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 CHAPTER-1

 **DESIGN OF THE STUDY**

 **Design of the Study – Capital Budgeting**

1. **Introduction & objectives of the study**:

Capital expenditure is an outlay of cash for a project that is expected to produce a cash inflow over a period of time exceeding one year. Examples of projects include investments in property, plant, and equipment, research and development projects, large advertising campaigns, or any other project that requires a capital expenditure and generates a future cash flow.

Because capital expenditures can be very large and have a significant impact on the financial performance of the firm, great importance is placed on project selection. This process is called capital budgeting.

* 1. ***Capital budgeting – Definition:***

**Capital budgeting** (or investment appraisal) is the planning process used to determine whether a firm's long term [investments](http://en.wikipedia.org/wiki/Investment) such as new machinery, replacement machinery, new plants, new products, and research development projects are worth pursuing. It is budget for major [capital](http://en.wikipedia.org/wiki/Capital_%28economics%29), or investment, expenditures.

Many formal methods are used in capital budgeting, including the techniques such as

* [Accounting rate of return](http://en.wikipedia.org/wiki/Accounting_rate_of_return)
* [Net present value](http://en.wikipedia.org/wiki/Net_present_value)
* [Profitability index](http://en.wikipedia.org/wiki/Profitability_index)
* [Internal rate of return](http://en.wikipedia.org/wiki/Internal_rate_of_return)
* [Modified internal rate of return](http://en.wikipedia.org/wiki/Modified_internal_rate_of_return)
* [Equivalent annuity](http://en.wikipedia.org/wiki/Equivalent_Annual_Cost)

These methods use the incremental cash flows from each potential investment, or *project* Techniques based on accounting earnings and accounting rules are sometimes used - though economists consider this to be improper - such as the *accounting rate of return,* and "[return on investment](http://en.wikipedia.org/wiki/Return_on_investment)." Simplified and hybrid methods are used as well, such as [*payback period*](http://en.wikipedia.org/wiki/Payback_period) and *discounted payback period*.

1. **Accounting rate of return**:

Accounting rate of return, also known as the Average rate of return, or ARR is a financial ratio used in [capital budgeting](http://en.wikipedia.org/wiki/Capital_budgeting). The ratio does not take into account the concept of [time value of money](http://en.wikipedia.org/wiki/Time_value_of_money). ARR calculates the return, generated from net income of the proposed capital investment. The ARR is a percentage return. Say, if ARR = 7%, then it means that the project is expected to earn seven cents out each dollar invested. If the ARR is equal to or greater than the required rate of return, the project is acceptable. If it is less than the desired rate, it should be rejected. When comparing investments, the higher the ARR, the more attractive the investment.

**Basic formulae**

*

Where

1. **NET PRESENT VALUE:**

 In [finance](http://en.wikipedia.org/wiki/Finance), the net present value (NPV) or net present worth (NPW) of a [time series](http://en.wikipedia.org/wiki/Time_series) of [cash flows](http://en.wikipedia.org/wiki/Cash_flow), both incoming and outgoing, is defined as the sum of the [present values](http://en.wikipedia.org/wiki/Present_value) (PVs) of the individual cash flows. In the case when all future cash flows are incoming (such as coupons and principal of a bond) and the only outflow of cash is the purchase price, the NPV is simply the PV of future cash flows minus the purchase price (which is its own PV). NPV is a central tool in [discounted cash flow](http://en.wikipedia.org/wiki/Discounted_cash_flow) (DCF) analysis, and is a standard method for using the time value of money to appraise long-term projects. Used for [capital budgeting](http://en.wikipedia.org/wiki/Capital_budgeting), and widely throughout [economics](http://en.wikipedia.org/wiki/Economics), [finance](http://en.wikipedia.org/wiki/Finance), and [accounting](http://en.wikipedia.org/wiki/Accounting), it measures the excess or shortfall of cash flows, in present value terms, once financing charges are met.

The NPV of a sequence of cash flows takes as input the cash flows and a discount rate or discount curve and outputting a price; the converse process in DCF analysis - taking a sequence of cash flows and a price as input and inferring as output a discount rate (the discount rate which would yield the given price as NPV) - is called the [yield](http://en.wikipedia.org/wiki/Yield_%28finance%29), and is more widely used in bond trading.

**Formula:**

Each cash inflow/outflow is [discounted](http://en.wikipedia.org/wiki/Discounting) back to its present value (PV). Then they are summed. Therefore NPV is the sum of all terms,

where

*t* - The time of the cash flow

*i* - The [discount rate](http://en.wikipedia.org/wiki/Discount_rate) (the [rate of return](http://en.wikipedia.org/wiki/Rate_of_return) that could be earned on an investment in the financial markets with similar risk.)

*Rt* - the net cash flow (the amount of cash, inflow minus outflow) at time *t.* For educational purposes, *R*0 is commonly placed to the left of the sum to emphasize its role as (minus) the investment.

The result of this formula if multiplied with the Annual Net cash in-flows and reduced by Initial Cash outlay will be the present value but in case where the cash flows are not equal in amount then the previous formula will be used to determine the present value of each cash flow separately. Any cash flow within 12 months will not be discounted for NPV purpose.

1. **PROFITABILITY INDEX:**

Profitability index (PI), also known as profit investment ratio (PIR) and value investment ratio (VIR), is the ratio of investment to payoff of a proposed project. It is a useful tool for ranking projects because it allows you to quantify the amount of value created per unit of investment.

The ratio is calculated as follows:

*

Assuming that the [cash flow](http://en.wikipedia.org/wiki/Cash_flow) calculated does not include the investment made in the project, a profitability index of 1 indicates breakeven. Any value lower than one would indicate that the project's [PV](http://en.wikipedia.org/wiki/Present_value) is less than the initial investment. As the value of the profitability index increases, so does the financial attractiveness of the proposed project.

Rules for selection or rejection of a project:

* If PI > 1 then accept the project.
* If PI < 1 then reject the project.

For example, given:

* Investment = 40,000
* life of the Machine = 5 Years

 [CFAT](http://en.wikipedia.org/wiki/Cash_flow) Year CFAT

 1 18000

 2 12000

 3 10000

 4 9000

 5 6000

Calculate [Net present value](http://en.wikipedia.org/wiki/Net_present_value) at 10% and PI:

 Year CFAT PV@10% PV

 1 18000 0.909 16362

 2 12000 0.827 9924

 3 10000 0.752 7520

 4 9000 0.683 6147

 5 6000 0.621 3726

 Total present value 43679

 (-) Investment 40000

 NPV 3679

 PI = 43679 / 40000

 = 1.091

 = >1

 = Accept the project.

1. **INTERNAL RATE OF RETURN:**

 The internal rate of return (IRR) is a [rate of return](http://en.wikipedia.org/wiki/Rate_of_return) used in [capital budgeting](http://en.wikipedia.org/wiki/Capital_budgeting) to measure and compare the [profitability](http://en.wikipedia.org/wiki/Profit_%28economics%29) of [investments](http://en.wikipedia.org/wiki/Investment). It is also called the discounted cash flow rate of return (DCFROR) or simply the rate of return (ROR).In the context of savings and loans the IRR is also called the [effective interest rate](http://en.wikipedia.org/wiki/Effective_interest_rate). The term *internal* refers to the fact that its calculation does not incorporate environmental factors (e.g., the [interest rate](http://en.wikipedia.org/wiki/Interest_rate) or inflation).

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**Definition:**

Showing the position of the IRR on the graph of NPV(*r*) (*r* is labeled 'i' in the graph)

The internal rate of return on an investment or project is the "annualized effective compounded return rate" or discount rate that makes the net present value of all cash flows (both positive and negative) from a particular investment equal to zero.

In more specific terms, the IRR of an investment is the [interest rate](http://en.wikipedia.org/wiki/Interest_rate) at which the [net present value](http://en.wikipedia.org/wiki/Net_present_value) of costs (negative cash flows) of the investment equals the [net present value](http://en.wikipedia.org/wiki/Net_present_value) of the benefits (positive cash flows) of the investment.

Internal rates of return are commonly used to evaluate the desirability of investments or projects. The higher a project's internal rate of return, the more desirable it is to undertake the project. Assuming all other factors are equal among the various projects, the project with the highest IRR would probably be considered the best and undertaken first.

A firm (or individual) should, in theory, undertake all projects or investments available with IRRs that exceed the cost of capital. Investment may be limited by availability of funds to the firm and/or by the firm's capacity or ability to manage numerous projects.

**Uses:**

Important: Because the internal rate of return is a [rate](http://en.wikipedia.org/wiki/Rate_%28mathematics%29) quantity, it is an indicator of the efficiency, quality, or [yield](http://en.wikipedia.org/wiki/Yield_%28finance%29) of an investment. This is in contrast with the net present value, which is an indicator of the value or [magnitude](http://en.wikipedia.org/wiki/Magnitude_%28mathematics%29) of an investment.

An investment is considered acceptable if its internal rate of return is greater than an established [minimum acceptable rate of return](http://en.wikipedia.org/wiki/Minimum_acceptable_rate_of_return) or [cost of capital](http://en.wikipedia.org/wiki/Cost_of_capital). In a scenario where an investment is considered by a firm that has [equity holders](http://en.wikipedia.org/wiki/Equity_investment), this minimum rate is the [cost of capital](http://en.wikipedia.org/wiki/Cost_of_capital) of the investment (which may be determined by the risk-adjusted cost of capital of alternative investments). This ensures that the investment is supported by equity holders since, in general, an investment whose IRR exceeds its cost of capital adds [value](http://en.wikipedia.org/wiki/Value_%28economics%29) for the company (i.e., it is economically profitable).

**Formula:**

 Given a collection of pairs ([time](http://en.wikipedia.org/wiki/Time), [cash flow](http://en.wikipedia.org/wiki/Cash_flow)) involved in a project, the internal rate of return follows from the [net present value](http://en.wikipedia.org/wiki/Net_present_value) as a function of the [rate of return](http://en.wikipedia.org/wiki/Rate_of_return). A rate of return for which this function is zero is an internal rate of return.

