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Green HRM Practices and Sustainable Performance. A Case Study of CCL, Ranchi

Akansha Deepti Toppo, Prachi Jaiswal, Smita Tirkey, Priya Tirkey, Nisha Rani Tirkey, Prerna Kumari, Jayleen Eshi Tiga, Shruti Verma, Dr. Narendra Singh, Dr. Ajay Kumar
Department of Commerce
St. Xavier's College, Ranchi

***Abstract* – The present research study is an exploration into the process of integration of Green HRM strategy and its implications for sustainable performance at Central Coalfields Limited (CCL), Ranchi. As of the leading Miniratna subsidiaries of Coal India Limited, CCL works in the energy intensive field of coal mining, where it is important to make a shift towards sustainability for long term growth and survival. In this respect, the research study focuses on the significant research gap, that is the issue of application of HR measures that are focused on humans. Using, a quantitative approach in research methodology, data was collected using a sample size of 59 employees from the headquarter of CCL in Ranchi. In this analysis, descriptive statistic were used to describe the demographic scenario while inferential statistics, regression analysis were employed to analyse the hypothesis. It was found that there exists a statistically significant positive correlation between GTD and sustainable performance. Important discoveries include the fact that only 18.2% of employees consider Green HRM to be costly affair while 81.8% believe that it is a cost-effective tool. Another, key finding shows that 95.5% of the participants strongly support the idea that green policies are well aligned with company's core purpose and values. At the same time, the study has found the presence of a perception gap concerning the impact that green activities have on career progress as 47.4% of employees have no clear understanding of how these two aspects are related. Concluding the project, it should be stated that although the company succeeded in cultivating high environmental consciousness among workers, it is necessary to move further and create specific Green HRM and rewarding systems to make CCL the leading organisation in sustainable energy production.**

***Keywords* - Green HRM, Sustainable Performance, Central Coal Limited (CCL), Green Training and Development (GTD), Environment.**

I. INTRODUCTION

Now-a-days, environmental sustainability has become an important concern for the organisations across the world, where environmental uncertainty and climate changes occur. Organisations are increasingly expected to go beyond the profit making and contributes towards the sustainable development. The growing awareness of environmental degradation, resource depletion and global warming has forced industries to adopt eco-friendly practices in their business activities. In the context of Human Resource Management (HRM) has emerged as an important approach in promoting environmental sustainability through what is now widely known as Green Human Resource Management (Green HRM).

The concept of Green HRM means integrating the environmental objective into the organisation's activities. It focuses on developing a workforce that is responsible and actively involved in reducing the organisation's environmental impact. Green HRM not only contributes to environmental protection but also enhances organisation efficiency, employee engagement and long terms sustainability. Despite the growing importance of Green HRM, many organisations are facing challenges in effectively implementing the Green HRM practices. On the other hand, sustainable performance is a complete concept that includes not only financial performance but also environmental and social effects or outcomes. It reflects an organisation's ability to maintain a balance between economic growth, environmental protection and social well beings. In recent years, organisation have realized that sustainable performance is not just a managerial requirement but also a source of competitive advantage.

The coal mining industry is one of the most environmental open sectors which plays an important role in the transformation or modification of the organisation. The organisation like CCL (Coal Coalfield Limited) operating in the coal mining sector face many challenges related to pollution, land degradation and resource utilization. Therefore, the adoption of Green HRM practices becomes an essential part for minimizing environmental impact and maintaining its productivity too. The study focuses on CCL which operates in the mining sector. CCL has been actively involved in various environmental and sustainable initiatives including afforestation, waste management and energy conservation. However, CCL is a major public sector undertaking in the coal industry provides an important factor to examine the adoption and impact of Green HRM practices. The objective of the research study is to examine how Green HRM practices are implemented in CCL and contribute to sustainable performance. Also, to assess the impact of green training and development program at CCL on employee engagement and to know

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whether the employees are aware of green initiative taken by the organisation. It aims to understand the relationship between HR policies and environmental outcomes and how employee involvement can enhance sustainability efforts within the organisation.

Significance of Study

The study is important because it provides environmental awareness into the practical organisation of Green HRM in a public sector which also highlights the importance of integrating environmental responsibility into human resource planning. It also contributes to the academic literature by bridging the gap between HRM practices and sustainable performance especially in the matter of the mining industry. The importance of the study lies in its potential to bridge the gap analysing the relationship between Green HRM practices and sustainable performance in CCL. The findings of this research will contribute to the existing body of knowledge which provides practical insights for the managers and the policymakers to design effective human resource planning that supports environmental sustainability.

Scope and Limitation of the Study

The study focuses on understanding the role of Green HRM practices in improving sustainable performance within an organisation. The study tries to understand that how the HR practices in environmental activities influences employee's attitude and behaviour and overall contribution towards sustainability performance. However, the study aims to provide a practical understanding of how Green HRM can be applied in real organisation particularly in industries that have a direct impact on the environment. As we know every research study has certain limitation, so this research study has too. One of the major limitations is that the study is restricted to a single organisation that is CCL and also related to the sample size and areas as the study covers only the office of CCL and its employees. Due to limited time period, the data collection is limited and it was not possible to include a large and more diverse sample, so that the data is collected through Google forms and there is few face to face interaction.

