CHAPTER II

DESIGN AND METHODOLOGY OF STUDY
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2.1.1. Research Problem And Need For Study

We have entered new millennium with lots of hope and expectation. At this juncture it is realised that the country or place which can tap, develop and use the available human resource and have surplus energy can stand the challenges and strive for economic development. That means both human resources and energy are going to play a pivotal role in the economic development and for survival. India has the potential resources to meet these two requirements in terms of energy and human resources, the second largest population in the world. On the contrary the deficit and demand of energy has been increasing. The human resources have not been gainfully tapped and developed. For this undesirable scenario, there is enough reason to be concerned not only by the planners, but also the people at large as they are directly or indirectly affected. It indicates and calls for zero deficit and rapid increase of energy to meet the ever-increasing demands. It is also important to note that energy consumption is an indicator of economic development. India’s per Capital consumption of 300 KWA per annum is one of the lowest in the world. Whereas it is only .30 percent of the All India average in respect of NorthEastern Region. At this critical moment it is expected to perform upto the expectation from the energy sector particularly coal industry as a major source of energy, which is meeting nearly 60 percent of the total commercial energy requirement of India.
The expectation is exceptionally high in view of the forecast of the depleting oil reserves and ever increasing hike in oil price. In this Coal India Ltd. (CIL), a public sector undertaking, being the second largest corporate employer of the world with 6.4 lakhs of strong labour force contribute over 90 percent of the total coal production and consumption. The organisation has been playing a significant role in the country’s energy resources and economic development over the years. Obviously, the importance and expectation continue to grow. The organisation and its performers cannot be kept aside and taken lightly as it plays an important role in nation building. But the overall performance of energy sectors under public sector organisations is not upto the expectation due to several reasons and calls for close examination and several steps for improvements.

Various forces threaten the business environment of Coal India Ltd. and the economic viability of its subsidiaries and production units. They are not able to cope up with the challenges. In addition to this, Coal India Ltd., at present is confronted with two ground realities that have to be accepted and work within this economic constrains - (i) the globalisation of market and liberalisation of economy, which is termed as “irreversible”, has all the more forced the coal industry to be competitive. The import of coal has started entering the Indian coal market with cheaper landing cost and assured quality, breaking the monopoly of Indian coal market by Coal India Ltd., which is synonym of Indian coal industry and (ii) the removal of the Government financial assistance and protection has left the Coal India Ltd. of its own and asked to stand on their own, earn and survive or perish as the Government is no longer interested to shoulder the non-productive and non-profitable organisations. This has added more constrain to the existence of Coal India Ltd. which is experiencing acute hardship and struggling for survival.
The scenario is not different in respect of NorthEastern Coalfields (NEC), a production unit and directly under the control of Coal India Ltd. Although NEC has certain inherent problems unlike in any other coalfields like shrinking markets, mining conditions, etc. the unit is experiencing a downward trend and financial hardship. It was also not expected from these coalfields to experience such a lean phase particularly after nationalisation comparing the performance of Assam Railways and Trading Company (AR&TC). This is inspite of 865 million tonnes of unique and high quality of coal reserves with 4560 strong manpower including professionals from different disciplines. Obviously expectation and contribution to the nation development is understandable with such a potential of coal reserves and work force. Keeping the external force as an unavoidable factor, which is difficult but not impossible to tackle, there is general impression in the public that the employees commitment to work is being eroded, human resources have not been properly used, the work culture is deteriorated due to internal and external factors, the rate of absenteeism is alarming both authorised and unauthorised, leading to ineffective work performance, deterioration of discipline, low moral and less managerial contribution. As a result the output cost per ton and the wages and salary cost have been increasing, which is not expected and desirable. It is reflected on productivity, production and profit generation. In short, human factors have brought mining operation in Assam a losing preposition. Hence, the crux of the problem apparently is more of human rather than technical and financial management.

