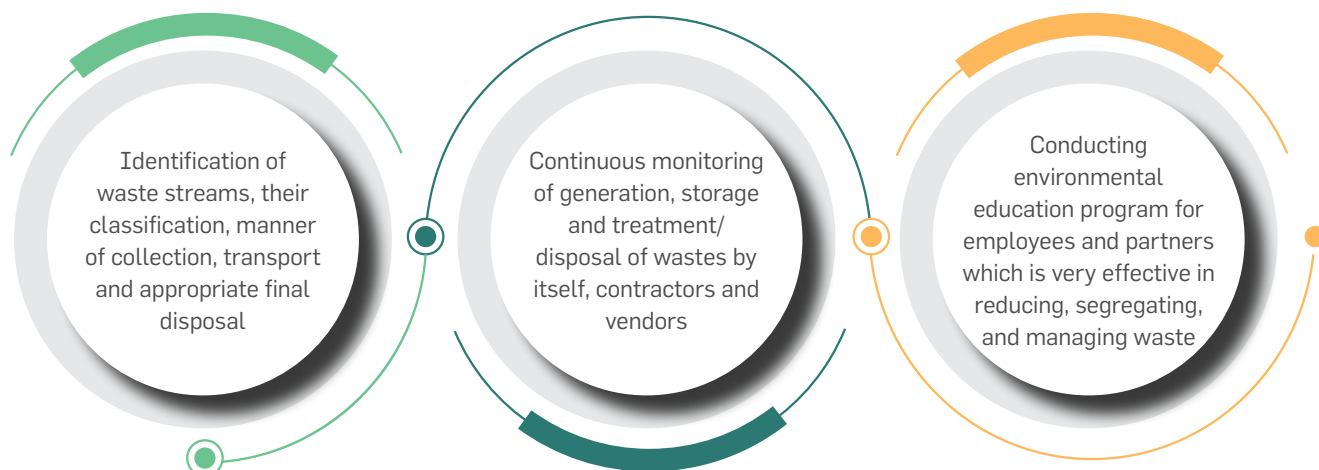


(GRI 305-7), (GRI 301-1, 301-2)

Waste Management

Greenko believes that circular economic practices will be the key element for driving sustainable development. The Company's waste management practices adhere to the principles of Environmental and Social Management System which requires conformance to legal requirements along with the reduction in waste generation through reuse or recycle, whenever possible. The ESMS mandates to identify the waste streams within the organization and continuously monitors waste generation. Further, ESMS also recommends creating awareness among key stakeholders to develop the circular economic culture. Greenko has also initiated Plastic Protocol in this reporting year to delineate the usage of single-use plastics in operation and is exploring the feasibility of replacing them with a sustainable alternative.

Waste Management practices at Greenko



Greenko conducts internal audits to quantify waste generation and to explore the potentials for incorporating the best waste management practices. At operational sites of Greenko, this management program is carried out with the help of an authorized third party, which involves monitoring garbage collection, segregation, and disposal of all the waste generated at the operating premises. Segregated recyclable wastes are sold to authorized recyclers. A part of wastes requiring treatment before disposal is sent to hazardous waste treatment facilities and others are used in landfills.



Natural Capital

Waste Generation by type

Waste Types	Units	Hydro	Wind	Solar	Total
Hazardous waste					
Used batteries	kg	533	6,856.5	10,646	18,035.5
Used Oil	kg	18,106	64,426	9,666	92,198
Chemical waste	kg	10	927	70	1,007
Oil-soaked cotton /cloth	kg	1,910.75	21,866	895	24,671.75
Non-Hazardous waste					
Packaging waste	kg	122	1,088	158	1,368
Paper waste	kg	75	298.9	203	576.9
Metal scrap	Kg	30,272	5,973	9,600	45,845
Wood	Kg	92	315	4,742	5,149
Plastic and rubber waste	kg	355.6	97	455.5	908.1
Kitchen waste	kg	17,417	3,688	4,702	25,807
E-Waste					
Information technology and telecommunication equipment	kg	55.5	103	145	303.5
Consumer electrical and electronics	kg	180.6	39	4,479.9	4,699.5
Significant Spills					
Oil Spills	lit	61	202	140	403
Chemical spills	lit	0	0	0	0

E-Waste Management

Greenko's approach for waste management includes Reduce-Reuse-Recycle-Reclaim-Disposal to minimize its environmental footprint. The Group stringently follows E-Waste Management rules to treat and reuse E-Waste resulting from technological upgradations, capacity augmentation, and other business processes. All these wastes are collected by the ICT department which is then segregated and recycled. All the non-reusable hazardous e-waste, including lead batteries, are disposed through authorised recyclers approved by Central and State Pollution Control Boards. In FY 2020-21, the total E-Waste generated by operations was estimated to be 4699.5 kgs. Greenko also donates the unused computers and other peripheral devices to various schools, orphanages, NGOs, etc.



(GRI 306-3), (GRI 306-4), (GRI 306-5)

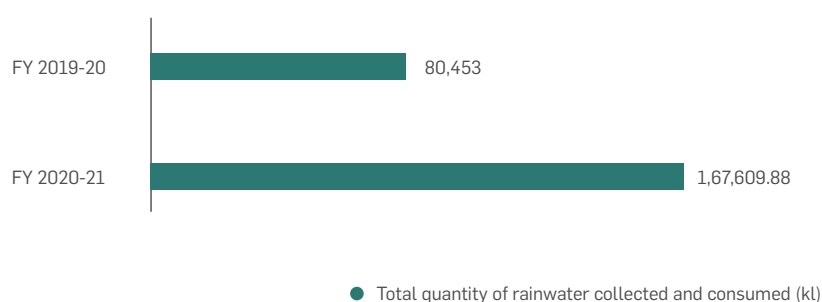
Water Management

Greenko's operations are less water-intensive and hence, water is mainly used for cleaning of solar modules, domestic requirements, construction, and biodiversity preservation of the surrounding ecosystem. Greenko continues to understand, monitor, and record its freshwater usage, domestic water consumption, operational water consumption and wastewater discharge. Greenko closely evaluates water use efficiency as one of the criteria for exploring the feasibility of new technologies and projects.