Needs for the Study

The need for this study arises because environmental sustainability has become an important issue for organisation, especially in pollution-prone industries like coal mining. There is an increasing demand for organisation to adopt eco-friendly practices and reduce environmental damage. In this context, Green HRM helps organisation to integrate environmental responsibility with HR practices. The study is needed to examine whether Green HRM practices at CCL are effectively contributing towards sustainable performance or are limited only to policy implementation. Another important need of the study is to analyse how Green HRM practices improve employee behaviour, organisational reputation, productivity and long terms sustainability.

II. LITERATURE REVIEW

Hue et al. (2026) reported that Green HRM become more effective when it creates strong green motivation among employees which helps to improve sustainable performance. The study highlights that sustainability is not achieved only through policies, rules or technology but mainly through employee's positive environmental behaviour. The author found that green motivation act as an important link between Green HRM practices and sustainable performance. However, the study focused only on green motivation and ignored other important factors such as environmental awareness, green culture, employee attitude and organisational commitment. It also missed the role of technology such as green digital tools and eco-friendly technologies which shows a gap in integrating human resources with technology for better sustainable performance.

Islam et al. (2025) reported that "If organisations treat employees in environmentally responsible ways that is following the Green HRM practices, employees become more engaged and that engagement ultimately makes them more productive and sustainable." The authors talk about Green HRM practices such as hiring environmentally conscious employees and providing eco-friendly training which helps to increase employee engagement, productivity and sustainable performance. The study focused on Bangladesh's manufacturing sectors showing that Green HRM can be effective even in developing countries facing environment and resource challenges. However, the research is limited because it only studies one country and one industry. It also overlooks important factors like leadership style, organisational culture, employee personality, job satisfaction and organisational commitment, which would influence the relationship between Green HRM and sustainable performance.

Adowah et al (2025) reported that Green HRM practices can improve an organisation's sustainability only when employees truly understand, supports and follow them. The study highlights practices like green hiring, sustainability training and rewards for eco-friendly behaviour along with employee's actual action such as saving energy and recycling. The author emphasized that simply creating green policies is not enough, employee belief and participation are equally important. The study also points out the research gap as most Green HRM study focus on developed countries while limited research exists in regions like Sub-Saharan Africa, especially Ghana. Additionally, the research pays less attention to negative

employee perceptions and mainly assumes that employees will respond positively to green initiative.

Khan et al (2025) reported that organisation can promote eco-friendly and innovative employee behaviour through Green HRM practicers and green leadership. Focusing on hotel industry in China and Pakistan, the study highlights that environmental problems can be solved by organisation alone but employees also need to actively participate in sustainable practices. The author found that organisational support, voluntary green behaviour and leadership together encourage green innovation among employees. However, the study identifies research gaps, including limited study in developing countries, weak understanding of psychological factors influencing employee behaviour and insufficient research on the moderating role of green transformational leadership.

Ren and Chowdhury (2025) found that organisations can achieve true sustainability only when employees feel included and able to participate in green initiative. The study discusses Green HRM practices such as green training, sustainable recruitment, recycling and carbon reduction policies but points out that these initiatives are often designed from top to down approach. The author highlights that employees are not all the same as factors like genders, age, culture, education and digital access influence how people engage with sustainability programs. The study also identifies a modern research gap, showing that Green HRM research has paid limited attention to hoe digital technologies and AI may create exclusion in sustainability initiatives, focusing more on systems than on employee's real experiences.

Ashfaq et al. (2025) reported that Green HRM practices improve the long terms performance of manufacturing organisation in Gujranwala. Using employee survey data and statistical analysis, the study found that Green HRM positively affects the organisational performance, especially when supported by Green Supply chain Management (GSCM). The author emphasized that environmental goals are achieved more effectively when HR strategies and supply chain practices work together. The study also fills a research gap by focusing on the manufacturing sector in a developing country, while suggesting that future research should explore other industries and additional organisational factors that encourage green and innovative workplace cultures.

Makhlouf et al. (2025) reported that Green HRM practices helps to improve sustainability performance in Tunisia's manufacturing sector. The study showed that Internal Environmental Management (IEM) plays a key mediating role while Ethical Leadership Style (ELS) strengthens the positive impact of Green HRM on environmental performance. Using data from 180 manufacturing firms and PLS-SEM analysis, the researcher concluded that combining green HR practices with ethical leadership and effective environmental management is important for achieving sustainability. They also suggest that future studies should examine whether these findings apply to service industries and other regions of the world.

Jabeen et al. (2025) reported that environmental sustainability in organisations is achieved not only through technology and policies but also through employee's behaviour, Green HRM practices and responsible leadership. Based on the data from 570 hotel employees in Pakistan, the study found that hotel using Green HRM practices showed better environmental performance and encouraged employees to generate innovative green ideas. The author also highlights that responsible leadership strengthens the positive impact of Green HRM. However, they pointed out that the connection between Green HRM and environmental performance through human behaviour is still not fully understood and there is limited research from developing countries especially in the hotel industry.