Given the (period, cash flow) pairs (*n*, *Cn*) where *n* is a positive integer, the total number of periods *N*, and the net present value NPV, the internal rate of return is given by *r* in:

Note that the period is usually given in years, but the calculation may be made simpler if *r* is calculated using the period in which the majority of the problem is defined (e.g., using months if most of the cash flows occur at monthly intervals) and converted to a yearly period thereafter.

 Note that any fixed time can be used in place of the present (e.g.,the end of one interval of an [annuity](http://en.wikipedia.org/wiki/Annuity_%28finance_theory%29)); the value obtained is zero if and only if the NPV is zero.

In the case that the cash flows are [random variables](http://en.wikipedia.org/wiki/Random_variable), such as in the case of a [life annuity](http://en.wikipedia.org/wiki/Life_annuity), the [expected values](http://en.wikipedia.org/wiki/Expected_value) are put into the above formula.

Often, the value of *r* cannot be found analytically. In this case, [numerical methods](http://en.wikipedia.org/wiki/Numerical_analysis) or [graphical methods](http://en.wikipedia.org/wiki/Plot_%28graphics%29) must be used.

1. **MODIFIED INTERNAL RATE OF RETURN:**

 Modified internal rate of return (MIRR) is a [financial](http://en.wikipedia.org/wiki/Finance) measure of an [investment](http://en.wikipedia.org/wiki/Investment)'s attractiveness. It is used in [capital budgeting](http://en.wikipedia.org/wiki/Capital_budgeting) to rank alternative investments. As the name implies, MIRR is a modification of the internal rate of return (IRR) and as such aims to resolve some problems with the IRR.

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Problems with the IRR:

While there are several [problems with the IRR](http://en.wikipedia.org/wiki/Internal_rate_of_return#Problems_with_using_internal_rate_of_return), MIRR resolves two of them.

First, IRR assumes that interim positive cash flows are reinvested at the same rate of return as that of the project that generated them. This is usually an unrealistic scenario and a more likely situation is that the funds will be reinvested at a rate closer to the firm's cost of capital. The IRR therefore often gives an unduly optimistic picture of the projects under study. Generally for comparing projects more fairly, the [weighted average cost of capital](http://en.wikipedia.org/wiki/Weighted_average_cost_of_capital) should be used for reinvesting the interim cash flows.

Second, more than one IRR can be found for projects with alternating positive and negative cash flows, which leads to confusion and ambiguity. MIRR finds only one value.

## Calculation

## MIRR is calculated as follows:

Where *n* is the number of equal periods at the end of which the cash flows occur (not the number of cash flows), *PV* is [present value](http://en.wikipedia.org/wiki/Present_value) (at the beginning of the first period), *FV* is [future value](http://en.wikipedia.org/wiki/Future_value) (at the end of the last period).

The formula adds up the negative cash flows after discounting them to time zero, adds up the positive cash flows after factoring in the proceeds of reinvestment at the final period, then works out what rate of return would equate the discounted negative cash flows at time zero to the future value of the positive cash flows at the final time period.

[Spreadsheet applications](http://en.wikipedia.org/wiki/Spreadsheet), such as [Microsoft Excel](http://en.wikipedia.org/wiki/Microsoft_Excel), have inbuilt functions to calculate the MIRR. In Microsoft Excel this function is "=MIRR".

Example:

If an investment project is described by the sequence of cash flows:

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

 YEAR CASH FLOW

 0 -1000

 1 -4000

 2 5000

 3 2000

Then the IRR *r* is given by

* .

In this case, the answer is 25.48% (the other solutions to this equation are -593.16% and -132.32%, but they will not be considered meaningful IRRs).

To calculate the MIRR, we will assume a finance rate of 10% and a reinvestment rate of 12%. First, we calculate the present value of the negative cash flows (discounted at the finance rate):

.

Second, we calculate the future value of the positive cash flows (reinvested at the reinvestment rate):

 .

Third, we find the MIRR:

 .

 The calculated MIRR (17.91%) is significantly different from the IRR (25.48%).

**6) EQUIVALENT ANNUAL COST:**

 In finance the **equivalent annual cost** (EAC) is the cost per year of owning and operating an asset over its entire lifespan.

 EAC is often used as a decision making tool in [capital budgeting](http://en.wikipedia.org/wiki/Capital_budgeting) when comparing investment projects of unequal lifespan. For example if project A has an expected lifetime of 7 years, and project B has an expected lifetime of 11 years it would be improper to simply compare the net present values (NPVs) of the two projects, unless neither project could be repeated.

EAC is calculated by dividing the [NPV](http://en.wikipedia.org/wiki/Net_present_value) of a project by the *present value of an* [*annuity*](http://en.wikipedia.org/wiki/Annuity_%28finance_theory%29) factor. Equivalently, the NPV of the project may be multiplied by the *loan repayment factor*.

 EAC=

The use of the EAC method implies that the project will be replaced by an identical project.

#  Why we should opt for a Capital Budget?

Here are nine good reasons why India should switch to a Capital Budget instead of the usual one that focuses primarily on revenue-related issues:

* First, every economic entity has a capital budget, be it unstated and implicit (like a household or kirana shop) or stated and explicit like in the case of a company or an R&D lab.
* As the size and complexity of operations increase, it becomes all the more necessary for an economic entity to structure, implement and review a capital budget. A nation-state is the most evolved form of an economic entity, and therefore needs a capital budget. We in India certainly need one.
* Second, there seems to be an obsessive interest in a 'revenue' budget. The annual tamasha surrounding the end-February presentation of the Union Budget reinforces the feeling that our economic pundits, commentators and critics are not able to step out of this frame of reference and demand a 'capital budget'.
* While revenue deficit, fiscal deficit, FRBM et al are all very fine, surely as citizens, we have a right to know how much capital is being deployed in nation-building activities and how such capital is being raised.
* At a ridiculous level, but just to forcefully make the point, a perfectly balanced revenue budget may have zero funds deployed for long-term investment in the country's infrastructure. Something close to this may well have happened as is pointed out below.
* Third, a capital budget provides a full perspective. A lack of appreciation of the nation's capital needs may have derailed us. An obsession with the revenue books has led India up the path of minimum investment in the country's infrastructure with an abysmal figure of close to 3.5 per cent of the GDP for about three decades. Debate and discussion on a publicly declared capital budget may have averted this serious under-investment.
* Four, revenue and capital budgets are obviously inter-related just as a profit and loss account and balance sheet are. Surpluses and allocations from the revenue budget go towards capital investments. Similarly, the servicing of long-term capital features in the revenue budget. In a jugalbandhi, there is no music when one half is missing, forgotten or ignored.
* Five, a capital budget should be made understandable to the people. Just as the television-viewing public has over the years gained an appreciation of the nuances of the revenue budget (prices, inflation, deficits, taxes, allocations, subsidies and so on), the language of capital budgets must also be made simple to the public at large who are today tuned in far more to economic issues than ever before.

The following five questions need to be posed and then answered:

* How much capital formation does my country need?
* How much has been planned for?
* How much has actually been invested?
* How has it been financed?
* What choices have been made?

Simple Then let's get the answers in the form of a Union Capital Budget. Or do we have to wait till these questions are posed under the Right to Information Act?

* Six, the capital budget is intimately linked with infrastructure investments. If US$ 350 billion is the planned infrastructure outlay in the next five years (as endorsed by everyone from the prime minister downwards), then let us have a capital budget that shows the way; or candidly admit that we have yet to find the way.
* Recognizing reality through a capital budgeting process will indeed throw up some challenging issues. An ICOR (incremental capital output ratio) hovering around four would mean that for the 9 per cent growth envisaged for the 11th plan period, capital formation will have to be around 36 per cent.
* If the infrastructure sector is targeting around 8 per cent Gross Capital Formation in Infrastructure, roughly one-fourth of the nation's capital formation will be in infrastructure. It is this one-fourth that is closely linked to the provision of public goods and services, economic development and global competitiveness. It is also largely under the direct influence of central and state governments.
* The balance non-infrastructural elements of capital formation are largely in the private domain and not directly amendable to public accountability or the assessment of the government's performance. So, the link between a capital budget and nation-building is very strong.
* Seven, the frailty of investment-related statistics is worrisome. Nobody from the Planning Commission to the finance ministry to the PMO will deny that the existing statistical superstructure for accurately capturing capital and investment related "stock" data is woefully inadequate vis-à-vis systems in place for capturing "flow" data.
* While we are up to our eyeballs in statistics relating to industrial production, agricultural production, service sector output, mining, electricity production, export-import figures and so on, try asking for data relating to the capital invested in the last one year across the central government, state governments, PSUs, private sector, urban local bodies and rural infrastructure, and humming and hawing is all you would get.
* The ministry of statistics and programme implementation should get cracking on this huge challenge. Surely, the newly constituted National Statistical Commission that has taken charge under the Chairmanship of Professor Suresh Tendulkar can list 'capital investments' as one of its priority tasks.
* Eight, a capital budget will lead to a more informed debate. A good capital budgeting process would lead to far greater participation and consensus on key issues of nation-building. Should we be investing more in railways or a new generation of expressways? Should irrigation take precedence over rural roads? Should urban local bodies strive to invest more by quadrupling their income from property taxes and other revenue raising methods?  How is funding happening? Are we availing enough of overseas development assistance? Are short-term funds of public sector banks going towards long-term debt of infra-projects? Is there gross asset liability mismatch in the balance sheet of our nation...or is there likely to be.
* Nine, finally, can we please do away with the irrelevant colonial hangover of a Railway Budget Day in Parliament. It was in 1924 that, for the first time, railway finances were separated from the general finances of the government.
* Eighty-three years later, it seems more appropriate to have an Infrastructure Budget Day. The overall requirement of Indian infrastructure is five times the size of the railway's requirement. And an Infra-Budget Day is nothing more than presenting the Capital Budget of the nation.
* February is a good time for capital ideas for a Capital Budget!

***1.2 Criteria for capital budgeting decisions***

Potentially, there is a wide array of criteria for selecting projects. Some share holders may want the firm to select the projects that will show immediate surges in cash inflow, others may want to emphasize long-term growth with little importance on short term performance viewed in this way, it would be quite difficult to satisfy the differing interests of all the share holders. Fortunately, there is a solution.