The impacts caused by its operations on water bodies are carefully analysed by Greenko and significant investments are made to reinforce measures to limit such effects. The main components of these

initiatives are development of watersheds, rainwater harvesting, drip or sprinkler irrigation and water-efficient cleaning technologies. The Group has built various natural drainage structures, water recharge systems, and storage facilities in and around its operational areas through which Greenko attempts to harnesses rainfall. Through this, Greenko systematizes water requirements of the surrounding community and operations. Through continuous efforts of Greenko, the number of rainwater harvesting structures are nearly doubled and the total quantity of rainwater harvested stands at 167609 kL.

Progressive in Water management practices at Greenko

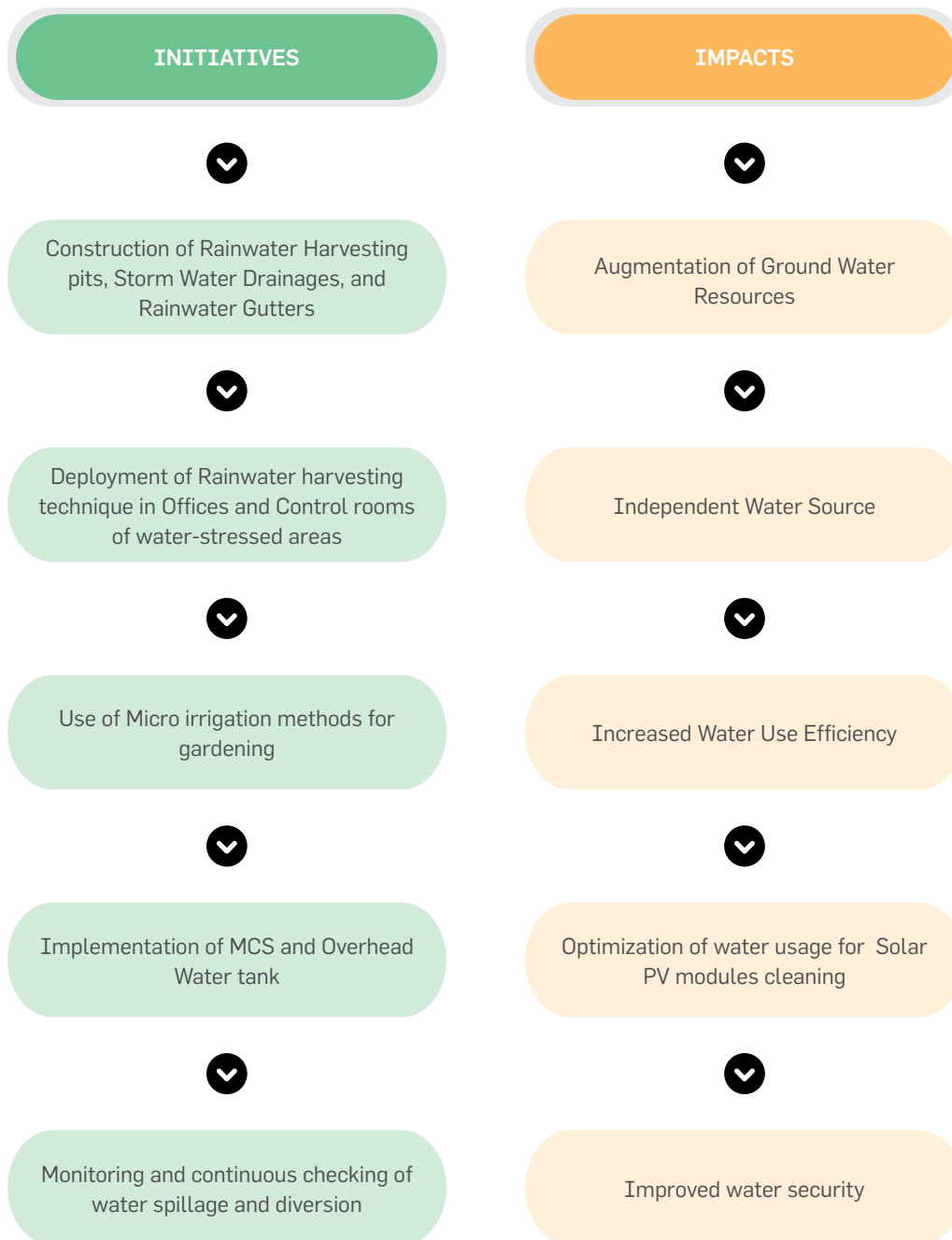


Water Management

KPI	Units	Hydro	Wind	Solar	Total 20-21	Total 19-20
Total quantity of water used for plant operations	kL	0	6,316.6	68,784.34	75,100.94	1,13,688.58
The total quantity of water used for office and domestic purposes	kL	18,108.41	13,199.3	22,372.24	53,679.95	2,07,525.54
The total quantity of wastewater treated and reused (for gardening, plantation, etc)	kL	381.7	589.5	17,290.8	18,262	33,266
Total Number of rainwater harvesting systems available	Number	2	16	79	97	46
The total quantity of rainwater collected and consumed	kL	120	312.2	1,67,177.7	1,67,609.88	80,453

Natural Capital

Water Management Practices and its Impacts






Value Creation Story: Water Conservation at Zuvan Solar Plant

Location: Zuvan Solar plant

Summary

The main water sources of Zuvan plant are a reservoir, bore well, and a pond. Reservoir water is used for module cleaning and conventional earth pit maintenance. Borewell water is used for domestic consumption and pond water is used for plantation, gardening, and fire tenders. The plant is reusing the module cleaning water for the plantation of Aloe vera and Green grass beneath the modules. This has also helped in enhancing the module efficiency. Owing to these conservation activities, the freshwater consumption of plants reduced by 15% in the current reporting year. In addition, various pond restoration activities like dredging have enhanced the rainwater potential of the pond. The plant will continue its efforts and also set a target for reducing freshwater consumption further to 25% by the year 2022.