Sachdeva et al. (2024) reported that hotel cannot achieve environmental sustainability only through green technology or policies. True sustainability happens when employees, managers, organisation culture and Green HRM practices work together. The study found that Green HRM acts as important mediator in improving environmental performance by strengthening green commitment and green intellectual capital. However, the author mainly focused on human behaviour rather than actual environmental outcomes like energy savings or waste reduction. They also pointed out that the study relied heavily on quantitative data and lacked deeper insights into employee's real experiences, workplace challenges and organisational culture.

Weber and Kassab (2024) found that organisation become more sustainable when employees, leaders and HR practices work together towards environmental responsibility. The study highlighted that sustainability is not achieved only through technology and policies but through building a strong green culture within the organisation. The authors explained the importance of employee green behaviour, green leadership and sustainable performance. However, the study had some gaps, such as focusing only on Thailand's environmental sector and giving limited attention to the role of technology, AI and digital tools in Green HRM. The authors also noted that leadership and HR systems may influence employee behaviour more strongly than study suggested.

Mahesh et al. (2024) reported that universities and colleges can promote sustainability through eco-friendly

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HR practices such as green recruitment, online interview, paperless work, environmental training, waste management, energy conservation and sustainability focused education. Using the 3P's Sustainability model that is Policy, People and planet and Program, the study emphasises that sustainability should become a part of institutional culture, leadership, curriculum and student activities. The author believed that education and HR practices can helps to develop environmentally responsible citizens for long terms social and environmental growth. However, the study lacked strong real-world evidence and gave limited attention to implementation challenges faced by rural institution, government colleges and financially weaker universities.

Hmeedat and Albdareen (2022) found that organisation can achieve long terms success by combining CSR with Green HRM practices like green recruitment, training and compensation. The study highlights that businesses should focus not only on profit but also on social and environmental responsibilities to achieve sustainability. However, the research was limited to one company in Jordan and did not explore differences across industries or countries. It also ignored factors like green leadership, organisational culture and employee experiences towards sustainability.

III. RESEARCH GAP

Despite the growing interest in Green HRM there are still many gaps which has to be overcomes. The main focus, in most of the studies is manufacturing sector in developing countries. Additionally, in organisations environmental and social performance are widely examined whereas mechanisms like green motivation, behavioural engagement, employee attitude are less understood. There is also a lack of effective framework for measuring Green HRM effectiveness and limited attention has been given to digital technologies that can be used its operation. Finally, most studies concerned with internal organizational benefits, with insufficient focus on the impact on external stakeholders and the achievement of sustainable development goals of the organisation. There is limited understanding of how cultural and regulatory differences influence the adoption and effectiveness of Green HRM practices across regions. There is insufficient exploration of how organizational CSR commitments enhance or complement Green HRM practices in achieving sustainable outcomes. The potential of technology to improve employee engagement in sustainability initiatives**.** Tracking environmental performance is also largely unexplored. Addressing these gaps can provide a more comprehensive understanding of how Green HRM practices contributes to sustainable performance across diverse industries

Research Question

- Do green HRM practices influence the overall sustainable performance of CCL, Ranchi?
- In what way green training and development program impact employee engagement?
- Are employees aware of and involved in initiatives at the workplace?

Research Objective

- To examine the influence of Green HRM practices on sustainable performance of CCL, Ranchi.
- To assess the impact of Green Training and Development program at CCL, Ranchi on employee engagement.
- To know whether the employees are aware of green initiative taken by the organisation.

Hypothesis of the Study

- **H0 (Null Hypothesis):** Green training and Development has no significant on sustainable performance.
- **H1 (Alternative Hypothesis):** Green training and development have a significant positive impact on sustainable performance.

IV. RESEARCH METHODOLOGY

Introduction

Research methodology is basically the plan of the researcher to carry out the study. It is associated with finding the answers to the research problems. Research methodology ensures that the research work in a clear, in systematic manner so that the results are reliable and meaningful. In this study "Green HRM Practices and Sustainable Performance: A case study on CCL, Ranchi, the methodology focuses on the operations with environmental concerns, HR practices that are used in the organization and their affection the overall performance. The information is collected from both primary and secondary sources with total of 59 respondents.

Research Design

A research design is a plan that a researcher prepares for his research study. It shows haw data is collected from different sources. It also measures and analyses the responses collected through the research questions. In this research project the data is collected using descriptive and quantitative approach. In the descriptive approach methods like surveys and questionnaire are used. The quantitative approach uses tools like regression analysis. The data collected are represented through tables and graphs for better understanding.

Nature and Source of Data

Primary source: A primary source of data collection refers to the data that is collected first-hand by the

researcher for research purpose. Primary data was collected form 59 respondents through a questionnaire with a 5-point Likert Scale. The respondents were the employees of Central Coalfield Limited, Ranchi.

Secondary source: Data collected using secondary sources refers to the data that had already been collected by other parties earlier on and was presented in books, journals, newspapers, internet searches like Google etc. Secondary data refers to the second-hand data used by the researcher.