The goal of the firm is to maximize present shareholders value. This goal implies that projects should be undertaken that result in a positive net present value, i.e., the present value of the expected cash inflow less (-) the present value of the required capital expenditures. Using net present values (NPV) as a measure, capital budgeting involves selecting those projects that increases the value of the firm because they have positive NPV. The timing and growth rate of the incoming cash flow is important only to the extent of its impact on NPV.

Using NPV as the criteria by which to select assumes efficient capital markets so that the firm has access to whatever capital is needed to pursue the positive NPV projects. In situations where this is not the case, there may be capital rationing and the capital budgeting process becomes more complex.

Note that it is not the responsibility of the firm to decide whether to please particular group(s) of shareholders who prefer longer or shorter term results. Once the firm has selected the projects to maximize its net present value(NPV), it is up to the individual shareholder to use the capital markets to borrow or lend in order to move the exact timing of their own cash inflows forward or backward. This idea is crucial in the principle – agent relationship that exists between shareholders and corporate managers. Even though each may have their own individual preferences, the common goal is that of maximizing the present value of the corporation.

While net present value is the rule that always maximizes share holder value, some firms use other criteria for their capital budgeting decisions, such as internal rate of return (IRR), Discounting cash flow (DCF) and payback period etc.

1.3 The importance of the capital budgeting in an industrial undertaking needs no emphasis. The present status is confined to the Singareni collieries company LTD (A Government company) to analyze how capital budgeting is managed in the organization, what are the practices adopted and its constraints.

***1.4 Objective of the study:***

* To study the capital budgeting management i.e., profitability analysis; sensitivity analysis; risk factor analysis; statement showing financial viability.
* To analyze the changes of the capital of the capital budgeting management.
* To evaluate the effectiveness of the capital budgeting- expenditure decisions in SCCL.

 Suitable suggestions to improve the Capital Budget Management

 ***1.5 Methodology****:*

**a.  *sources of data****:*

 Annual reports of the Singareni Collieries Company Limited published & printed financial statements of SCCL.

***b. Limitations of the study:***

1. The information provided is restricted to its period of reference.

 2. The period of study i.e., 2 months is not enough to conduct a detailed study of the project.

 CHAPTER-2

 **INDUSTRY PROFILE**

**Introduction to Coal Industry**

***2.1 Coal Mining in India:***

 India has a large history of commercial coal mining covering nearly 220 years starting from 1774 by M/s Sumner and Heatly of East India Company in Raniganj Coalfield along the Western bank of river Damodar. However, for about a century the growth of Indian coal mining remained sluggish for want of demand but the introduction of steam locomotives in 1853 gave a fill up to it. Within a short span, production rose to an annual average of 1 Million tonne (mt) and India could produce 6.12 mts. per year by 1900 and 18 mts per year by 1920. The production got a sudden boost from the First World War but went through a slump in the early thirties. The production reached a level of 29 mts by 1942 and 30 mts by 1946.

 With the advent of independence, the country embarked upon the 5-year development plans. At the beginning of the 1st plan, annual production went up to 33 mts. during the 1st Plan period itself, the need for increasing coal production efficiently by systematic and scientific development of the coal industry was being felt. Setting up of the National Coal Development Corporation (NCDC), a government of India Under taking in 1956 with the collieries owned by the railways as its nucleus was the first major step towards planned development of Indian Coal Industry. Along with the Singareni collieries Company Limited (SCCL) which was already in the operation since 1945 and which became a government company under the control of Government of Andhra Pradesh in 1956, India thus had two Government coal companies in the fifties. SCCL is now a joint undertaking of Government of Andhra Pradesh and Government of India sharing its equity in 51:49 ratios.

***2.2******Nationalization of Coal Mines:***

Right from its genesis, the commercial coal mining in modern times in India has been dictated by the needs of the domestic consumption. On account of the growing needs of the steel industry, a thrust had to be given on systematic exploitation of coking coal reserves in Jharia Coalfield. Adequate capital investment to meet the burgeoning energy owners. Unscientific mining practices adopted by some of them and poor working conditions of labor in some of the private coal mines became matters of concern for the Government. On account of these reasons, the Central Government took a decision to nationalize the private coal mines.

The nationalization was done in two phases, the first with the coking coal mines in 1971-1972 and then with the non-coking coal mines in 1973 which now is the piece of Central legislation determining the eligibility of coal mining in India.

In October, 1971, the Coking Coal Mines (Emergency Provision) Act, 1971 provided for taking over in public interest of the management of coking coal mines and coke oven plants pending nationalization.

This was followed by the Coking Coal Mines (Nationalization) Act, 1972 under which the coking coal mines and the coke oven plants other than those with the Tata Iron & Steel Company Limited and Indian Iron & Steel Company Limited, were nationalized on 1.5.972 and brought under the Bharat coking Coal Limited (BCCL), a new Central Government Undertaking. Another enactment, namely the Coal Mines (Taking over of Management) Act, 1973, extended the right of the Government of India to take over the management of the coking and non- coking coal mines in seven States including the coking coal mines taken over in 1971. This was followed by the Nationalization of all these mines on 1.5.1973 with the enactment of the coal mines (Nationalization) Act, 1973 which mow is the piece of Central Legislation determining the eligibility of coal mining in India.

The Government has recognized the need for new coal policy initiatives and for rationalization of the legal and regulatory frame work that would govern the future development of this industry. One of the key reforms is that the Government has allowed importing of coal to meet our requirements. Private sector is now allowed to participate in the extraction and marketing of coal.

The ultimate objective of some of the ongoing measures and others under consideration is to see that a competitive environment is created for the functioning of various entities in this industry. This would not only bring about gains in efficiency but also effect cost reduction, which would consequently ensure supply of coal on a lower prices. Competition would also have the desirable effect of bringing in new technology, for which there is an urgent and overdue need since the coal industry has suffered a prolonged period of stagnation in technological innovation.

In a developing country like India coal mining occupies a pivotal place. Coal is the basic input to many industries like iron and Railways. In addition to them, Cement Fertilizers, Paper, Chemical and thousand of medium and small- scale industries are among the main consumer of coal.

Despite the development of the alternative resources of fuel like Electricity, Petroleum and Solar energy, Coal continues to be the major fuel in most of the industries.

***2.3 Coal in the Energy Scenario:***

Coal dominates India’s energy source. It contributes 55% to the total production. Natural gas contributes 13% and natural oil contributes 17%. India’s coal reserve may last for about 230 years at the present Reserve to Production (R/P) ratio, whereas, world’s coal reserve is expected to last for 192 years.

In India coal reserves are found in Andhra Pradesh, Uttar Pradesh. West Bengal, Madhya Pradesh, Orissa, Jharkhand etc

***2.4 Coal resources and quality:***

According to the 2014 BP Statistical Energy Survey, India had coal reserves of 58600 million tones, 7.09% of the world total. The world’s largest coal reserve are held by the U.S.A, Russia, China, Australia, and India. In 2013-2014 India produced 532.062 MT of coal (CIL 431.266 MT; SCCL:50.425 MT and balance others). Indian coals are high in ash content (24-45%) but low in Sulphur (less than 1%) of the reserves, 15 are coking variety and the balance non-coking.

***2.5 Coal Production:***

Through a sustained programme of investment and greater thrust on application of modern technologies, it has been possible to raise the production of coal from al level of 70 Million Tonnes at the time of Nationalization (1970) to a production of 532.062 MT during 2013-14.

Most of the coal production in India comes from open cast mines which contribute over 88% of the total production (472.578 MT). underground mining currently accounts for around 12% of national output(59.484 MT). most of the production is achieved by conventional Board and Pillar mining methods.

Coal is the dominant energy resource in India, accounting for more than half of the country’s requirements. 70% of India’s coal production is used for power generation, with the remainder being used by heavy industry and public use. Domestic supplies satisfy most of India’s coal demand.

According to the 2008 BP Statistical Energy Survey, India’s coal consumption is 208 million tons of oil equivalents. Unfortunately most of India’s coal is characterized by high ash content, but has high other useful qualities such as low sulphur content (generally 0.5%), low iron content in ash, low refractory nature of ash, low chlorine content and low trace element concentration.

At present all private mines are allowed to operate only if they are producing coal to supply a specific industry (eg. Power station, industry)..

The only other major coal producer other than CIL, is the Singareni Collieries Company, which is located in Andhra Pradesh. Singareni has 36 underground and 14 open cast mines, and produced 50.425 million tons of coal in 2013-14.

***2.6 Organizational structure of the Coal Industry:***

Almost the entire sector is under state control, Coal India Limited., (CIL) a Government under taking, has seven coal producing subsidiaries and produce, 88% of the overall coal production. Singareni Collieries Company Limited., is a joint venture of Government of Andhra Pradesh and Government of India.

***2.7 Coal Consumption:***

The power industry is the single largest coal-consuming sector accounting for about 70% of overall consumption followed by steel sector (13%). The balance is being consumed in other industries such as cement, fertilizers, textile and chemical industries etc.

***2.8 Collaboration in Coal Sector****:*

Technical and financial assistance of erstwhile USSR, UK, Australia, Canada, Germany and France is given in developing the coal industry on continuous basis through joint working groups of the respective Governments and the Government of India. World Bank has also financed some projects in the coal sector.

***2.9 Reforms in Economy and Scope of Private Participation:***

The scope of private sector participation in coal mining was begun with amendment to the Coal Mines Nationalization Act in respect of existing developed mines and a cost sharing basis has been envisaged by CIL with foreign mining companies and mining equipment manufacturers in developing new mines.

Thirteen mining blocks with a potential for yielding 35 million tons per year have been offered for captive mining. Letters of intent have been issued for setting up of four coal washeries with at o total installed capacity of 21 million tons per year to private investors, including foreign investors under a BOO scheme of CIL. Global tenders have also been floated by Coal India to develop some existing mines in collaboration with foreign firms.