It is the age of productive and gainful employment as the sizeable percentage of cost of production goes as waste by way of salary and wages towards non-productive labour force. The drainage of public money should be a matter of concern. There is benefit of doubt about the fulfillment of the confidence the nation and the people of India have reposed on the organisation in the wake of nationalisation.
of private coalmines. This has put a question in the existence of this unit, which needs justification. The tendency of blaming the other factors rather than human side may no longer justify and hold true as the human resources, as a prime mover play a crucial role in the success or failure in the performance of the organisation and needs to be taken into account in such actual situation. Hence, it needs to analyse, identify and study the ground reality of the problem, which continues to contradict between the expectation and performance of its workforce on the defect appeared to be more visible. But the paucity of research and as also no such research work has been done so far on North-Eastern Coalfields, particularly human side of the organisation has made all the more justify the need for the present study which needs for bringing about changes in the existing human resources management providing such restriction and protection.

The present study attempts to have a primarily descriptive and analytical research of the different functions or states of the human resources of North-Eastern Coalfields and is to recognise some problems, define it and formulate the alternative source of actions and selecting the most promising course of action.

2.1.2. Objectives of the Study

The main objectives of the proposed study are to examine the human resources of NorthEastern Coalfields. It attempts to study, analyse and find out how efficiently and effectively the functions of human resources are functioning in fulfilling the overall Human Resource Policy and objective of the organisation and stress to harvest the best out of the human resources available. Otherwise, what are the other reasons, which call for corrective measures or modification of human resources management functions. The main objectives of this study are confined to the following issues: -
(i) To study the earlier development of labour force with its historical development of coal industry and importance of coal,

(ii) To study the concept of human resource management in the present management context.

(iii) To analyse the human resource policies and practices of the organisation.

(iv) To study the salary and wages administration of the employees,

(v) To study the union and management relationship,

(vi) To analyse the working conditions and mine safety of the organisation,

(vii) To analyse the moral, motivation, job satisfaction, absenteeism, monotony etc. and

(viii) To study and discuss critically the findings and suggest for the efficient and effective utilisation for better tomorrow in the changing environment.

2.1.3. Scope Of the Study

The study covers only organised coal sector and mines under North Eastern Coalfields, Coal India Ltd., where the human resources are deployed and concentrated at present and engaged. The historical background is furnished since the inception of the erstwhile Assam Railways and Trading Company Ltd. (AR&TC) and upto the present scenario after the nationalisation. The enquiry does not include all the private, illegal and unorganised sector coal mines in the NorthEastern Region.

The present study is presented broadly consisting of ten chapters. They are given below:

(i) First Chapter covers the background of the study with emphasis on

(a) energy and its importance

(b) coal and its development

(c) coal industry: A historical perspective.

(d) profile and performance of NorthEastern Coalfields vis-a-vis Coal India Ltd.
(ii) Second chapter covers the design, research problem and need for study, objectives of the study, scope of the study, methodology, and significance of the study and limitations of the study.

(iii) Third chapter deals with review of literature and concept of Human Resources Management (HRM) as such in the present context and developed new model with observations.

(iv) Chapter four deals with Human Resources Policy and Practices

(v) Fifth chapter covers the salary and wages administration.

(vi) Chapter six deals with working condition and safety measures.

(vii) Chapter seven discusses union and management relation.

(viii) Chapter eight discusses attitude, moral, motivation, job satisfaction, absenteeism and monotony.

(ix) Statistical analysis of hypothesis are discussed in the ninth chapter and

(x) The tenth and last part deals about the sum up of the conclusions and suggestions.

2.1.4. The Hypothesis

The study attempts to verify the hypotheses:

1. NorthEastern Coalfields does not have sound human resource policies for proper tapping and utilisation of human resources.

2. The overall performance of NorthEastern Coalfields is not encouraging.

3. Increase in manpower and productivity leads to increase in production.

4. Increase in manshift does not increase production and productivity proportionately.

5. Implementation of well-formulated human resource policy is essential to safeguard harmonious industrial relations.

6. Increase in salary and wages improves the earning per manshift (EMS).
7. Increase in salary and wages leads to increase in coal production.