Study Area

The study is conducted in Central Coalfield Limited (CCL) in Ranchi, Jharkhand, a subsidiary of Coal India Limited. CCL is headquartered in Ranchi which operates primarily in the coal-rich regions of Jharkhand. The study area mainly focuses on the HR practices and performance of CCL in Ranchi. It focuses on the ways and the methods used by the organization which integrates Green Human Resource Management (Green HRM) practices. These practices includes eco-friendly training, energy conservation initiatives, and employee awareness programs.

Target Population

The target population of the present study consists of employees of Central Coalfields Limited, particularly those working in the Ranchi District. This includes personnel from different levels such as top management, middle management and staffs from different levels. The study mainly focuses on the employees who are directly and indirectly involved in various HR functions and environmental management practices. It includes all the employees from different departments like HR, CSR.

Sample Size

The process of administering the final research instrument at Central Coalfields Limited (CCL), Ranchi, follows a systematic sampling and distribution procedure. This ensures that the data collected on Green Human Resource Management (GHRM) and its impact on Sustainable Development are representative of the organizational hierarchy and functional diversity of the public-sector undertaking.

Final Sample Validation

Questionnaires were distributed across various CCL divisions and the HR department in particular; a total of 59 responses were retrieved. After a rigorous screening process to identify incomplete entries or outliers, a final sample of 59 respondents was approved for statistical analysis. This sample size is consistent with the requirements for determining the correlation between GHRM practices and sustainable development and training (Economic, Social, and Environmental performance).

Sampling Technique

The administration involves several critical stages to maintain data integrity and respondent anonymity:

- Sampling Strategy: A Judgmental (Purposive) Sampling technique is utilized to ensure that the respondents possess the necessary awareness of the company's environmental policies and sustainability initiatives.
- Inclusion Criteria: Participation is restricted to employees who have completed at least one year of service at CCL, ensuring they are familiar with the Green practices (such as paperless office initiatives, waste management training, and eco-friendly performance metrics) integrated into the company's HR framework.

Data Collection Procedure

Digital Administration: A structured questionnaire was hosted on a secure platform and distributed via official channels and corporate communication groups during the working hours of CCL, Ranchi. This approach was particularly effective for reaching the Management teams and employees.

Physical Administration: For employees in operational and field roles who are digital-capable, digital questionnaires and scanners were distributed in person. A cover letter endorsed by the relevant department heads accompanied each questionnaire to signify institutional support and ensure academic confidentiality.

Collection Timeline: The data collection was carried out at the CCL, Ranchi in the month of April, 2026.

Research Instruments

Research Instrument are the appliances or approach used by investigations to collect information for a study. In simple language it helps in collecting data requires to answering the question used in research.it used research instrument like questionnaires selection of question which participants to be answered. Inspection gathering view and information from a team. Interviews where face to face interaction are done between employees and people where one person questioning and another are given answering. Test estimating result creativity and awareness. In this research used a structural questionnaire which are separate into section. Section-1demographic profile gender, age group, monthly household income, education level. section-2 Sustainable Performance Green HRM practice performance. Political, legal, economic, culture performance. Preservation of HRM practices in greening. Section -3 green training and development green training improve company performance. Environmental awareness training. Section-4 Employee engagement and job

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satisfaction. Employees recognition in their company like (ccl)central coalfield limited. Section -5 initiative and green growth in this initiative toward green HRM to be promoted.

Variable

Variable defines any component, feature or item in research examination that can differ or alter and is considered by the research.

- **Independent Variable (IV):** Green HRM Practices. (GHRM)

Others, Green Initiatives. (GI)

- **Dependent Variable (DV):** Green Training and development. (GTD)

Others, Sustainable performance and Employee Awareness. (SPEA)

Data Collection Procedure

It includes meaningful data collected from employee to achieving the goal of the study. It is a step-by-step method for collecting information by researcher for investigation in structure and methodical.

Sources Primary Data gathering information directly through people.it prepared in structure questionnaire in which respondents are collected from questionnaire. Primary data was collected directly through google form (59) responded in this survey method using convenience sampling during specific months of 2026.

Data Analysis and Tools

The study used descriptive statistics like percentages to recognize the desperation of response with regression tools to analyses data. The analysis on Green HRM Practices and sustainability performances: A case study of CCL from Ranchi district Jharkhand.

Statistical tools such as correlation, mean and standard deviation to discover the connection between variables are used to understand the Green HRM practices and sustainability performance. Statistical techniques are MS Excel.

Limitation of study

The validity and generalization of the research findings can be hampered by some restrictions of the ongoing study. The small number of respondents in the study who may fail to represent the views of all employees in the company constitutes one of the major limitations. In fact, it was impossible to involve larger sample sizes in this study owing to certain time pressures. Another limitation could be the possibility that some of the employees provided inaccurate information or were biased in their responses owing to their personal beliefs, fear of disclosing their identity, and lack of knowledge about environmental management processes. Inaccuracy of the information obtained would be affected by such responses. Moreover, the study's comparison with other organizations is restricted only to Central Coalfields Limited in Ranchi District of Jharkhand state. Thus, not all companies working in different regions and economic sectors can utilize the outcomes of this study.