***2.10 Import of Coal:***

Imports of coking and non- coking coal have been increasing every over years. The bulk of imported coal is coking coal which is required by steel plants. The domestic coking coal production has not been able to keep place with the increase in demand from the steel sector. Import of lulling coal required for metallurgical purposes cannot be stopped since these are blended with indigenous coal to improve its quality.

***2.11******Captive consumption:***

Private sector companies engaged in production of Iron & Steel, Cement and Power generation have been permitted to take up coal mining for Captive consumption. The production of captive collieries viz., TISCO, IISCO and DBC are still small when compared with the productive Collieries.

***2.12 Coking and Non- Coking Coal****:*

India has limited reserves of coking coal as well as superior grades of non-coking coal. Superior grades are available at depth that can be mined only through underground working. As the mines make get older and deeper the geo-mining conditions in these mines make extraction of coal harduous, causing decline in production and not financially viable. Government envisages increasing productivity and quality in these mines by introduction of machine mining.

***2.13*** ***Coal India Limited:***

Coal India Limited, having head quarters at “Calcutta”, is the holding company with eight substations viz,

* Eastern Coalfields India Limited (ECIL) Sancharia, West Bengal.
* Bharat Coking Coal Limited (BCCL) Dhanbad, Bihar.
* Central Coal Field Limited (CCL) Ranchi, Bihar
* Northern Coal Fields Limited (NCL) Singrouli, Madhya Pradesh
* Western Coal Fields Limited (WCL) Nagpur, Maharashtra
* Mahanandi Coal Fields Limited (MCL) Sampabalpur, Orissa
* Central Mining Planning & Design Institute of India (CMPDIL) Ranchi, Bihar
* Eastern Coal Fields Limited (ECL) Sancoria, Asansol.

***2.14*** ***The Singareni Collieries Company Limited:***

The Singareni Collieries Company Limited (SCCL) is a Government coal mining company jointly owned by the Government of Andhra Pradesh and Government of India on a 51:49 equality basis.

The Singareni coal reserves stretch across 350 km of the Pranahita- Godavari Valley of Andhra Pradesh with a proven geological reserves aggregating to whopping 8791 million tones.

SCCL is currently operating 14 opencasts and 36 underground mines in 4 districts of Andhra Pradesh with manpower around 69043 (31.3.2014).

CHAPTER – 3

COMPNAY PROFILE

(The Singareni Collieries Company Limited)

Company Profile: **The Singareni Collieries Company Limited**

**3.** The growth of the company since inception up to 2007 can be classified in phases as under.

 ***3.1 1871-1927:***

 In the year 1871, Dr. King of the Geological Survey of India discovered coal near the village of Yellandu in Khammam district and accordingly one of the important coal seams bore his name (King Seam). The Hyderabad (Deccan) Company Limited incorporated in England acquired mining rights in 1886 at exploit coal found in Yellandu area. One mine was opened in 1889 at Yellandu and coal mining continued in this area till 1927. In the inaugural year (1889), 59.671 tonnes of coal was produced.

Large-scale expansion of coal mining SCCL was undertaken during the initial Five-Year plans. In 1960 the Govt. of India Started its participation in the equity of the company and also started extending loan assistance.

Thus, since March 1960 the company has been jointly owned by the Government of Andhra Pradesh and Govt. of India. The Company’s accredited valley coalfield, which is the only depository of coal in South India. Mining activities of SCCL are presently spread over four districts of Telangana Region of Andhra Pradesh viz. Adilabad, Karimnagar, Khammam and Warangal.

The studies of Geological Survey of India estimate as 22016 million of coal reserves in the Godavari valley coalfield. The inventory covers up to a depth of 1200 meters and it includes reserves proved, indicated as well as inferred.

The present Company was incorporated on 23rd December 1920 under the Hyderabad Companies Act as a public limited company with the name ‘The Singareni Collieries Company Limited’ (SCCL). It acquired all the assets and liabilities of the Hyderabad (Deccan) Co. Ltd. Best & Co., acted as Secretaries and Selling Agents.

***3.2 Initial expansion (1928-1960):***

 During this period SCCL commenced coal-mining operations in Bellampally and Kothagudem areas. Singareni Collieries grew from a production level of 0.07 m.t. in 1928 to 2049 m.t in 1960. The State of Hyderabad purchased majority shares of the Company in 1945. From 1945 to 1949, the Hyderabad Construction Co., Ltd., was acting as Managing Agent.

In 1947, the Government of India transferred its share capital to the newly constituted Mines Authority Limited (Coal India Limited). The manner of participation in the company financial assistance for its expansion by the state Government and the Central Government were agreed upon in the 4-Party agreement of 1947.

In 1949 this function was entrusted to industrial Trust Fund by the then Government of Hyderabad. The controlling interest of the Company devolved on the Government of Andhra Pradesh in 1956 pursuant to the reorganization of States. Thus, the SCCL became a Government Company under the Companies Act in 1956.

***3.3 Pre-Nationalization area (1961-73)***

The period witnessed a steep growth in coal production as the Government of India also participated in investment in SCCL from 1961. Coal –mining activities were extended to other areas like Mandamari and Ramagundam (1961) and Ramakrishnapuram (1963).

***3.4 post – nationalizations ear (1973-92)***

Large – scale expansion / modernization of mines was taken up during this period. A large number of mines were opened between 1973-1992. Open cast mining commenced in SCCL in 1975 with the opening of open-cast mine at Godavarikhani area. The central government decided to control its equity directly in SCCL. Accordingly agreements were concluded on 13th March 1977. The SCCL, The State government, the Central government and Coal India Limited were parties to the agreements. In 1974 the Government of India transferred its share capital to the Coal Mines Authority Limited.

***3.5 Liberalization era (1992-2007)***

Even though the country adopted economic reforms in the early 1990’s. it was not until 1996 that the coal industry has the first feel of liberalization through Deregulation of pricing and distribution of higher grades of coal. During this period the company witnessed a remarkable **turnaround** due to structural reforms initiated in 1997 with significant increase in production, productivity and profitability. SCCL has mined 275.70 Million Tons of coal from the Godavari valley field during the last 100 years.

***3.6 Financial assistance plan periods;***

The manner of extending financial assistance for expansion of SCCL by the Govt. of India during V plan period was agreed upon in the **four party Agreement** executed on 10th June 1974.

For financial and other assistance during VI, VII, VIII, IX & X Plan periods, separate agreements were executed on 31st March, 1985, 19th October 2013 and 11th June 2010 between the Government of India, the Government of Andhra Pradesh and SCCL.

***3.7 Mission of SCCL:***

* To retain strategic role of premier coal producing company in the country and excel in a competitive business environment.
* To strive for self-reliance by optimum utilization of existing resource and earn adequate returns of employed.
* To exploit the available mining blocks with maximum conservation and utmost safety by adopting suitable technologies and practices and constantly upgrading them against international benchmark.
* To supply reliable and qualitative coal in adequate in adequate quantities and strive to satisfy customers needs by constantly sharing their experience and customizing the product.
* To emerge as a model employer and maintain harmonious industrial relations within the legal and social frame work of the state.
* To emerge as a responsible company through good Corporate Governance by laying emphasis on protection of environment & ecology and with due regard for corporate social obligations.

***3.8 Production profile:***

SCCL occupies a vital position in the coal production of the country with 7.5% of India’s coal reserves and production of 10% of country’s annual coal production. Coal production from open cast mines in SCCL commenced and presently contributes to more than 60% of the total coal output of the company.

***3.9 Singareni at a Glance:***

No of mines 36 Undergrounds+14 opencast

Manpower 69043

Production 2013-14 Target: 50.4MT Actual: Rs 50.43 MT

Production 2012-13 Target: 43.56MT: Actual: 44.54MT

Output per manshift (Total) 2013-14 2.73 Tones

Major consumers Power, Cement and others

***3.10 Market Profile:***

SCCL has been endeavoring to meet the coal demand of entire South India. All the powerhouses located within the state of Andhra Pradesh get their coal supplies from Singareni Collieries. In addition, the requirements of coal of some of the Powerhouses located in Maharashtra and Karnataka are being fulfilled by Singareni Collieries Company Limited. About 2700 industrial units situated over the southern states in the Small-scale sector get their coal requirement from SCCL.

***3.11 Performance of SCCL at glance:***

 **2010-11 2011-12 2012-13 2013-14**

Production MT 37.71 40.60 44.44 50.42

Dispatches MT 37.48 41.79 44.40 49.27

Productivity – Output per

man shift (Tonnes)