Strategic Objective	Target Area	Material Topics Addressed	Key Risks Considered	Alignment with SDGs
To improve the water efficiency of Zuvan plant	Zuvan Solar plant	Excellence, Adoption and Management of Assets and Projects	Water security	  

Key Achievements:

- Reduction in freshwater consumption by 15%
- An increase in rainwater storage potential of the pond



Natural Capital

Energy Efficiency

Greenko is committed to adopting various energy-efficient measures in its operations to minimize the losses in generation, transmission, and distribution and thereby aspires to reduce its carbon footprint. Greenko has implemented a multitude of energy-efficient measures in its operating locations, some of which are enlisted below:

- Procurement of Energy Efficient Equipment in line with Bureau of Energy Efficiency (BEE) Guidelines
- Replacement of conventional Lights with CFL & LED lights
- Regular maintenance of auxiliary equipment
- Operational management of hydro plants- arresting water leakage through proper grouting work in powerhouses
- Installing Light Arresters in between 33 kV line to reduce the breakdown time
- NRV Modification for pitch cylinder for reducing oil leakages in HUB (WTG)
- Installed Grease collectors which are used for waste or Excess grease collection from wind turbine blades to reduce breakdown time
- To capture real-time data in-house application has been developed by Greenko. With the help of this app 'CELESTE' Inverter operations are being monitored thereby improving power generation

Ecological Restoration

Biodiversity

Greenko's Projects are designed, developed, and operated based on extensive Environmental Impact Assessment (EIA) carried out during the planning stage. The company makes tremendous efforts to avoid setting up its operations in biological hotspots and protected areas. Further Greenko proactively implements projects like habitat conservation, natural or sustainable farming, protecting sea-based wildlife systems, fish seeding initiatives to restore, protect, and enhance biodiversity. Greenko has also undertaken extensive plantation programs at all its operational sites to develop natural CO₂ sinks.

Biodiversity Management

KPI	Units	Hydro	Wind	Solar	Total 20-21	Total 19-20
Number of Trees Planted	Number	2,090	21,318	1,06,663	1,30,071	92,380
%plant survival over last 3 years	%	65.1	81.9	75.13	74.04	74.37
Total greenery area developed	m2	19,875	76,355.6	10,60,388	11,56,619.04	5,50,851.2
Number of Biodiversity conservation programs	Number	6	80	55	141	82
New bird nests provided	Number	0	291	151	442	348
Fish seedings	Number	1,00,000	0	0	1,00,000	1,00,000
Number of Noise mitigation measures taken	Number	35	35	25	95	56

(GRI 304-1, 304-2, 304-3, 304-4)

In addition, the Group is also supporting various Biodiversity Conservation activities and Natural resource management programs in various geographical locations. To conserve and mitigate biodiversity loss, Greenko diligently conserves one endangered species, each year, in the regions of its operations. During the last few years, the Group has contributed towards the conservation of Olive Ridley Turtles, Great Indian Bustard & Red Panda.

Initiatives on Biodiversity Conservation and their Impacts

ACTIVITIES	DESCRIPTION
<p>Habitat Conservation and Species Recovery of Great Indian Bustard (GIB)</p> <p>Location: Rollapadu Wildlife Sanctuary Along with Forest Department, Government of Andhra Pradesh</p> <p>Conservation of Olive Ridley Turtles in Andhra Coast (With WWF)</p>	<p>Greenko is working with the Govt of Andhra Pradesh and the forest department to develop and maintain a favorable conservation status at rollapadu wildlife sanctuary for Indian bustards</p> <p>The disentangling sea turtles project done in partnership with WWF offers the chance for Greenko to join a turtle conservation project in the Andhra coast. Aiming to work closely with the fisherman communities in India, the project aims to mitigate the threats to marine turtles through advocacy at government level. This project helped in raising awareness among 400 fishers and 20 fishnet makers, state forest & fisheries department officials. This also involved the capacity building of 3 field teams from Srikakulam district, for conducting offshore turtle surveys.</p>
<p>Demonstration of Natural Farming</p>	<p>At Ghani Solar Park (With the Collaboration of Sri Sri Institute of Agriculture and Technology, Bangalore)</p>
<p>Construction Of Fisheries Hatcheries for Trout</p>	<p>At Sangam Busty, North Sikkim District</p>



Natural Capital

Climate Proofing the Business

Climate Risk Assessment and Management at Greenko

Greenko is aligning its business models and asset management practices to cope with the extreme weather events resulting from dynamic climate conditions. The climate risk assessment is conducted as a part of project management to identify, analyze and mitigate potential physical and transitional climate risks. This analysis is proactively and systematically performed based on climate change related events, trends, forecasts, and projections.

Physical Risks

In this context, Greenko has assessed the impact of physical risks across different stages of its operating lifecycle, such as,

- Physical impact on renewable resource potential
- Physical impact on generating assets
- Physical impact on Transmission and Distribution infrastructure

Transitional Risks

This category of risks mainly corresponds to future policy changes to aid renewable energy transition

Greenko has conducted climate risk assessment for six of its critical operating sites to assess and manage climate risk vulnerability of assets and their productivity. The six sites are as follows,

- Ghani solar, Kurnool, Andhra Pradesh
- SEI Adhavan, Tamil Nadu (Solar)
- Sneha Kinetic (Dikchu Hydropower project), Sikkim
- AMR Power, Karnataka (Hydro)
- Rayala Wind, Andhra Pradesh
- Tanot wind, Rajasthan

Key Climate Change Risks associated with Greenko's Generating Assets

Wind	Hydro	Solar
Changes in wind speed	Change in rainfall patterns	Changes in solar irradiation and cloudiness
Changes in the daily or seasonal distribution of wind	Extreme precipitation events leading to flooding	Changes in mean temperature
Changes in air density	The projected decrease in hydro generation potential with increased melting of glaciers in the long term	Changes in wind speed

Greenko has studied and projected climate change impacts on its operations using IPCC's RCP 4.5 scenario which is the low-medium emission pathway (equivalent to 1.7-3.2°C temperature increase). The climate change projections were studied for the period of 2020-2039 (Short term) and 2040- 2059 (Medium Term). The assessment revealed that transitional risks are well-identified and addressed by Greenko. Physical risks like heat stress may possess certain threats to operations and various water conservation and harvesting strategies are planned to mitigate those risks. The physical impacts on resource availability viz., wind pattern, solar radiation, and hydrological flows are to be addressed through agility, predictive and adaptive capabilities developed through Digitalization. The additional system and infrastructural requirements to develop climate-resilient assets were also evaluated and planned accordingly.