V. DATA ANALYSIS AND HYPOTHESIS TESTING

The demographic factors help in doing research to understand different groups of employees how they behave how they participate in Environmental activities in the organisation and also about different employees in respect of their age, gender, educational qualification, work experience and year of service in the organisation. The analysis of these demographic factors under all these questions is very essential for the study related to Green Human Resource Management without all this information that would be unclear understanding about the real scenarios that are happening in the organisation in respect of environment and performance.

Demographic_Factors

Table No – 1 Location – Ccl, Ranchi**.**

Gender	Frequency	Percentage
Male	41	69.49%
Female	18	30.51%
Others	0	0
Total	59	100%

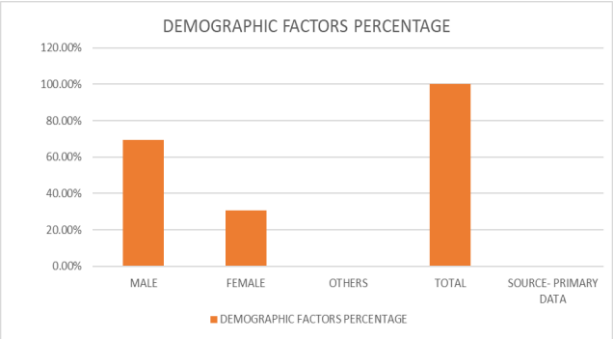


Figure 1: Gender Distribution percentage

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The data analysis helps in knowing more about employees in different demographic groups with different responses towards green human resources and sustainability performance In this research study the demographic factors show about the scenario of Central Coalfields Limited Ranchi(CCL) this provides information about the respondents who responded to the questionnaire which are filled by them during the survey done by the authors the questionnaire containing of all the information's like their gender, age group, education qualification, income group and service in the organisation. Data analysis in this

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chapter is done on the basis of these factors under demographic condition therefore these data help to compare with different factors and to understand more better about sustainability performance and human resource management.

The above graph shows the demographic factor of gender section. The graph explains that the total percentage male is 69.49% with frequency of 41 males and the percentage of female is 30.51% with the frequency of 18 females. The above percentage shows that the majority number is of gender male and least percentage population is of female. The number of males in the organisation is double off than of females. The table shows uneven distribution therefore it can affect productivity scale. The study was shown male dominance in the organisation.

Table No – 2

Age	Frequency	Percentage
BELOW 20	5	8.47%
20-30	10	16.94%
30-40	15	25.42%
40-50	20	33.89%
ABOVE50	9	15.25%
TOTAL	59	100%

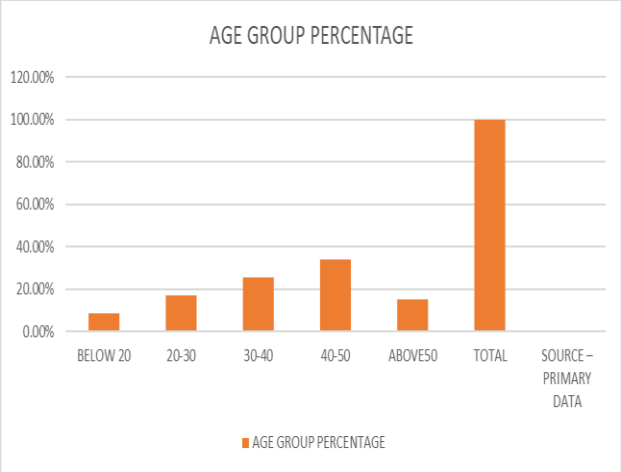


Figure 2: Age group percentage

This graph shows the age group distribution of the respondents of CCL, Ranchi who responded on the questionnaire. The graph shows that the age group below 20 is of frequency 5 and percentage 8.47% and 20-30 is 16.94% ,30-40 is 25.42% ,40-50 is 33.89% and above 50 is 15.25% with frequency 10,15,20,9,59 respectively. The graph shows that middle aged employees are in majority into the organisation is of 30-50 years and the younger employees are of age below 20 and the small proportion of employees are of age above 50. In conclusion, the data shows the middle age employees are in majority and youngers are in least.

Table No.- 3 Source- Primary Data

Qualification	Frequency	Percentage
Inter/Diploma	7	11.86 %
Undergraduate	20	33.89%
Post Graduate	20	33.89%
Professional Degree	12	20.33%
Total	59	100%

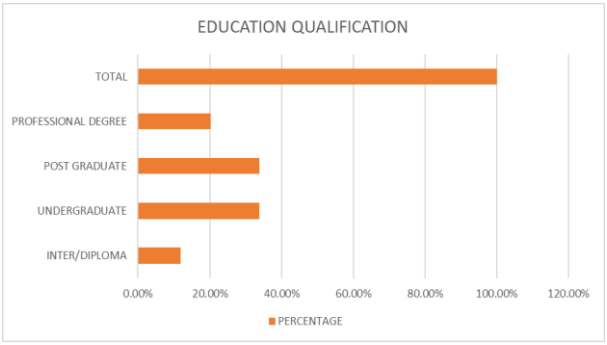


Figure 3- Educational Qualification Percentage

The given graph shows the details about educational qualification of the employees of CCL, Ranchi who were the respondents of the question ire the graph state the percentage and frequency of employees were intermediate and diploma qualified is 11.86% and 7 employees and the percentage of employees who are graduate is 33.89% post-graduation is 33.89% professional degree is 20.33% where is the frequency is 20, 12, 59 respectively the highest qualified employees in the organisations are of Qualification An undergraduate and post graduate And lowest qualified Employees are of Intermediate and diploma.