Mines 2.39 2.63 3.01 3.36

Total 1.91 2.10 2.42 2.73

OB removal ibcm 1373.53 1407.07 1849.92 2470.49

Manpower 82224 75573 70586 69043

Profit Rs lakhs 6380 17617 13283 26801

***3.12 Land marks:***

1. Discovery of Coal 1871

2. Commencement of Mining Operation 1889

3. Introduction of Machine Mining 1948

4. Introduction of Incentive Scheme 1951

5. Introduction of Electric Lamps 1953

6. Introduction of Frame proof Mining machine 1954

7. Commencement of Open Cast Mining Projects 1975

8. Road Headers, side dump loaders, load haul dumpers 1981

9. Long wall Face 1983

10. Introduction of first 123/33 KVA Sub-station 1984

11. Introduction of Computers 1986

12. Introduction of walking dragline in opencast Mines 1986

13. Introduction of French Blasting Gallery Technology 1989

14. Introduction of Input crushing & conveying technology 1994

15. Introduction of Re-structuring capital base 1994

16. Re – structuring package 1998-99

17. Electronics for recognition of Trade Union 1998-99

18. All time record production of 29.556 million tones 1999-00

19. All time record production of 302 cores 1999-00

20. Introduction of Hi-tech information system 1999-00

21. Record profits of 400 cores 2002-03

***3.13 Awards***

Coal India productivity Award – 2006

Best CEO Award to **Sri R.H.Khwaja.IAS.** SCCL by **IIIE** 2007

Golden peacock environmental A ward for mining 2008

Coal India Productivity Organization Award 2009-10

TERI Award for Environmental Excellence 2011

***3.14 Financial results:***

***(a) Profit & Loss account for the year ended 31st March 2014***

|  |  |  |  |
| --- | --- | --- | --- |
| **PARTICULARS** | **SCHEDULE REFERENCE** | **2013-14** | **2012-13** |
| **INCOME** |  |  |  |
| Turn over of gross coal (Gross) | 1 | 782548.37 | 639608.57 |
| Less: Statutory levels |  | 95793.30 | 81620.76 |
| Less: transfer to development |  | 1371.52 | 7947.82 |
| Turnover for coal (Net) |  | 685383.55 | 550039.99 |
| Internal consumption of coal | 2 | 1273.10 | 1539.21 |
| Other income | 3 | 53755.04 | 47099.29 |
| Increase/ decrease in stock | 4 | 8243.40 | 114.41 |
| **Total** |  | **748655.09** | **598792.90** |
| **EXPENDITURE** |  |  |  |
| Employee’s Remuneration and other benefits | 5 | 253738.23 | 239961.71 |
| Consumption of stores & Spares | 6 | 152344.90 | 116347.39 |
| Power & fuel | 7 | 22642.55 | 22070.05 |
| Transportation charges | 8 | 15991.47 | 12066.79 |
| Repairs & Maintenance | 9 | 16230.17 | 16570.53 |
| Social amenities | 10 | 20355.92 | 15631.80 |
| Interest | 11 | 1211.39 | 2119.47 |
| Provision and write off  | 12 | 1735.07 | 2540.46 |
| Other Expenses | 13 | 106648.55 | 8063.74 |
| Contractual expenses | 14 | 87867.90 | 53170.66 |
| Depreciation | E1 | 30093.37 | 24919.64 |
| Voluntary retirement compensation |  | 3578.03 | 46129.90 |
| Overburden adjustment |  | (79.47) | 17740.06 |
| Provision for back filling |  | 99700.00 | .. |
| Less: cost allocated to internal job works | 15 | 7092.91 | 3371.23 |
| **Total** |  | **708983.17** | **573960.57** |
|  |  |  |  |
| Profit for the year before prior period adjustment & Taxation |  |  |  |
| Prior period adjustment(Net) | 16 | 478.45 | (160.83) |
| Provision for tax –current |  | 45806.24 | 32047.00 |
| * Deferred
 |  | (33374.34) | (20665.42) |
| Fringe benefit tax |  | .. | 328.19 |
| Income tax of earlier years |  | (39.27) | .. |
| Profit after taxation |  | **26801.14** | **13283.39** |
| Add: profit brought forward from previous year  |  | 14378.38 | 15150.50 |
| profit available for appropriations |  | **41179.52** | **28433.89** |

|  |  |  |  |
| --- | --- | --- | --- |
| **APPROPRIATIONS**Less: Transfer to general reserves |  | 10000.00 | 10000.00 |
| Less: Transfer to general reserve |  | 6932.79 | 3466.40 |
| Less: Corporate divided tax |  | 1151.45 | 589.11 |
| Balance carried to balance sheet |  | 23095.28 | 14378.38 |
| Basic and diluted earnings per share (Rs) |  | 1.55 | 0.77 |

***(b) Balance sheet as on 31st March 2014***

|  |  |  |
| --- | --- | --- |
| **PARTICULARS**  | **2013-14** | **2012-13** |
| **SOURCES OF FUNDS** |  |  |  |  |
| 1. share holders funds |  |  |  |  |
|  a. Share capital b. Reserves & Surplus |  | 173319.8189135.53 |  | 173319.8170418.63 |
| 2. Reserve for future overburden removal |  | 58864.04 |  | 41734.54 |
| 3. Secured loans |  | 46433.66 |  | 61882.06 |
| Total |  | **367753.04** |  | **347355.04** |
| **APPLICATION OF FUNDS** |  |  |  |  |
| 1. Fixed assets |  |  |  |  |
|  a. gross block | 625740.88 |  | 554197.07 |  |
|  Less: Depreciation net block | 297938.67 |  | 281753.07 |  |
|  b. capital works in progress |  | 327802.21 |  | 272443.96 |
| 2. Investments |  | 37452.69 |  | 34682.61 |
| 3. Deferred Tax Asset (Net)  |  | 1941.76 |  | 1942.01 |
| 4. Advance action for removal of over burden |  | 49174.26 |  | 32303.48 |
| 5. Current Assets, loans & Advances |  |  |  |  |
|  a. Current Assets |  |  |  |  |
|  i. Inventories  | 34831.46 |  | 26139.35 |  |
|  ii. Sundry debtors | 29925.89 |  | 26874.22 |  |
|  iii. Cash & Bank Balances | 156997.80 |  | 160651.66 |  |
|  iv. Other current Assets | 5188.46 | 5815.31 |  |  |
|  b. Loan & Advances | **113579.70** |  | **299628.73** |  |
|  **LESS** Current Liabilities & Provision |  |  |  |  |
|  a. Current liabilities  | 160273.61 |  | 192232.27 |  |
|  b. provision | 273218.77 |  | 112389.72 |  |
|  | 433491.77 |  | 304621.99 |  |
| Net Current Assets6. Miscellaneous Expenditure(to the extent not written off or adjusted) |  | (929668.46) |  | (4993.26) |
|  |  | **367753.46**  |  | **347355.04** |

***(c)Performance indicators*** at glance 2009-10 to 2013-14

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicators** | unit | **2013-14** | **2012-13** | **2011-12** | **2010-11** | **2009-10** |
| Production |   |   |   |   |   |   |
| a. Open Cast | Lakh tons | 384.56 | 324.59 | 279.58 | 258.31 | 234.27 |
| b. Under Ground | Lakh tons | 119.69 | 120.87 | 126.46 | 118.76 | 127.11 |
| c. Total | Lakh tons | 504.25 | 445.46 | 406.04 | 377.07 | 361.38 |
| Off take | Lakh tons | 493.68 | 445.21 | 419.5 | 376.29 | 354.47 |
| Stock of Coal | tons | 12.25 | 1.63 | 1.48 | 12.18 | 14.13 |
| Output per man shift | Nos | 2.73 | 2.42 | 2.1 | 1.91 | 1.74 |
| Man power | RS. Lakh | 69043 | 70586 | 75573 | 82224 | 86025 |
| Net sales | RS. Lakh | 685384 | 550040 | 449968 | 379055 | 362910 |
| Net profit before tax | RS. Lakh | 39672 | 24832 | 29012 | 11720 | 33249 |
| Accumulated Profit | RS. Lakh | 23095 | 14378 | 15151 | 11589 | 17642 |
| General Reserve | RS. Lakh | 66040 | 56040 | 46040 | 40000 | 30000 |
| Equity share capital | RS. Lakh | 173320 | 173320 | 173320 | 173320 | 173320 |
| Long term debit | RS. Lakh | 46434 | 5067 | 66334 | 66334 | 66334 |
| Net worth | RS. Lakh | 262455 | 243738 | 216258 | 211400 | 206392 |
| Capital Employed  | RS. Lakh | 272286 | 302133 | 302028 | 253942 | 217571 |
| Contribution Exchequer |   |   |   |   |   |   |
| State Government | RS. Lakh | 88622 | 79147 | 70164 | 58486 | 55818 |
| Central Government | RS. Lakh | 54051 | 39203 | 15139 | 20524 | 23226 |
| Earning per share | Rs | 1.55 | 0.77 | 1.02 | 0.37 | 1.06 |
| Debt equity share | Ratio | 0.27:1 | 0.31:1 | 0.38:1 | 0.38:2 | 0.38:3 |
| Capital turnover ratio | Times | 2.52 | 1.82 | 1.49 | 1.49 | 1.67 |
| Cost of sales to sales | % | 94.21 | 95.49 | 93.55 | 96.91 | 90.84 |
| Debtors as no of maonth sales | months | 0.46 | 0.51 | 0.37 | 0.53 | 0.38 |

**d) Cash flow statement for the year ended 31st march 2014.**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Particulars** | **2013-14** | **2012-13** |
| A | CASH FLOW FROM OPERATING ACTIVITIES |   |   |   |   |
|   | Profit Before Tax and Prior Period |   | 39671.6 |   | 24832.33 |
|   | Adjustment |   |   |   |   |
|   | Adjustment for |   |   |   |   |
|   | Depreciation | 30093.4 |   | 24919.64 |   |
|   | OBR Reserve | 17129.5 |   | 25952.16 |   |
|   | WVD of assets written off | 440 |   | 1591.09 |   |
|   | Provision written back | 819.56 |   | 2450.8 |   |
|   | interest income on investments | 85.03 |   | 85 |   |
|   | interest income on deposits and others | 15662 |   | 17433.28 |   |
|   | Interst expense | 1211.38 |   | 2119.47 |   |
|   | VRS expenditure | 3578.03 |   | 46129.9 |   |
|   | gain exchange variation | 561.91 |   | 0.58 |   |
|   | Loss exchange variation |   |   | 741.56 |   |
|   | prior period adjustment | 503.12 |   | 277.45 |   |
|   | Operating profit before working capital charges |   | 36459.7776131.69 |   | 86108.31110940.64 |
|   | Adjustment towards changes in : |   |   |   |   |
|   | Inventories | 8692.11 |   | 2161.59 |   |
|   | Sundry Debtors | 3051.67 |   | 10340.29 |   |
|   | Other current assets | 626.85 |   | 3030.53 |   |
|   | Loans and advances (Excl: Advance Tax & TDS | 1618.85 |   | 8869.71 |   |
|   | Current liabilities | 32216.3 |   | 32865.16 |   |
|   | Provisions for gratuity, leave encashment& superannuation benefit | 17414.2 |   | 14856.96 |   |
|   | provisions for back filling | 99700 |   |   |   |
|   | Tax paid including TDS | 41131.6 |   | 32896.85 |   |
|   | FBT paid |   |   | 328.19 |   |
|   | Overburden advance action | 16870.8 |   | 8272.82 |   |
|   | Cash flow before extra ordinary items |   | 17397.50937529.19 |   | 438.3511050.27 |
|   | VRS payment |   | 3578.03 |   | 27877.29 |
|   | Net Cash flow from operating activities |   | 89951.2 |   | 82624.98 |
|   |   |   |   |   |   |
| B | CASH FLOW FROM INVESTING ACTIVITIES |   |   |   |   |
|   | Increase in fixed assets( including work in progress) | 88637 |   | 63933.41 |   |
|   | Sale of Investments | 0.25 |   |   |   |
|   | Interest income | 85.03 |   | 85 |   |
|   | cash flow from investing activities(B) |   | 88551.7 |   | 63848.41 |
|   |   |   |   |   |   |
| C | CASH FLOW FROM FINANCING ACTIVITIES |   |   |   |   |
|   | Decrease in secured loans | 15448.4 |   | 24388.68 |   |
|   | Interest on Deposits and others | 15662 |   | 17433.28 |   |
|   | Interest expense including prior period interest | 1211.38 |   | 2119.47 |   |
|   | Dividend Paid | 3466.4 |   | 3466.4 |   |
|   | Corporate dividend Tax | 589.11 |   | 589.11 |   |
|   | Cash flow from financing activities© |   | 5053.28 |   | 13130.38 |
| D | Net increase in cash and cash equivalents (A+B+C) |   | 3653.86 |   | 5646.19 |
| E | cash & cash equivalent at the beginning of the year |   | 160652 |   | 155005.5 |
| F | cash &cash equivalent at the end of the year (D+E) |   | 156998 |   | 160651.7 |