Greenko Commits to Climate Pledge

The Climate Pledge co-founded by Amazon with Global Optimism in 2019



Net Zero Carbon by 2040

Part of UNFCCC "Race To Zero" and part of the solution -
10 years Early

- Community of companies and organizations, working together to crack the climate crisis and solve the challenges of decarbonizing our economy.
- Greenko Has joined 114 businesses across the globe and accepted the challenge of Climate Pledge.

The Climate Pledge Requires the signatories to:



Natural Capital

Extending Life and Managing End of Life

Lifecycle Management at Greenko

An LCA study is conducted for analyzing the environmental impact of a product/system across the various stages of its lifecycle. In this case, the goal of the LCA study is to analyze the environmental impacts associated with the production of electricity from Greenko's different renewable energy technologies i.e., onshore wind plant (600MW), solar plant (3000MW), and a pumped storage hydro plant (1200MW) in line with ISO 14040 and 14044 standards and explore the feasibility and consequences of the extension of life and end of life management. A process-based LCA approach was utilized for this study.

A cradle-grave LCA study was conducted i.e., the environmental impacts are calculated over the entire lifecycle of the renewable energy technology plants involving the extraction of raw materials, manufacturing of the components, assembling, transport, operation, maintenance, and end-of-life treatment. Through this study, it was understood that the production and disposal stages contribute to the maximum environmental impacts of the onshore wind, solar, and pumped storage hydro plants. Although variables such as the production of raw materials and components used in the plants are not directly under Greenko's control, significant measures will be taken by Greenko to ensure the proper recycling and reuse of raw materials used in the various components of renewable energy plants, ensuring that the raw materials are not ending up in landfills.

Environmental stewardship

Greenko adopts the concept of Environmental stewardship which means **'Being responsible for all phases of the project life cycle'**. Through its strategic governance, the Group has taken steps to minimize the

environmental ramifications by committing to various principles like Extended Producer Responsibility (EPR), Design for Environment (DfE), Reduce usage of toxic substances, Impact assessment.

The Group carries out life cycle assessment during the initial stages of every project to minimize the environmental impacts throughout the lifecycle of assets, starting from design and development to manufacturing, distribution, use, and disposal. Greenko is also inspiring its suppliers to adopt green practices thereby, culminating the sustainability principles in its supply chain.

Life Cycle considerations are communicated to the vendors through contractual obligations and strict compliance is ensured. Several Audit mechanisms are instituted by Greenko to evaluate the environmental performance

of Suppliers/vendors with respect to Emissions, Materials, Water, Chemicals, etc.

Greenko is working with its supply chain partners on saving diesel by changing the packing configuration, changing the port etc. of every order.

The Group also works for a better End-of-life (EOL) Management for the below-mentioned products but, is not limited to engaging the certified Waste Carriers, Hazardous Waste Disposal License and Waste Operator Licensees, etc.

Items covered under Environmental stewardship programs for EOL management

Location	Items
Head Office	Personal Computers (Desktops, Laptops, Portables, And Computer Monitors), Computer Peripherals (Mouse, Keyboards, Including Printers, Scanners), Cell Phones, Cleaning Material Tins, Electrical items, papers, and Office Furniture Debris
Project sites/Plants	Packing Material, Paint Tins, Used Oils, Batteries, Construction Debris



**Value Creation Story:
Recycle and Reuse of Crushed
Concrete Cube wastes**



Location: Himachal Pradesh, Andhra Pradesh, Madhya Pradesh, Telangana

Partners Involved: Jeori projects, Ghani Solar Project, Jilesh Power

Summary

Along with its partners, Greenko initiated various projects to utilize the waste concrete cubes generated from concrete testing samples. The cubes are used as an alternatives for bricks in constructing various structures like Walls, Pedestals, Steps, Water tanks, Earth pit chambers, Poles. Greenko will continue to give a second life to these concrete cubes and continues to divert them from landfills.



Strategic Objective	Target Area	Material Topics Addressed	Key Risks Considered	Alignment with SDGs
To reduce Waste generation from concrete sample testing during construction.	New project construction sites	Circular Economic Practices	Construction and Demolition Wastes	 

Benefits Achieved

- Diversion of Construction wastes from Landfills
- Reduction in Construction cost of new structures

Innovative Approach of the Project

Greenko has extended the life of concrete cubes which would otherwise be sent to landfills. These concrete cubes are stronger than brick and hence, there is no additional requirement for rendering works which result in cost saving.

Value Created

The crushed cubes are used for construction of the following non-structural elements:

- I. Construction of the following at plant areas and villages:
 - Pedestal for containers and restroom walls, RO plants, etc.
 - Construction of walls for water tank in the project area
 - Kerb walls for roads
- II. Base for cleaning area and ground clearance for storage material, drainage works.
- III. Recycled aggregate/ crushed concrete cube used for pavement subgrade.
- IV. To make cage wall for plants and trees



Construction of Surface Water Storage tank with concrete cubes, Madhya Pradesh

Looking Ahead

Greenko's approach towards minimizing the impacts on environmental resources encompasses various strategies mitigating climate change, understanding and addressing climate risks, harnessing circular economy and protection and restoration of ecosystems and biodiversity. With a focus on the Circular Economy, Greenko is accelerating its efforts in 'self O&M' and looking forward to developing partnerships for exploring 'second life', 're-engineer' 're-manufacture, and 'reuse' options for its assets, at the end of its life cycle.