Table No- 4

Monthly Income	Frequency	Percentage
BELOW 20,000	9	15.25%
20000-30000	12	20.33%
30000-40000	19	32.20%
40000-50000	10	16.94%
ABOVE 50000	9	15.25%
TOTAL	59	100%

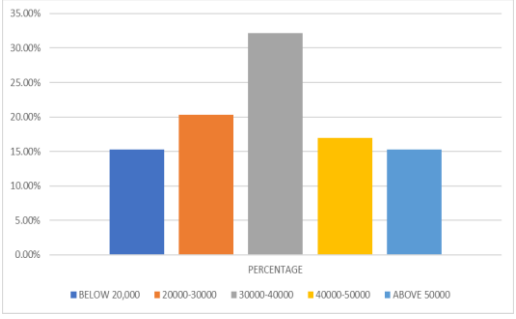


Figure 4- Annual income percentage

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The graph of annual income shows the total annual income of the employees of CCL Ranchi having range from below 20000 to above 50000. The employees whose annual income is below 20000 is of frequency 9 with percentage 15.25. And the Employees with income range of 20000 to 30000 is of frequency 12th and percentage 20.33%. Employees with the income range of 30000 to 40000 is of frequency 19 with percentage 32.2 017 and Employees with income range of 40000 and 50000 is of frequency then with percentage 16.94% and employees whose income is above 50000 is of frequency 9 and percentage 15.25%.

Table No- 5

Years Of Service	Frequency	Percentage
0-5 Years	9	15.25%
5-10 Years	5	8.47%
10-15 Years	10	16.94%
15-20 Years	20	33.89%
Above 20 Years	15	25.42%
Total	59	100%

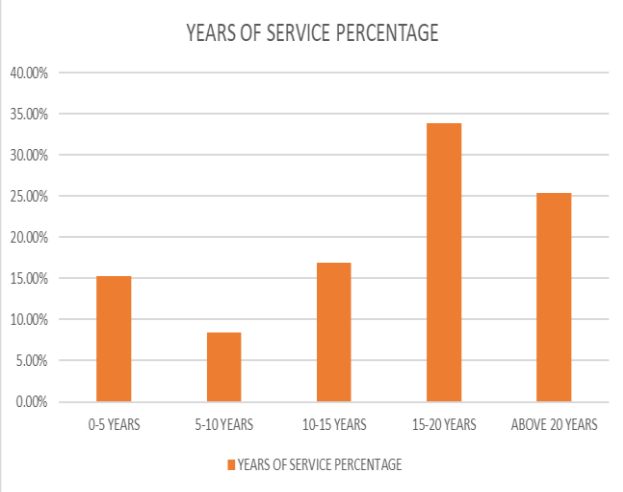


Figure 5- Year of service percentage distribution

The given graph shows the year of services of employees of CCL Ranchi they have served in the organisation are with the class interval of 025 year having frequency of 9 Employees with the percentage 15.25%. And 5 to 10 years with the frequency of 5 employees and percentage 8.75%. 10 to 15 years with frequency 10 and 16.94%. 15 to 20 years with frequency and 33.89%. Above 20 years with frequency 15 and percentage 25.42%. From the graph, it indicates that the longer experience employees are of duration 15 years and above. The employees who are new having service experience of less than 10 years.

Table: 6

Variables Entered/Removed			
Model	Variables Entered	Variables Removed	Method
1	GTD[b]	.	Enter
a. Dependent Variable: SP			
b. All requested variables entered.			

Analysis

The above table shows that green training and development (GTD) is independent variable and dependent variable is sustainable performance. And the dependent variable of this is sustainable performance and green training and development is independent variable.

Model Summary TABLE: 7				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.609[a]	.370	.359	.32534
a. Predictors: (Constant), GTD				

Analysis

The R in this table shows the correlation coefficient. That indicates the relationship between independent variable and dependent variable with are sustainable performance and green training and development. This table of model summary shows that the value of R is 0.609 which shows the relationship between dependent and independent variable and if the value of R which is 0.609 increases the dependent variable will also increases.

R square represents the variation in the dependent variable which is green training and development and which is explained the value shows moderate relationship between the variables and 37.0% of variance in the dependent variable and 63% of variable is remaining unexplained because of unexplained factors. Therefore, this explains moderate power.

Adjusted R Square has 0.359 value. Adjusted R square is the part of regression analysis that corrects R square and the number of predictors available. Here Adjusted R square is lower than R square hence it shows model is stable not inflated.

Standard Error of Estimate states the actual value deviation with predictors value, if the value is lower than the model is better. But here the model is moderate level with the value of 0.325.