**e) Financial Report (Rs in crores):s**

|  |  |  |
| --- | --- | --- |
| **Particulars** | **2013-14** | **2012-13** |
| Capital |   |   |
|  Authorised(1800000000 Equity shares of Rs 10 each) | 1800 | 1800 |
|  Issued,subscribed and paid up:1733198119 Equity shares of Rs 10 each fully paid (includes 632145 equity shares of Rs 10 each allotted as bonus shares by capitalisation of general and capital reserves) | 1733.2 | 1733.2 |
| General reserve  | 660.4 | 560.4 |
| Profit after tax | 268.01 | 132.83 |
| Dividend | 69.33 | 34.66 |

**(f)**

**Sources and application of funds in SCCL:**

* Equity capital From Government of India.
* Equity capital From Government of Andhra Pradesh
* Long – term borrowings from Government of India.
* Plighting back of funds by Internal Resources of Profit.
* Bilateral credit from Government of India
* Drawing funds temporarily from Commercial Banks such as State Bank of Hyderabad etc. to meet working capital

**(g) Cash Credit Account: (CCA)**

Secured by first charge in factor of the following participation banks ranking on present and future stocks of stores and spares and coal stock in all the divisions.

a. State bank of Hyderabad Limit Rs. 490 Lakhs

b. Indian Bank of Hyderabad Limit Rs. 150 Lakhs

c. Canara Bank Hyderabad Limit Rs. 90 Lakhs

d. State Bank of Partial, Hyderabad Limit Rs. 100 Lakhs

 **3.15 Consumer satisfaction:**

 To improve the customer satisfaction the company adopted selective mining in underground and opencast mines to improve the quality of dispatches.

Non-carbonaceous brands like clay were blasted separately and excluded form coal brought to surface, in some mines, picking arrangement for removing shale stone etc, were intensified at all sidpatch points.

Installation of electronic weighbridges in the place of mechanical weighbridges, joint sampling methods etc were also taken

Measures for improving quality of coal like fortnight planning of seam-wise production, spot analysis at dispatch points, selective mining, washing lower/inferior grade coal etc., were taken.

Washeries established at Manuguru and Ramagundam on BOO basis started functioning. Establishment of washeries on BOO basis at Khairagura and Ramakrishnapur is in progress.

**3.16 Target and off-take of coal :**

During the year 2009-10 off-take if coal was 49.37 million tones against the target of 44.50 million tones.

As per the New Coal Distribution Policy announced by the Ministry of Coal, Gol in 2008, customers drawing more than 4,200 tones per annum have to enter into FSA. 171 customers entered into FSAs with SCCL. Apart from them, 2power units, 55 cement units, 55 sponge iron units and 27 CPP customers have FSAs with SCCL. 92% of dispatches have been covered under FSAs and joint sampling protocols. The number of customers registered with SCCL has gone up from 6,469 in 208-09 to 6,850 in 2009-10.

**3.17 exploration activities:**

74057 million tonnes of reserves were proved during the year under review against 229 million tonnes proved in the previous year. Thus, the total proved reserves in Godavari Valley Coalfield have gone up from 9,384 MT at the end of previous year to 9,459 MT as on 31.03.2010. The coal extracted by the Company in the Godavari Valley Coalfield up to the year 2009-10 was about 931 MT.

**3.18 Welfare measures and Social Security Schemes:**

 Welfare and social security to the employees are given due attention and various welfare activities viz., housing & sanitation, educational, recreational, medical facilities with super specialty services and social security schemes that were in vogue are being continued. The overall housing satisfaction as on 31.3.10 was 75% as against 72% at the end of previous year.

The Singareni Collieries Education Society sponsored by the Company has been running 13 schools at various areas, women’s degree & junior college at kothagudem and one polytechnic college at srirampur.

Tale radiology services have been commenced at Main Hospital and radiology department is renovated. The cell constituted for monitoring diseases like hypertension, diabetes have conducted 22 counseling sessions.

Out of 36 underground mines man-riding systems are in operation in 29 mines and under erection in 3 mines. In 4 mines man-riding systems are not introduced since walking distance is less.

Employees are provided sports facilities & required infrastructure and also encouraged to participate in sports & games. Several events were conducted for sports & games which inter-alia include coal India inter Company weight lifting, power lifting, body building competitions and caroms tournament.

**3.19 Corporate Social Responsibility**

 As a responsible corporate citizen, the company is carrying out several CSR activities under a programme known as’ Surrounding Habitats Assistance Programme’(SHAPE) the objective of which is to improve the quality of life, living standards by making the surrounding areas as better living places. 88 mobile medical camps covering 294 villages conducted by the Company have benefitted 7,927 persons living in remote places by way of medical consultation and investigation and medicines have been supplied free of cost. Financial support was extended for establishment of Engineering College by JNTU at Manthani, Karimnagar district which starts from the academic year 2010-11. An amount of Rs.5 crores was donated to Andhra Pradesh Chief Minister’s Relief Fund for the exclusive purpose of construction of 2,500 houses and providing basic infrastructure for fold victims of Rajole Village in Mahaboobnagar district. An amount of Rs. 5 lakhs has been donated to National Foundation for communal harmony.

**3.20 Activities of Singareni Seva Samithi**

‘Singareni Seva Samithi’, a non – profit organization established by the Company in 1998 has helped to a great extent for socio-economic development of coal belt region. During the year under review the Samithi extended training to 662 candidates in various vocational courses in association with Khadi Gramina Mahila Vidyalaya. Training was also imparted for the Project Affected Persons in various vocational courses in addition to the measures taken under R&R scheme. 266 PAPs were trained in Agarbathi & Rexine bag making, Volvo vehicles & Motor car driving.68 candidates have established self employment units during the year under review. Out of 576 candidates trained for Army / Police recruitment rallies, 48 candidates were selected. In the Yoga & Meditation camps conducted throughout areas 300 persons have participated.

An expenditure of Rs. 183 crores was incurred on various social overheads during the year 2009-10 as against Rs.155 crores incurred in the previous year.

**3.21 Information Technology & Net Working:**

Enterprise Resource Planning (ERP) Package has been implemented and stabilized. Disaster system is being established.

First balance sheet under ERP regime was generated for the financial year 2008-09. Facility established in the Company to organize ‘web casting’ where web conference can be held from; multiple locations subscribing to annual license. RG-I, II & III, SRP and Mandamarri areas are inter-connected by wireless.

Video conference facilities are being extensively used for various review meetings. 2 important modules of hospital management system (OP registration & periodical medical examination) went on live during the year under report.

**3.22 Safety in mines:**

For the best efforts put in by the Management the number of fatal accidents and fatalities has been reduced.

Mines rescue services: During the year under report, 76 persons were imparted initial training in rescue and recovery works. Two mines rescue teams have participated in All India Mines Rescue

**3.23 Human Resource Development:**

The fundamental truth behind the success made by the company is its committed and dedicated human resources. For further improving the technical and managerial skills of employees and constantly upgrading their knowledge in relevant spheres, the management is sponsoring them to various training programs

The HRD dept., strives continuously for improving the competencies of all Singarenians so that the company can achieve the set goals and simultaneously enable the employees to lead healthy, peaceful, stress free and prosperous life.

The activities taken up by the department include in-house and external management development programmes, maintaining libraries with relevant books & journals, organizing study tours, yoga& meditation camps, sports, games and cultural events, publishing in –house journals and bulletins & implementation of effective system of performance management.

**3.24 Environment:**

SCCL is environmentally conscious, responsible and proactive. SCCL’s initiatives in protection of environment starts from the exploration stage itself where preferences are given for mining coal in non-forest areas thereby reducing pressure on forest areas.

SCCL is following triple point agenda for sustainable and development;

Excel in operations & technology

Excel in environment management

Respect to the social order

Pollution control measures like dust suppression at the source of generation at mines and units like coal handling plants, workshops etc., treatment of waste water, noise control and soil erosion control measures and being scrupulously followed.

GK OCP, Kothagudem has been awarded in recognition of practicing “cleaner production technologies and climate change mitigation measures” by AP Pollution Control Board on the occasion of World Environment Day celebrations on 5th June, 2009.

So far 16 Effluent Treatment plants are in operation for removal of oil and grease in workshops, 7 Sewage Treatment Plants are functioning at different areas. WWF has organized 2-day field workshop on 19th & 20th February, 2010 at Kothagudem for Singareni Collieries High School teachers to impart practical learning experience on environment education. Nature clubs are working in all schools of the Company with the association of WWF.

**Aforestation:**

During the year 2009-10 SCCL has developed block and avenue plantations covering an area of 551 Ha. and plantation 1,00,4696 numbers of seedlings were distributed for planting. In all 13, 35,902 numbers of seedlings were planted as against 4, 62,043 in the previous year.