The organization will continue its flagship initiatives to protect and promote biodiversity by planting trees, conservation of one endangered species in one year, natural fish farming. Greenko is adapting to new climate normal by upgrading its infrastructure. Greenko is upgrading its business models to effectively harness the imperatives of mitigating climate change and social and economic processes aligning with UNSDGs.



Epilogue from the President and JMD

Dear Stakeholders,

In this integrated report, Greenko delineated the advances made against strategic objectives on all the six capitals financial, manufactured, intellectual, human, social and relationship and natural. In keeping with the challenge of achieving the ambition of Paris Climate Agreement of limiting global warming to 1.5 degrees centigrade, we have signed 'Climate Pledge' to achieve Net Zero -10 years earlier, by 2040. To mitigate the physical, regulatory, technological risk to business due to climate change induced by global warming, We have extended climate risk assessment to more sites and have identified mitigation actions for implementation. In keeping with the recent investor interest, we have restructured our ESG processes and metrics and you can find in the performance section of the report, our performance on ESG aspects.



“

Businesses, cities and governments are looking forward to deep decarbonization solutions to meet their commitments in the short and medium term and “Race-to-Zero”. In this context, the firm, schedulable and dispatchable power; and zero carbon molecules of Greenko are increasingly being sought after.

”

Partner in 'Race-to-Zero'

As you may have already noted, we have intensified our efforts to combine multiple RE resources (Solar & Wind) with Long- Duration, Stand-Alone, Off-Stream, Closed Loop Pumped Storage, and Energy Storage Cloud to deliver 'Firm, Schedulable & Dispatchable RE power'. These projects are designed to

- Augment and substitute the carbon intensive firm power in the grid
- Improve flexibility of the electricity system
- Create space for multiplication of non-fossil- based energy resources
- Enable optimal operation at fossil and non-fossil plants
- To enable provision of 100% green energy for growth markets
- RE-Industrialization for Low-carbon economy
- New-age energy transition fuels to provide solutions for hard to abate decarbonization needs and
- Meet the long-term energy & climate goals of India and its neighbours

We are working with large scale industrial houses and process factories for industrial decarbonization solutions. The Green hydrogen may be deployed for multiple applications directly or through synthesising zero carbon molecules. Our deep decarbonization solutions in hard to abate sectors like metals, petrochemicals, bulk transportation is a pathway towards achieving India's Hydrogen Mission leading to energy Independence.

Businesses, cities and governments are looking forward to deep decarbonization solutions to meet their commitments in the short and medium term and "Race-to-Zero". In this context, the firm, schedulable and dispatchable power; and zero carbon molecules of Greenko are increasingly being sought after.

Firm Renewables – An Opportunity for India

Our initiatives are crafted for the context of India, its resources- water, wind and sun that can be harnessed to power its growth within the carbon budgets. India has a target of 500 GW of Non-Fossil fuel-based energy by 2030. India's Solar and Wind generation capacity and its cost effectiveness is amongst the best in the world. However, the present electricity architecture in India, about 375 GW installed capacity and 180 GW peak demand, is characterized by low flexibility and high cost, due to the dominant share of coal and in-firm renewables. To improve the electricity generation-supply flexibility and to generate the power at a lower cost, it is imperative that the country installs Stand-Alone, Make-In-India, Long Duration Storage capacity and morph the Renewable Power to Round-The-Clock. Further, to attain the target of 450 GW of Renewables by 2030 and to deliver lower cost of power, it is imminent to establish long duration, Make-in-India pumped storage capacity of 30-50 GW, well before 2030. The storage capacity enables time-shift of power and therefore, delivers firmness. Generation of more firm RE supported by long-duration pumped storage creates space for additional RE capacity and its effective operation.

McKinsey, the knowledge partner of Global Long Duration Energy Council, concludes that the deployment of long duration energy storage is essential for balancing the grid through its decarbonization and it minimizes social and environmental cost. Further, their analysis places Pumped Hydro Storage as an attractive and viable option in the context of India.

The new flexible electricity architecture augmented with Low-Cost, Long-Duration and Make-in-India Storage in sync with RE, decarbonizes India's power sector and will drive the cost of power down by 20% in the next few years. Intermediate solutions of providing firm hybrid power with a component



Our deep decarbonization solutions in hard to abate sectors like metals, petrochemicals, bulk transportation is a pathway towards achieving India's Hydrogen Mission leading to energy Independence.



of RE, is not in sync with long term goals of the country and the business. Such solutions, in the short and medium term, create barrier for decarbonized flexible electricity architecture. Further, such intermediate solutions are not desired when the firm RE solutions are cost optimal than the green field fossil fuel-based power solutions. Reliable and affordable Round-The-Clock RE, could be used by Industries to substitute 70 GW of captive power plants in the next few years. The Industries in India with access to effective means of decarbonization, would be the supplier of Green Commodities (Green Metals, Chemicals etc.) and hence a preferred supply chain partner for the global business. Also, availability of cost-effective decarbonization ecosystem can be a significant factor for India becoming a destination

Epilogue from the President and JMD

of global supply chains. As the cross-border adjustment mechanism are adopted by more nations, the trend of global supply chains concentrating in geographies with cost effective decarbonization infrastructure will accelerate. The Global Supply Chains with 'Net Zero' goals will prefer 'Make-In-India' due to low cost and low carbon electricity amongst other factors.

Decarbonizing Industry

The RE-Electrification viz; electrifying energy and all electricity being renewable, is the first option in industrial decarbonization. However, this has a limitation and much of industrial processes are hard-to-abate as significant part of the GHG emissions are not of energy origin. Net Zero molecules can address such components of GHG emissions. Firm Renewables could be deployed for the manufacture of cost-effective Zero carbon molecules in India (hydrogen, ammonia etc.) for variety of use cases in industry and transportation. The cost-effective Zero carbon molecules will not only substitute imports to support 'Aatma Nirbhar Bharat' but could power the decarbonization of many OECD countries who have declared Net Zero ambition.