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Table -8

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.488	1	3.488	32.953	.000[b]
	Residual	5.927	56	.106		
	Total	9.415	57			

a. Dependent Variable: SP

Analysis

The Anova analysis means Analysis of Variance is the statistical tool used to compare and two determine that two or more groups are statistically significant or not. Anova is widely used in research for calculating the data and finding the hypothesis. And to identify that independent variable has significant effect on dependent variable.

Sum of squares explains the total variations in the data is available. The value of regression of sum of square is 5.927 and the residual sum of square is 3.488

Degree of freedom mean the number of independent values that are available for statistical calculation. The regression df is 1 because here only one variable is used whereas the residual df is 56 that indicates other factors are fitting the model. And total df is 57 that says that total sample of information that were available.

Mean Square is the calculation of mean of the data, mean square is calculated by dividing the sum of square by the degree of freedom. The mean square helps in calculating the value of F. the value of regression mean square is 3.488 and the value of residual mean square is 0.106.

The F test shows that regression model is significant or not and the higher the value shows the model is significant and lower the value shows the model is not significant. But in this table the F test value is 32.953 that shows significant variation of sustainable performance.

Significance vale is 0.000 that indicates the analysis result is significant.

The table shows that the value of P is high that shows significant variation in Sustainable Performance. And P value is 0.00 and $p < 0.001$, Since $p < 0.05$ indicating the analysis is significantly statistical. Therefore, null hypothesis is rejected and alternative hypothesis is accepted.

Table:9

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.198	.313		7.020	.000
	GTD	.450	.078	.609	5.740	.000
a. Dependent Variable: SP						

Analysis

Coefficient is statistical value used in regression analysis for showing the relationship between the dependent and independent variables. It shows directly proportional relationship between both the variables by showing the change in independent variable causes the change the dependent variable with every one unit. This helps researcher to know that the relationship is strong, positive, weak. Unstandardized coefficient is B, that shows actual relationship between dependent and independent variable. The constant value is 2.198 shows when GTD Is zero SP will be 2.198. the value of B foe GTD is 0.450, states positive relationship between SP and GTD.

Standard Error is for measurement of accuracy of the values. The value is 0.313 and 0.078 indicating the analysis is reliable. Standardized Coefficient Beta shows strength and relationship between independent variable and dependent variable .value is 0.609 shows positive effect on sustainability performance. T test is done to check whether the coefficient is significant or not and the higher value means significant coefficient. The value is 5.740.

Significance value is known as P value shows that the relationship between variables is significant or not. here the value is 0.000 indicates positive relationship and green training and development have positive impact.

Objective Achieved

The overall findings from analysing the survey results clearly show that the main purposes of the Green HRM program, especially concerning Initiative and Career Growth, have been met. With more than 60% of the employees having positive experiences in regard to environmental training, education, and rewards programs, it is safe to conclude that the company has created a culture in which sustainable practices are seen as the standards of professional activity. The clear majority of respondents, 77.3%, who were able to establish the connection between personal initiative and job satisfaction/career growth, are proof of the successful implementation of the green strategy within the framework

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of the employee's motivation. However, taking into account the fact that there were neutral and even disagreeing opinions with regard to the promotion and rewards programs, it becomes clear that there still is much room for improvement in terms of incorporating environmental initiatives into professional performance metrics

VI. FINDING, CONCLUSION, SUGGESTION

The study highlights Central Coalfields limited (CCL) critical transformation to a triple- bottom- line strategy that balance profit, people, and the environment. The study confirms that Green Training and Development (GTD) is a major driver of Sustainable Performance by using regression analysis and on data from a sample of 59 highly educated and experienced employee. Instead of being a side project, GTD gives workers the knowledge and mindset needed to reduce waste and maximize resource efficiency, which is essential for a company that produces energy in a highly regulated environment.

Findings

- As per the demographic analysis, there are more male than female among the respondents, with male making up 69.49% of all respondents and female making up only 30.51%. Therefore, it can be said that male make up the majority of this organisation's workforce.
- The majority of the workforce was between the ages of 40-50, indicating that the company is dominated by experienced and mature workers.
- The majority of the respondents fell into the undergraduate and graduate categories, according to the educational qualification analysis. This implies that the company employs educated workers who can comprehend sustainability and GHRM.
- The results of the regression analysis indicate that GTD and sustainable performance are significantly and positively correlated. These two variables have a positive correlation, as shown by the R value of 0.609 and the R square of 0.370.
- The regression equation's statistical significance was demonstrated by ANOVA analysis because its significant value was 0.000, which is less than 0.05. As a result, the alternative hypothesis was proven and the null hypothesis was rejected.

Conclusion

The results make it clear that improving sustainable performance at Central Coalfields Limited is largely dependent on GHRM. The findings clearly show that employee involvement, environment awareness, and green training have a positive impact on organisational sustainability. The null hypothesis was rejected when it was determined through statistical analysis that Green Training & development significantly affected sustainable performance. Positive attitude were found among employees regarding green auditing, environmentally friendly workplaces, and environmental activities. Some workers, however, had no opinion on incentive and promotion programs. Employee perceptions of GHRM were generally found to be very favourable. The results of the study indicate that GTD is crucial to sustainable performance in CCL, Ranchi. The results of this study have shown that an organisation performs better the more employees receive training on eco-friendly operations. Even though the majority of CCL's employees are middle-aged to older men, they have demonstrated a strong acceptance of the company's more environmentally friendly practices.