**3.25 Research & Development:**

During the year under review R & D activities were taken up in UG mines viz., extraction of coal underneath dwellings and PWD road, design of rhombus pillars for introduction of SDL in steeply inclined seams, simultaneous extraction by BG method in 3 seam and LHDs in 4 seam in Vakilpalli mine, parting stability between wide stall panels in 2 seam and 3 seam in RK 1A incline, induced caving of hanging roof in Goaf and ventilation studies at RKNT; and in opencast projects viz., effect of dump on Godavari river and fold protection bund and slope stability etc. The activities benefited in expediting the new projects, improving safety, mine ventilation, production & productivity and health of workmen.

**S & T Projects:**

3S&T Projects with the assistance of Govt. of India are ongoing and are under implementation at PKOC, Manuguru and Anna University for predicting slope failures using micro seismic technology. Investigation of capability of over line strata for estimation of support capacity by CMRI, NIRM & ISM and stability of parting between coal pillar a working in level contiguous seams during depillaring by CMRI.

CHAPTER-4

**CAPITAL BUDGETING**

**CAPITAL BUDGETING**

**4.1 Concept of Capital Budgeting:**

 The term “capital budgeting” refers to long term planning for proposed capital outlays and their financing. Thus it includes both rising of long term funds as well as their utilization. It may thus be defined as “the firms formal process for the acquisition and investment of capital” .it is the decision making process by which the firms evaluates the purchase of major fixed assets. It involves firm’s decision to invest its current funds for addition, disposition, modification, and replacement of long term or fixed assets. However it should be noted that investment in fixed assets is also to be taken as a capital budgeting decision. Ex: A new distribution system may call for both new warehouse and an additional investment in investors. An investment proposal of this nature must be taken as capital budgeting decision evaluated as a single package but not as an investment in a fixed asset (i.e. warehouse) and in a current asset (investment) separately.

Capital budgeting is a many sided activity. It includes searching for DE 1:1 kind of more profitable investment proposals, investment engineering and marketing consideration to predict the consequence of accepting the investment and making economic analysis to determine the profit of each investment proposal.

* Its basic feature can be summarized as follows:
* It has potentially of making large anticipated profits.
* It involves a high degree of risk
* It involves a relatively long-term period between the initial outlay and the anticipated return..

On the basis of the above discussions it can be concluded that capital budgeting consists in planning the development of available capital for the purpose of maximizing the long term profitability of the firm.

**4.2 The capital budget evaluation process:**

Many companies follow a carefully prescribed process in capital budgeting. The process usually includes the following steps:

Project proposals are requested from department’s plants and authorize capital budgeting. Capital expenditure is an outlay of cash for a project that is expected to produce a cash flow over a period of time exceeding one year. Ex: Investments in property, plant, and equipment, research and development projects, large advertising company, or any other project that requires a capital expenditure and generates a future cash flow. Because capital expenditures can be very large and have a significant impact on the financial performance of the firm, great importance is placed on project selection. This process is capital budgeting.

**4.3 Criteria for capital budgeting decisions:**

Potentially there is a wide array of criteria for selecting projects. Some shareholders may want the firm to select project that will show immediate surge in cash inflow, others may like to get long term growth with little importance on short-term performance.

Viewed in this way, it would be quite difficult to satisfy the differing interests of all the shareholders. Fortunately, there is a solution. The goal of the firm is to maximize present shareholder value. This goal implies that projects should be undertaken that result in a positive net present value of the required capital expenditure.

Using Net Present Value (NPV) as a measure, capital budgeting involves selecting those projects that increase the value of the firm because they have a positive NPV. The timing and growth rate of the incoming cash flow is important only to the extent of this on NPV.

Using Net Present Value (NPV) as the criterion by which to select projects assumes efficient capital markets so that the film has access to whatever capital is needed to pursue the positive NPV projects. In situation where this is not the case, there may be capital budgeting process becomes more complex. Note that it is not the responsibility of the firm to decide whether to please particular groups of share holders who prefer longer or shorter term results.

Once the firm has selected the projects to maximize its net present value, it is up to the individual shareholders to use capital markets to borrow or lend in order to move the exact timing of their own cash inflows forward or backward. This idea is crucial in the principal-agent relationship that exists may have their own individual preference. The common goal is that of maximizing the present value of the corporation.

**4.4 Objectives of a capital budgeting**

* It determines the capital projects which can be started during the budget after taking into account their urgency and the expected rate of return on each project.
* It estimates the expenditure that would have to be incurred on capital projects approved by the management together with the source from which the required funds would be maintained.
* It restricts the capital expenditure on projects within authorized limits.

**4.5 Importance of capital budgeting:**

Capital budgeting decisions are most crucial and crucial business architectures. Special care should be taken in making these decisions on account of the following reasons.

**4.6 Involvement of Heavy Funds:**

Capital budgeting decisions require large capital outlays. It is therefore absolutely necessary that the firm should carefully plan its investment programs so that it may get the finances of the right time and they are put to most profitable use. An opportune investment decision can give spectacular results and on the other hand an ill-advised and incorrect decision can jeopardize the survival of even the biggest firm.

**4.7 Long Term Implication:**

The long term feel the effect of capital budgeting decision over a long period and therefore they have a decisive influence on the rate and direction of the growth of the firm.

For example, if a company purchases a new plant for manufacture of a new product. The company commits itself to sizable amount of fixed cost in terms of indirect labor such as supervisory staff salary and indirect expenses such as rent etc. in case the product does not come out or came out but proves to be unprofitable, the company will have to bear the burden of fixed cost unless it decide to write off the investments completely as a wrong decision. Therefore it can prove disastrous for the long-term survival of the firm.

Similarly inadequate investment in assets would make it difficult for the firm to run the business in the long run just as an unwanted expansion

**4.8 Irreversible decisions:**

In most cases capital budgeting decisions are irreversible. This is because it is very difficult to find a market for the capital assets. The only alternatives will be to scrap the capital assets so purchased or sell than to incur a substantial loss in the event of the decision proved wrong.

The capital budgeting decision requires an assessment of future events, which are uncertain. It is really a difficult task to estimate the future events, the profitable benefits and costs accurately in quantitative terms because of economic, political, social and technological factors.

On account of these reasons capital expenditure decisions are the class of division, which is best, reserved for consideration by the highest level of management. In case some parts of it are delegated, a system of effective control by the top management has to be evolved.

It has already been said that the firm capital budgeting include both planning for proposed capital outlays and their financing. However in this chapter we are not dealing with selection of a particular project out of several alternative projects available. Thus our study is restricted to the process of deciding whether or not to commit resources to a project whose benefits costs is in consonance with the profit maximization.

**4.9 Capital Investment proposals:**

A firm may have several investment proposals for consideration. It may adopt some of them or all of them depending upon whether they are independent or dependent of maguey excusal.

**4.10 Capital budgeting – appraisal methods:**

In view of the significance of capital budgeting decision, it is a absolutely necessary that the method adopted for appraisal of capital investment proposal is a sound one. Ant appraisal method should provide the following:

* A basis of distinguishing between acceptable and non- acceptable.
* Ranking of project in order of their desirability.
* Choosing among which is applicable to any concealed project.
* Recognizing the fact that bigger benefits are preferable to smaller one and every benefit is preferable to longer once.

There are several methods for evaluating and ranking the capital investment proposal. In case of all these methods the main emphasis is to the return which will be derived on the capital invested in the project. In other words the basic approach is to compare the investment in the project with the benefits derived there from.

1. Payback period method.
2. Discounted payback method
3. Accounted Rate of Return Method
4. Net Present Value Method.
5. Internal rate of Return Method
6. Profitability Index Method
7. Modified Internal rate of Return Method

(a) **Payback period method:**

Payback period shows the expected number of years required to recover the original investment on a project. This is the oldest method of capital budgeting. This method has several flaws-

1. *It does not specify how much money is made by the project.*
2. *It does not take into account the cost of capital.*
3. *It completely ignores the time value of money*.

**(b) Discounted payback method:**

Discount payback period is the same as pay back method, but the expected cash inflows are discounted to the present at the cost of capital, which removes one of the deficiencies of the payback method.

**(c) Accounted Rate of Return Method:**

Accounting rate of return focuses not on cash inflows, but on project’s contribution to the firm’s net income. It is defined as average annual income divided by average investment, where average annual income is defined as average cash inflow minus average annual depreciation and average investment is given as cost plus salvage value divided by 2. Although it is the second lowest methods for capital budgeting, it ignores the time value of money, and is an accounting rather than a financial tool and as such may not really be used for financial decisions.

**(d) Net Present Value Method:**

The net present value of a project is defined as the summation of discounted cash inflows expected over the life of the project minus the initial investment. The return value may be positive or negative. If the rupee value is negative the project should be probably rejected. In this method, the return value expected for a project takes into account the time value of money, and the cost of capital. It is one of three most popular methods, but tends to be used less by real firms but more by academics.

**(e) Internal rate of Return Method:**

The internal rate of return is the discount rate at which the discounted expected cash inflows of a project equal to the initial cost may be used to select mutually exclusive projects.

**(f) Profitability Index Method:**

The profitability index is defined as the present value of projects expected cash inflows divided by the present value of all costs associated with the project.

**(g) Modified Internal rate of Return Method:**

The modified internal rate of return better reflects the profitability of a project. Unlike IRR, which assumes cash inflows from the project are reinvested at the IRR, whereas the modified IRR assumes that all cash flows are reinvested at the firm’s cost of capital.

A distinction should be made about the uses of these capital budgeting methods. If the indicators are used solely for an accept/reject decision then the IRR MIRR, NPV and PI methods can be adopted.

 **CHAPTER – 5**

**CAPITAL BUDGETING IN SCCL**

**CAPITAL BUDGETING IN SCCL**

**5.1 FEASIBILITY REPORT:**

The SCCL Board has power to sanction the projects below Rs 50 crores. The projects costing above Rs 50 crores are sanctioned by Government of India .