Circular Economy Approaches

We need to reimagine the ways we generate and deliver goods and services. The circular economy that closes the production consumption cycle has significant potential of GHG emission reductions to reach the net-zero GHG emissions by 2050. And we at Greenko, as the report unravels, have made significant advances in circular business models, extending the life and managing the end-of-life of our assets. We have begun our engagement with solar panel and other equipment suppliers on end-of equipment-life management. We continued our new initiative of modernizing 500 wind turbines is an important circular initiative of reengineering

to extend life. More importantly, our new projects in pumped storage and Energy Storage Cloud are 'sharing models of circular economy' delivering firm and flexible electricity and 'electricity plus' services to various stakeholders of the electrical system.

Contributing to UNSDGs

Greenko, from its inception, has been contributing to sustainable development and its scale and extent have changed as it progressed. Presently, the company's scale and size; expertise and access; make it possible to address the challenge of powering India's growth with clean, reliable, and affordable electricity and also to achieve energy security and financial stability. Our business directly contributes to UNSDG 13-Climate Action and UNSDG 7-Affordable and Clean Energy and UNSDG 12-Responsible Consumption and Production goals. We recognize that the planet is at the brink, as argued in the 'Living Planet Report 2020', and we have to re-envision our relationship with nature. We will contribute to the conservation and restoration of nature at our sites and across the interconnected planet.

Investors across the globe are excited about the multitude of benefits that firm and flexible RE presents. Further, decentralized decarbonization solutions using cost-effective green hydrogen and zero carbon molecules would disrupt but create wealth for many countries, including India. The investor conviction and trust is evidenced by the infusion of 980 million USD equity into our company and the successful issuance of green bonds of 940 million USD. As always, Greenko will address investor expectations to the letter and spirit. The policymakers and regulators have recognized the opportunity in this new energy transition for India and are architecting a new energy policy ecosystem to incentivize #AtmanirbharBharat.

Through the report, you may have already noticed the convergence of multiple initiatives

towards organizational development, which is critical for successful transition to Greenko 3.0 & 4.0. The empowerment model and People- Process-System are now supplemented and reinforced by the spread of a) Integrated Thinking which aligns each employee to the organization's financial and extra-financial goals; b) Innovation Hub architecting pathways for doing things in different ways; c) Digitalization helping the seamless flow of information and analytics d) Assurance of systems and processes to ensure that the organization adheres to standards and quality, and finally e) customer and partner relationship focus as these groups change both in quantity and quality.

Greenko will continue to curate its business efforts to contribute towards sustainable development, being cognizant of the context in India and delivering value to all stakeholders. In this endeavour, stakeholder/s continued engagement is extremely valuable. My colleagues and I will be eager to listen to your concerns and suggestions.


Mahesh Kolli
President &
Joint Managing Director



Annexures







ESG vs UNSDGs Mapping - Across Value Chain

In the FY 2020-21, Greenko has projected various business initiatives under its ESG framework and linked them with the UNSDGs. This initiative serves as a point of reference for maintaining leadership and addressing global challenges proportionate to Greenko's Business Capacity and its commitment towards Net Zero 2050. The Initiatives and targets achieved/under progress are presented here under.

ESG	Focus Area	Key Milestones, 2020-21	Contribution to UNSDGs
Environment	<p>Climate Change</p> <p>By 2030, substantially increase the share of renewable energy in the global energy mix.</p> <p>Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.</p> <p>Integrate climate change measures into national policies, strategies, and planning.</p> <p>Improve education, awareness, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.</p> <p>Reduction in GHG Emissions</p> <p>Better Air Quality in the operational areas</p> <p>Encouraging suppliers to become ISO certified & RoHS Compliant-Shared Vision-Encourage responsible sourcing & consumption pattern.</p> <p>Operational Portfolio of 7.5 GW in Wind, Solar & Hydro Investment in New Energy – Green Hydrogen & Ammonia as a commitment to Net Zero 2050</p>	<p>Increasing RE share in the total final energy consumption - 7.5 GW installed capacity.</p> <p>Climate risk assessment conducted at critical operational sites and mitigation plans are being implemented</p> <p>Greenko has established an integrated risk assessment and management framework with Standard Operating Procedures (SOP) for disaster warning and Management.</p> <p>12.47 million tons of CO₂ equivalent direct and indirect GHG emissions avoided</p> <p>Disaster preparedness teams are established across operations and regular trainings conducted.</p> <p>Climate risk mitigation strategy based on the Early Warning System.</p> <p>1,13,680 tons SOx avoided.</p> <p>75,787 tons NOx avoided.</p> <p>15,473 tons PM10 avoided.</p> <p>85% critical suppliers ISO & RoHS Compliant</p> <p>Established Climate Risk & Assessment Framework based on TCFD Recommendations.</p> <p>Publishing Integrated Report each year to disclose the non-financial indicators transparently.</p> <p>Reduced material Consumption.</p> <p>45.1% proportion spent on local procurement.</p>	<p>Climate Action, Sustainable Cities & Communities, Affordable & Clean Energy, Partnering for Goals</p> 