Suggestion

Based on the statistical findings ($R^2=0.370$, $p<0.05$), Here are some actions to improve sustainable performance:

- Tailored training for senior employees: since a sizable portion of your workforce between the ages of 40 to 50, and 59.31% of them have more than 15 years of experience, training programs should honour their extensive knowledge while incorporating cutting-edge green technologies. Programs called "reserve mentoring", in which younger, tech- savvy staff members educate veterans about green technology, may be highly successful.
- Bridge the Gender gap in Green Leadership: Men currently make up 69.49% of the workforce. This offers a substantial opportunity to include the 30.51% of female employees in leadership position related to sustainability or "Green Committees". Diverse perspectives can enhance sustainability problem solving.
- Encourage "green innovation": CCL should investigate the remaining 63% of performance variance since GTD accounts for 37% of it. Linking "green KPIs''(key performance indicators) to the monthly income structure is one method. Workers with salaries between 30,000 and 40,000 may be eligible for "sustainability bonuses" if they make suggestions for waste reduction.
- Leverage high education qualification: over 88% of workers possess at least an undergraduate degree. CCL should establish professional certification programs in environmental management, carbon footprint accounting, and sustainable mining practices in addition to basic environmental awareness.
- Digitalize green training: CCL should implement a digital learning management system (LMS) to maintain the positive, momentum shown by the R value of 0.609. This would offer continuous, bite-

sized training that doesn't interfere with productivity and fits into the hectic schedules of long-tenured staff.

Future Scope

- The study can be expanded by using the same methodology to compare Central Coalfields Limited other branches and subsidiaries.
- It is possible to compare the sustainable performance and GHRM practices of public and private companies.
- Green HRM practices can be examined in relation to employee job satisfaction, organizational commitment, and productivity across range of industries.
- The effect of socially conscious business practices and government- adopted environmental policies on GHRM practices can be further investigated.
- More samples could be used in future studies to produce more reliable and accurate findings regarding sustainable performance and green HRM practices.

REFERENCES

1. Thi Hue, T., Luu, T. M. N., & Hang, P. T. T. (2026). Do green human resource management and green innovation drive green competitive advantage? Insights from Delphi and analytic hierarchy process. *Corporate Governance: The International Journal of Business in Society*, 1-23.
2. Islam, M. F., Al Masud, A., Emon, M., Shuvro, R. A., Jony, M. T. I., & Akter, T. (2025). Integrating green HRM for productivity and sustainability: green innovation, engagement and pro-environmental behaviour as key mediators. *Future Business Journal*, *11*(1), 24.
3. Adowah, M. A., Oli, S., Boasiako, N. A., Lartey, E., & Osei, B. A. (2025). Impact of green HRM practices and employee green perception on sustainable organizational performance. *International Business Research*, *18*(1), 94-108.
4. Khan, K., Gogia, E. H., Shao, Z., Rehman, M. Z., & Ullah, A. (2025). The impact of green HRM practices on green innovative work behaviour: empirical evidence from the hospitality sector of China and Pakistan. *BMC psychology*, *13*(1), 96.
5. Ren, S., & Chowdhury, S. (2026). Toward Inclusive Green Human Resource Management: An Identity-Based Analytical Framework. *Human Resource Management Journal*, *36*(1), 48-63.
6. Ashfaq, Z., Ashraf, A., & Ahmad, J. (2025). Effect of Green HRM Practices on Sustainable Performance: Mediating Role of GSCM Practices. *Market Forces*, *20*(1), 57-84.
7. Makhlouf, H., Lakhal, L., & Pasin, F. (2025). The impact of GHRM practices on corporate sustainability dimensions: a mediation and moderation analysis. *International Journal of Productivity and Performance Management*, 1-33.
8. Jabeen, R., Mehmood, S., Ahmed, M., Ghani, T., Javaid, Z. K., & Popp, J. (2025). The role of green HRM on environmental performance: Mediating role of green ambidexterity and green behaviour and moderating role of responsible leadership. *Journal of Chinese Human Resources Management*, *15*(2), 70-90.
9. Sachdeva, G., Taneja, S., & Gupta, R. (2024). The mediating role of green human resource management: analyse the impact of green commitment and intellectual capital in hotel environmental performance. *Energy Efficiency*, *17*(5), 49.
10. Weber, P., & Kassab, E. A. (2024). The employee green behaviour of green transformational leadership, green human resource management on the sustainable performance. *Journal of Infrastructure, Policy and Development*, *8*(8), 4630.
11. Mahesh, K. M., Aithal, P. S., & Sharma, K. R. S. (2024). Green HRM and teaching sustainability in higher education institutions: for promoting sustainable education and sustainable development goals. *Education (IJCSBE)*, *8*(1), 261-271.
12. Hmeedat, O., & Albdareen, R. (2022). The impact of green human resources management practices on the relationship between commitment to social responsibility and sustainable performance. *Information Sciences Letters*, *11*(4), 1013-1022.