8. Increase in salary and wages has direct effect on the maximisation of profit.

9. Increase in salary and wages has no direct effect on the cost of production of coal.

10. Increase in salary and wages should increase productivity, i.e., output per man-shift (OMS).

11. Increase in production tends to increase the occurrence of accidents.

12. Increase in manpower and man-shift tends to increase frequency of accident.

13. Frequency of accidents and output per man-shift (OMS), i.e., productivity are closely related.

14. Controllable human factors are responsible to the occurrence of mine accidents.

15. Industrial relation in NorthEastern Coalfields is cordial and peaceful.

16. Multiplicity of trade union is a great loss to the company and employees.

17. The present workers participation system does not effectively encourage to have harmonious industrial relations.

18. Attendance bonus paid, as a part of wages, is not effective in checking and improving absenteeism.

19. Absenteeism affects the coal production whereas mandays loss does not affect the coal production.

20. Nationalisation of coal has not given security and benefit to the employees but the organisation is benefitted.

21. Training does not help in the prevention of mine accident.

22. Increase in expenditure on welfare facilities leads to increase productivity (OMS), production and earning per man-shift (EMS).
2.1.5. Methodology

Data Collection

The present study is based on both primary and secondary sources of data.

(i) Primary Data

The primary data are collected through the sample survey. The different tools and techniques of primary data collection are explained below:

(a) Questionnaire

The designing of an effective questionnaire for the study required testing the validity of the questionnaire. The pilot testing was done by a preliminary study observation and association of all the collieries and office and developed a draft questionnaire. It was discussed with the employees working in the opencast, underground, surface, office, trade union leaders and executives of the past and present.

Keeping into confidence the suggestions, comments and the researcher's exposure and experience by virtue of working in this particular coalfields for the last ten years led to the formulation and finalisation of the questionnaire, (Appendix X). The population or the universe is heterogeneous character. It is, therefore, classified into three homogenous groups or strata and the sample is drawn from each stratum at random in proportion of its size and followed satisfied sampling. Hence, purposive and stratified method of sampling was used for administering the questionnaire. It is classified under three homogenous heads and meant for - (i) Executive (comprising of the lowest level to highest level policy making executives), (ii) Non-executives (consist of skilled, semi-skilled and unskilled employees) and (iii) Trade Union Leaders (comprising of the past and present leaders).
The questionnaire in some specific questions are designed in such a way that the respondents of the three categories are asked the same questions in order to have a cross-checking approach and examining wherever it is necessary and relevant.

The questionnaire consists of a forwarding letter and was made accessible to the respondents. The questionnaires contain close-ended questions (Executives, Non-executives and Trade Union Leaders respectively).

Before starting the research work and administering the questionnaire the researcher took the permission of the management and granted vide No. NEC/CGM/94/ES/717 dated 13.6.1994 and also informed the office bearer of different trade union leaders. In orders to administer the questionnaire the detailed cross section of the employees and executives were examined from the Non-executive Information System (NEIS), service books and B-form and selected at random. In order to maintain quality of data for the introduction of questionnaire to the some lower category of non-executive at colliery level, staffs and school teachers from the collieries who can read, write and understand English and Hindi or Telugu or Nepali or Assamese or Bengali were selected, explained and discussed to assist in explaining and understanding the questions before
distribution of the questionnaire. They were explained and discussed the questionnaire. Hindi is the common language and spoken by the employees at the work place or otherwise. However, this was not required in respect of employees working in Simsang and Tura, Meghalay (highly qualified), Head office, Guwahati and Margherita, Assam as the employee are qualified and understand.