ESG	Focus Area	Key Milestones, 2020-21	Contribution to UNSDGs
	<p>Water & Waste</p> <p>Ensure Availability of water and sanitation across communities within operational areas.</p> <p>By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing the release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.</p> <p>By 2030, substantially increase efficiency of water across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and considerably reduce the number of people suffering from water scarcity.</p> <p>Reduced Material Consumption</p> <p>Circular Economy Based Approach to refurbish, reuse, recycle waste</p>	<p>4628.08 kL of filtered water supplied to communities through 17 RO plants</p> <p>1250 people benefitted from construction of Community Toilets</p> <p>18262 kL of wastewater treated and recycled for gardening, plantation etc.</p> <p>97 Rainwater Harvesting Systems under operation recharging</p> <p>1,67,610 kL of water (Rainwater Consumed/recharged)</p> <p>Initiatives based on circular economy to refurbish/recycle materials for a second life e.g. Used PV solar panels being used as shades for Bus stops around communities.</p>	<p>Good Health & well Being, Clean Water & Sanitation</p> 
Social	<p>Community-Engagement</p> <p>Achieve universal health coverage, including financial risk protection, access to quality essential health-care services, and access to safe, effective, quality, and affordable essential medicines and vaccines for all.</p> <p>Inclusive and equitable quality education & promoting lifelong learning opportunities for the community-By 2030, ensure equal access for all women and men to affordable and quality technical, vocational, and tertiary education, including university education.</p> <p>Digitalization for all</p> <p>Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p>	<p>Interventions to promote access to quality healthcare for local communities by conducting regular health camps -3959 people benefitted through services provided by the staff at sites mainly for Health Camps and other activity</p> <p>Medical insurance coverage to employees' family, including dependent parents, at no extra cost to the employee. 403 Insurance Claims settled successfully</p> <p>14 school/college students benefitted with 100% tuition fee reimbursements.</p> <p>Vocational & professional fee reimbursement for 16 students</p> <p>3 computer training centers established across local communities</p> <p>260 people empowered with digital literacy</p> <p>Providing Vidya Volunteers as additional skilled teachers to Government Schools through our interventions to improve the quality of education.</p>	<p>Innovation, decent work & economic growth, inclusive & quality education, preserving life on land.</p> 

Annexures

ESG	Focus Area	Key Milestones, 2020-21	Contribution to UNSDGs
		<p>640 Students benefitted from Classroom Infrastructure (Benches, Chairs, Uniforms, Play Equipment, Smart Class Systems LED TV & Sound Systems, etc.) in Government Schools.</p> <p>260 youth received practical training in the solar domain</p> <p>8781 people empowered via good programs in healthcare and education</p> <p>130071 Saplings planted/transplantation initiatives were taken up at sites.</p> <p>141 Biodiversity enhancement programs conducted</p> <p>Partnership with WWF to conserve the threatened Olive Ridley Turtle species and with the Government of India for conserving the Great Indian Bustard. Plans to conserve Red Panda in coordination with Government of Sikkim has also been initiated.</p> <p>10 ICT projects planned & implemented</p>	
Governance	<p>Talent Retention & Attraction</p> <p>Increased No. of Women in workforce</p> <p>Zero fatalities across operations</p> <p>Increased Learning & Development opportunities for employees</p> <p>Multiskilled employee number increasing Y-o-Y.</p> <p>Increased No. of safety Training Hours</p> <p>Strict Adherence to POSH</p> <p>Accountability & Transparency for all stakeholders</p>	<p>99% key staff retention</p> <p>181 new talents hired</p> <p>6.17% women workforce</p> <p>7.42 per capita safety training hours</p> <p>18% increase in total number of training hours /employee</p> <p>750 multiskilled employees</p> <p>Zero incidents of POSH reported</p> <p>The Board at Greenko follows best Governance practices to run the business ethically considering the concerns of all the stakeholders.</p>	<p>Gender Equality, Decent work & Economic Growth, Quality Education, Reduced Inequality, Sustainable Cities & Communities, peace Justice & Strong Institutions</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="margin: 5px;"></div> <div style="margin: 5px;"></div> <div style="margin: 5px;"></div> <div style="margin: 5px;"></div> <div style="margin: 5px;"></div> <div style="margin: 5px;"></div> </div>

ESG	Focus Area	Key Milestones, 2020-21	Contribution to UNSDGs
	<p>Integrity & Ethical Practices</p> <p>Effective Risk management</p> <p>Board Diversity</p> <p>Defined Board Responsibilities</p> <p>Mapping the Integrity of Financial Management Systems</p> <p>Best in Class Employee Remunerations</p>	<p>Greenko has a Conflict-of-Interest Policy and a Code of Business Conduct setting out the company's requirements and process to report and deal with non-compliance & also has a Whistleblower policy in place for Grievance Redressal.</p> <p>Board is responsible for strategically establishing the company's risk tolerance and developing a framework and clear accountabilities for managing risks.</p> <p>Greenko's Board ensures that its membership has the proper mix of skills and perspectives & ensure this, by following age/term limits and gender / diversity requirements.</p> <p>Written mandates for the Board and each committee setting out their duties and accountabilities.</p> <p>An independent Audit & Risk Committee to monitor and manage the integrity of financial statements, reviewing the Company's internal control and risk management systems.</p> <p>The Remuneration and Nomination Committee determines Greenko's remuneration policy, regarding performance standards, existing industry practice and provides the best remunerations to all employees, to maintain a balance by having a structured pay roll implementation, including for the senior management.</p>	

Key UNSDGs for Greenko's Business:



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404-1	Average hours of training per year per employee	220	Human Capital – Learning and Development
404-2	Programs for upgrading employee skills and transition assistance programs	220	Human Capital – Learning and Development
404-3	Percentage of employees receiving regular performance and career development reviews	220	Human Capital – Learning and Development
405-1	Diversity of governance bodies and employees	228	Employee Diversity

GRI Standards	Description	Page No.	Remarks
405-2	Ratio of basic salary and remuneration of women to men	NA	
406-1	Incidents of discrimination and corrective actions taken	NA	
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	NA	
408-1	Operations and suppliers at significant risk for incidents of child labor	NA	
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	NA	
410-1	Security personnel trained in human rights policies or procedures	237	Greenko Security Services
411-1	Incidents of violations involving rights of indigenous peoples	NA	
412-1	Operations that have been subject to human rights reviews or impact assessments	NA	
412-2	Employee training on human rights policies or procedures	220	Human Capital – Learning and Development
412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	NA	
413-1	Operations with local community engagement, impact assessments, and development programs	261	Value Creation for Community
413-2	Operations with significant actual and potential negative impacts on local communities	NA	
414-1	New suppliers that were screened using social criteria	NA	
414-2	Negative social impacts in the supply chain and actions taken	NA	
415-1	Political contributions	NA	
416-1	Assessment of the health and safety impacts of product and service categories	NA	
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	NA	
417-1	Requirements for product and service information and labeling	NA	
417-2	Incidents of non-compliance concerning product and service information and labeling	NA	
417-3	Incidents of non-compliance concerning marketing communications	NA	
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	NA	
419-1	Non-compliance with laws and regulations in the social and economic area	NA	