The reliability of the sample with allowable error (10% to 20% of the positive character) the size of the qualitative data is calculated by the following formula.

\[ n = \frac{4pq}{L^2} \]

Where \( n \) = require sample size
\( p \) = positive character
\( q \) = 1 - p and
\( L \) = allowable error

Optimum sizes of samples, percentage to total populations (Universe) of various categories of respondents are set out as below:

**TABLE 2.1.**

Sample Details of Respondents

<table>
<thead>
<tr>
<th>Details</th>
<th>Total Sample Units</th>
<th>Sample Units</th>
<th>Covered sample size</th>
<th>Actual Respondent</th>
<th>% of 5 to 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Executive</td>
<td>153</td>
<td>76</td>
<td>100</td>
<td>89</td>
<td>58.17</td>
</tr>
<tr>
<td>Non-Executive</td>
<td>4673</td>
<td>246</td>
<td>500</td>
<td>480</td>
<td>10.27</td>
</tr>
<tr>
<td>Trade Union Leader</td>
<td>30</td>
<td>14</td>
<td>25</td>
<td>14</td>
<td>46.67</td>
</tr>
</tbody>
</table>

The details of the respondents age profile, literacy rate, previous experience before joining CIL, and marital status are shown below:
(i) Age Profile of Respondents:

<table>
<thead>
<tr>
<th>Age</th>
<th>Non-executive</th>
<th>Executive</th>
<th>Trade Union Leader</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upto 25yrs</td>
<td>25(5.21%)</td>
<td>2(2.25%)</td>
<td></td>
<td>27</td>
</tr>
<tr>
<td>26-30yrs.</td>
<td>60(12.50%)</td>
<td>5(5.62%)</td>
<td></td>
<td>65</td>
</tr>
<tr>
<td>31-35yrs.</td>
<td>57(11.88%)</td>
<td>20(22.47%)</td>
<td>1(7.14%)</td>
<td>78</td>
</tr>
<tr>
<td>36-39yrs</td>
<td>92(19.17%)</td>
<td>15(16.85%)</td>
<td>1(7.14%)</td>
<td>108</td>
</tr>
<tr>
<td>40-45yrs.</td>
<td>86(17.92%)</td>
<td>20(22.47%)</td>
<td>7(50%)</td>
<td>113</td>
</tr>
<tr>
<td>46-50yrs.</td>
<td>67(13.96%)</td>
<td>13(14.61%)</td>
<td>3(21.4%)</td>
<td>83</td>
</tr>
<tr>
<td>51-55yrs.</td>
<td>46(9.58%)</td>
<td>5(5.62%)</td>
<td>1(7.14%)</td>
<td>52</td>
</tr>
<tr>
<td>Above 55yrs</td>
<td>47(9.79%)</td>
<td>9(10.11%)</td>
<td>1(7.14%)</td>
<td>57</td>
</tr>
<tr>
<td>Total</td>
<td>480(100%)</td>
<td>89(100%)</td>
<td>14(100%)</td>
<td>583</td>
</tr>
</tbody>
</table>

(ii) Literacy Rate:

<table>
<thead>
<tr>
<th>Details</th>
<th>Illiteracy Rate</th>
<th>Literacy Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(a) Non-executive</td>
<td>(b) Executive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Number</td>
<td>144</td>
<td>139</td>
<td>118</td>
</tr>
<tr>
<td>(percentage)</td>
<td>30.00%</td>
<td>41.37%</td>
<td>35.12%</td>
</tr>
</tbody>
</table>
Table 2.4: Previous Experience before Joining CIL

<table>
<thead>
<tr>
<th>Details</th>
<th>Non-executive</th>
<th>Executive</th>
<th>Trade Union Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience before joining CIL</td>
<td>1 (0.21%)</td>
<td>2 (2.25%)</td>
<td>-</td>
</tr>
<tr>
<td>No experience</td>
<td>479 (99.79%)</td>
<td>87 (97.75%)</td>
<td>14 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>480 (100%)</td>
<td>89 (100%)</td>
<td>14 (100%)</td>
</tr>
</tbody>
</table>