List of Acronyms and Abbreviations

Abbreviation	Meaning
ADIA	Abu Dhabi Investment Authority
ALARP	As Low As Reasonably Practicable
APPC	Average Power Purchase Cost
B2B	Business to Business
BBS	Behavior Based Safety
BoS	Balance of Systems
BoT	Robotic Process Automation
BU	Billion Units
C&P	Contracts and Procurement
CAGR	Compound Annual Growth Rate
CAPEX	Capital Expenditure
CDM	Clean Development Mechanism
CEO	Chief Executive Officer
CERC	Central energy regulatory commission
CEEW	Council on Energy, Environment and Water
CII	Confederation of Indian Industry
CFL	Compact Fluorescent Lamp
CFO	Chief Financial Officer
CO ₂	Carbon Dioxide
COO	Chief Operating Officer
COSO	Committee of Sponsoring Organizations
CSR	Corporate Social responsibility
DG	Diesel generator
DISCOM	Distribution Company
DMS	Document Management System
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
EHS	Environment, Health and safety
ELTP	Entry Level Trainee Program
EOL	End of Life
EPC	Engineering, Procurement and Construction
ESIA	Environmental Social Impact Assessment
ESMS	Environmental and Social Management System
ESG	Environmental Social & Governance
EU	European Union
EWS	Early warning system
GAM	Greenko Asset Management
GATS	Greenko Asset Tracking System
GDP	Gross Domestic Product
GBI	Generation Based Incentive

Abbreviation	Meaning
GEPS	Greenko Energy Project Systems
GETs	Graduate Engineering Trainees
GIC	Government of Singapore Investment Corporation
GIMS	Greenko Integrated Management Systems
GHG	Greenhouse Gas
GLMS	Greenko Leave Management System
GMAT	Greenko Meeting and Action Tracker
GOI	Government of India
GOM	Greenko Operations Management
GRI	Global Reporting Initiative
GRMF	Greenko Risk Management Framework
GS	Gold Standard
GW	Gigawatt
GWO	Global Wind Organization
H&S	Health and Safety
HCM	Human Capital Management
HEP	Hydro Electric Power
HO	Head Office
HR	Human Resource
HRMS	Human Resource Management System
HT	High tension
HVAC	Heating, Ventilation and Air Conditioning
I/O	Input/Output
IBEF	India Brand Equity Foundation
ICB	International Competitive Bidding
ICT	Information and Communications Technology
IEA	International Energy Agency
IESA	India Energy Storage Alliance
IEX	Indian Energy Exchange
IFC	International Finance Corporation
IIRC	International Integrated Reporting Council
IMS	Integrated Management System
INR	Indian Rupee
IoT	Internet of Things
IRENA	International Renewable Energy Agency
IRESP	Integrated Renewable Energy Storage Projects
ISMS	Information Security Management Systems
ISO	International Organization for Standardization
IT	Information Technology
ITIL	Information Technology Infrastructure Library

List of Acronyms and Abbreviations

Abbreviation	Meaning
JMD	Joint Managing Director
kL	Kilo liter
Km	Kilometer
KPI	Key Performance Indicator
kV	Kilovolt
kWh	Kilowatt-hour
LCA	Life Cycle Analysis
LC	Learning Curve
LCOE	Levelized Cost of Energy
L&D	Learning & Development
LED	Light Emitting Diode
M&A	Mergers and Acquisitions
MD	Managing Director
MTBF	Mean time Between Failures
MU	Million Unit
MW	Megawatt
NDC	Nationally Determined Contributions
OCTAVE	Operationally Critical Threat, Asset & Vulnerability Evaluation
O&M	Operations and Maintenance
OEM	Original Equipment Manufacturer
OJT	On the Job Training
PLC	Programmable Logic Controllers
PLF	Plant Load Factor
PMC	Project Monitoring Cell
PMS	Performance Management System
POSH	Prevention of Sexual Harassment at Work
PPA	Power Purchase Agreement
PPS	People, Process and System
PS	Performance Standards
PSHPP	Pumped Storage Hydro Power Project
PV	Photo Voltaic
QA	Quality Assurance
QC	Quality Control
QEHS-IS-En-SA	Quality, Environment, Health & Safety, Information Security, Energy and Social Accountability Management Systems
QMS	Quality Management System
QMD	Quality Management Department
R&D	Research and Development
RE	Renewable Energy
REC	Renewable Energy Certificate

Abbreviation	Meaning
RO	Reverse Osmosis
ROHS	Restriction of Hazardous Substances Directive
ROI	Return on Investment
RTC	Round The Clock
SAP	Systems, Applications, and Products
SBU	Strategic Business Unit
SCADA	Supervisory Control and Data Acquisition
SECI	Solar Energy Regulatory Commission
SF6	Sulphur Hexafluoride
SLDC	State Load Dispatch Center
SMEs	Subject Matter Experts
SPOD	Schedulable Power On-Demand
SPSP	Standalone Pumped Storage Project
TNI	Training Needs Identification
TCFD	Task Force on Climate Related Financial Disclosures
TWh	Tera Watt hour
UI	Unscheduled Interchange
UNFCCC	United Nations Framework Convention on Climate Change
UNSDGs	United Nations Sustainable Development Goals
US\$/USD	United States Dollar
VCS	Verified Carbon Standard
VRE	Variable Renewable energy
VUCA	Volatility, Uncertainty, Complexity and Ambiguity
WINSOM	Wind In Source of Operation & Maintenance
WWF	Worldwide Fund for Nature
WTG	Wind Turbine Generator
YoY	Year on Year







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