Table 2.5: Marital Status

<table>
<thead>
<tr>
<th>Detail</th>
<th>Non-executives</th>
<th>Executives</th>
<th>Trade Union Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>431 (89.61%)</td>
<td>76 (85.39%)</td>
<td>12 (85.71%)</td>
</tr>
<tr>
<td>Unmarried</td>
<td>40 (8.7%)</td>
<td>12 (13.48%)</td>
<td>2 (14.29%)</td>
</tr>
<tr>
<td>Widow/Widower</td>
<td>4 (0.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorcee/Other</td>
<td>4 (0.8%)</td>
<td>1 (1.12%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>480 (100%)</td>
<td>89 (100%)</td>
<td>14 (100%)</td>
</tr>
</tbody>
</table>

(b) Difficulties in Getting Filled up Questionnaires

The researcher faced some difficulties like any other researchers in getting back the filled up questionnaires such as reluctance, resistance and indifference of the respondents. However, this could come across to a large extent after explanation and convincing the respondents after persistent efforts. A negligible percentage of questions were due to the hectic working life style and some misplaced the questionnaires.
(c) Semistructured Interviews

In order to understand the development of trade union since the Assam Railways and Trading Company (AR&TC), and various aspects of human resources policy and practices, mining conditions, safety, treatment by the Europeans, the researcher had recorded semi-structured interviews with the trade union leaders of the past and present, the employees who had worked during pre and post nationalisation of coal mines but now retired.

The interviews gave an insight to the dynamics of trade union movement and other human aspects. Some of the respondents went out of their way to accommodate the interview at their house at Gauhati, Tinsukia and different places, inspite of their other pressing retirement demands and engagements. They were very keen, open and responded with great jeal, enthusiasm, sharp and clear in their memory, even though there was a sign of ageing and illness. However, the executives were reluctant to have a recorded interview but prefer questionnaires and responded remarkably. It was quite encouraging.

(d) Observation

The researcher had the opportunity to witness and interact with the trade union leaders, executives of past and present and meetings between trade union leaders and management, public criticism. This also helped in formulating the hypothesis of this study. This added to the knowledge of the dynamics and functioning of human resources management and supplements the finding of the study.

(ii) Secondary Data

The data are collected from the reliable sources such as various publications of Coal India Ltd., Government of India, ILO, office records including published Annual
(iii) Data Analysis and Statistical Tools

The various data collected from various sources are analysed systematically with the help of highly sensitive computer software (SPSS) to make interpretation and meaningful conclusion. The data are classified and tabulated with the help of the said software. The suitable tools of statistics are used wherever it is found necessary. The tools used in the present study are (i) Pearson’s Coefficient Correlation, (ii) Spearman’s Ranking Correlation (iii) Analysis of Variance Ratio Test (ANOVA), (iv) Chi-square Test and (v) Compound Growth Rate.

The results are presented with the help of tables, graphs and pictorial methods.

(iv) Reference Period

To facilitate in the trend analysis of various parameters the reference period is taken from 1973-74 to 1998-99.

(v) Limitations

The researcher faced the following limitations during the study

1. No detailed data is available to judge the impact of technology on the performance of the organisation and on the human resources performance.

2. The manpower reports maintained and submitted by different related departments vary negligibly. Hence, the study depends on report submitted, accepted and published by CIL, Calcutta.

3. The address and age of the employees are based on the date of birth as entered in the service book or B-form.

4. NEC does not maintain annual performance of each non-executive employee, but
assessed only at the time of promotion.

15. The awareness of the grass roots level employees of the organisation is low because of illiteracy and lack of exposure. Most of them either do not feel free or not concerned or reluctant to answer the questions posed to them, at least at the beginning.

16. The calculation of family income is not easy as most of them do not disclose it openly or otherwise do not maintain proper records as such. Hence, the chances of not providing exact income are high and did not considered.

17. The training records maintained are haphazard except at Vocational Training Institute of different collieries of mines.

Hence, it is evident that the present study suffers from various limitations particularly as the study is dealing with the most complex and unpredictable human beings. It is quiet impossible to achieve an absolute mathematical accuracy.