Feasibility report is a study of project to enable the management and Government to take investment decision. For preparation of project reports a detailed exploration works will be undertaken to take investment decision.

The methodology adopted for preparation of feasibility report differ from Project – to project and industry – to – industry. Feasibility report in coal sector is evolved over a period of time observing various guidelines and suggestions issued by the evaluating agencies viz; Ministry of coal, Planning commission, Investment board etc.

**5.2 Evaluation Of Feasibility Report**

The feasibility report outlines the type of technology like underground method, with details of extractable coal resources, life of the project etc. The feasibility report quantifies various physical input required viz. land, building, plant and machinery (input) with year wise phasing of requirement.

The physical parameters are converted into monetary terms evolving the financial viability of the projects. The various methods adopted are:

1. Operation cost Vs Realization
2. Discounted cash inflow methods like I.R.R and N.P.V. drawn and compared with required rate of return.
3. Payback period
4. Economic analysis duly indicating overall benefits to the nation.

Keeping in view the different stages of project cycle emphasis is made to analyze a new from the stage of projection i.e. preparation of the FR.

The structure and contents of the FR in SCCL have been evolved, as stated earlier over period of time taking due consideration of the guidelines of various Government agencies as well as the management of the SCCL.

**5.3 Annual Plans and 5 – Year Plan:**

The Government of India will set the production target of SCCL. The Annual plans and 5-year plans will be prepared and submitted to India.

These five year plan shows the total amount required during the plan period considering various priorities. According to production schedule, requirements of funds will be shown in each year.

Thus, annual plan will be drawn identifying all projects – prosperity, formulation, construction, and infrastructure development.

Annual plan will be prepared considering the following:

* Completed mines and existing mines.
* Ongoing projects.
* Projects under formulation waiting for approval.
* Projects yet to be formulated and others.

The total capital requirement for the 5-year plan and for the annual plans will be financed as follows:

* Government of Andhra Pradesh equity.
* Government of India equity.
* Bilateral credit.
* Government of India loan
* Suppliers credit
* Internal resources.

The total of the above resources is the total outlay.

**5.4 Pattern of Finance:**

The SCCL is tripartite Government Company. Government of Andhra Pradesh is 51% equity and Government of India’s 49%

**5.5 Clearances by SCCL Board of Directors:**

FR prepared is submitted for clearance of Technical committee of the Board. After clearance by the technical committee, the F.R is cleared in the Board of SCCL. The SCCL Board is delegated to approve projects up to Rs 50.00 crores. The FR is then submitted to Government of India after clearance from the Board.

**5.6 Project cost estimation:**

The capital requirement of the project is estimated under the following major heads – land; Plant & Machinery; Coal Handling Plant and railway siding, Vehicles, Furniture & fixtures, Cost of development, Environmental management plan, Interest during management plan, interest during construction, Capitalization of revenue expenditure. The details of capital estimation under of a above heads.

 **(a)Land:**

Based on the land requirement for mine area, laying of roads, auxiliary services, building township etc are estimated in physical terms. Later the land requirement is identified as to whether it is private land, Government land, and forest land etc., for ascertaining the acquisition cost. Taking into account the rate prevailing for different type of lands, the cost of acquisition of land is estimated. Based on the yearly requirement of land, the yearly capital projections are made for meeting the cost of land.

**(b) Prospecting and Boring:**

The cost of drilling in the blocks was already incurred and booked to Exploration capital account and the ideological information of the project is fixed up with the help of bore holes drilled. The cost incurred in connection with drilling of bore holes has to be capitalized.

**(c) Cost of Building:**

The capital requirements are estimated under the following sub groups:

1. Main plant structure
2. Residential building
3. Auxiliary structures.

Estimation of cost of production:

The estimation of year wise production is worked out keeping in view the level of output, manpower, power requirement and stores cost etc. various elements considered in the estimation of cost of production are detailed below:

1. Wages
2. Stores
3. Power
4. Generation administration expenses
5. Post project environmental monitoring.
6. Interest on working capital
7. Interest on loan
8. Depreciation
9. Treatment And compensatory aforestation
10. Environment base line data generation
11. Green belt development
12. Pollution monitoring equipment

**(e) Interest** (during construction):

The total capital requirements under the above heads are registered with yearly phasing keeping in view the prevailing debt equality ratio. The capital distributed into loan capital constructions period of the projects is worked out by adapting the prevailing interest rate @ 17% per annum.

**(f) Capitalized revenue expenditure:**

The revenue nature of expenditure such as wages, stores, power general overheads expected to incur till the project is put on to revenue account is estimated year wise. Necessary credit will be given for the production in value. During construction period the net revenue expenditure is capitalized and included as an element of capital head in the project cost.

Separate statements are prepared for estimating the cost under each head of expenditure. A summary of the capital cost of the project is prepared and included as annexure in feasibility report, bringing out the head wise total requirements with yearly phrasing for identifications of total project cost.

**(g) Vehicles:**

Keeping in view the size of the project and its location, the requirement of vehicles is estimated. The vehicle head normally covers jeeps, cars, transport trucks, explosive vans, fork lifters etc. the capital requirement for vehicles estimated taking into account the prevailing market prices. The phrasing of vehicles was also shown as per requirement.

**(h) Furniture & Fixtures:**

The furniture and fixtures required for the project are estimated and necessary provision is made under this head. Normally lump sum provisions are made for tables, chairs, filling racks, computers etc.

1. **Cost of development**:

Under this head necessary cost provisions are made for development activities such as mine development, roads and culverts, water supply and other amenities, research and development and cost of preparation of feasibility report.

**(j) Environmental Management Plan: (EMP**)

Under this head necessary cost provisions are made for providing rehabilitation to the displaced persons and for making compensation for pollution.

**(k) Plant and equipment**:

The plant & equipment is estimated separately under different groups for conventional method of mining and open cast mining.

The requirement of plant and machinery under the subgroups is arrived on the basis of mine capacity and its development plan. To meet the contingencies for the items which have not been considered in the subgroups, a suitable percentage of the total P & M cost is under contingencies.

With estimating cost of the various plant and equipment required for the mine the latest in – house process available based on the recent purchases orders paced for similar items, tenders and quotation received from the suppliers and CMPDIL price list are adopted for basic process in the project equipment.

**(j) Coal Handling Plant (CHP) & railway siding:**

Taking into account the capacity of the existing Coal handling Plant in the project area, additional requirement is assessed so as to provide additional capacity to the existing CHP or to provide separate CHP. Accordingly capital requirement is estimated and phasing is shown to match the production phasing of the project. Provision for adequate railway siding facilities will be made in the project estimate.

CHAPTER-6

KISTARAM PROJECT AREA

**Kistaram Open Cash Project, Kothagudem Area**

**6.1 Background:**

To meet the ever increasing demand of coal, the company has drawn an ambitious production plan to sustain the production from 40.60 MT during 2007-08 to 40.80 MT by the end of XI plan period i.e., 2011-12. However, due to increase in coal demand and negative coal balance of about 25.00 MT in SCCL, the projections of the remaining period of XI plan will be revised and the change in production projections of XI plan will be finalized during the Mid- Term appraisal of XI five Year plan. The coal demand can only be met by starting new mines and by reorganizing and reconstructing some of the existing mines to set up production with advanced technology.

SCCL is taking the following steps for increasing / maintaining the coal production:

1. Reconstruction of existing mines for optimum production by intermediate and high technology.
2. Opening of new mines in the adjoining / superjacent areas / seams for higher production.
3. Adopting opencast working wherever possible for high rate of production.
4. Conversion of shallow underground workings to opencast method for extraction of balance coal reserves.

 **Demand and supply of coal (MT)**

|  |
| --- |
| **XI PLAN** |
| **s.no** | **2009-2010** | **2010-2011** | **2011-2012** | **2012-2013** | **2013-2014** |
| **I Demand** |   |   |   |   |   |
| I. power(utilities) | 28.6 | 30.6 | 32.66 | 32.66 | 32.66 |
| ii.captive power | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 |
| iii.cements | 6.28 | 14.4 | 14.4 | 14.4 | 14.4 |
| iv.others including collieryconsumption | 7.57 | 12.75 | 16.45 | 16.85 | 16.85 |
| **Total** | **44.32** | **59.62** | **65.38** | **65.78** | **65.78** |
| **II Capacity available** |   |   |   |   |   |
| i.existing capacity | 15.095 | 14.975 | 14.775 | 14.42 | 10.92 |
| ii. Under implementation | 7.715 | 7.854 | 7.825 | 7.825 | 7.575 |
| **Total(II)** | **22.81** | **22.82** | **22.6** | **22.245** | **18.495** |
| **III Gap between demand and supply(I-II)** | **22.77** | **24.3** | **27.58** | **27.935** | **31.685** |
| **IV capacity creation proposals** |  |  |  |  |  |
| I. approved projects | 2.48 | 2.48 | 2.16 | 1.46 | 0.96 |
| II.projects under formulation(INCLUDING KISTARAM PROJECT) | 12.75 | 13.23 | 14.32 | 16.295 | 21.345 |
| **subtotal(IV)** | **15.23** | **15.71** | **16.48** | **17.755** | **22.305** |
| **V.total capacity(INCLUDING CAPACITY PROPOSALS)** | **38.04** | **38.53** | **39.08** | **40** | **40.8** |
| **overall gap (V-I)** | **-6.28** | **-21.09** | **-26.3** | **-25.78** | **-24.98** |

To meet the demand of coal, the exploration activities have been intensified in the deeper areas as well as in the hitherto unexplored potential coal bearing areas of Godavari valley coal field.

Detailed exploration has been conducted in the Venkatapuram block located near JVR OCP I Expansion project to prove the persistency of coal seams up to 191.20 depths. An opencast project, JVR OCP I expansion is in operation since 2005-06. JVR OCP I expansion is located about 2 km from the proposed property. The required infrastructure is already developed.

In view of availability of infrastructure and feasibility of the deposit for exploitation by opencast method, it is proposed to take up the project on priority to meet the demand of coal. The proposed opencast project is named as Kistaram OCP.

Detailed exploration in Kistaram OCP area was stared in August 2007 and a total of 5746.50 M have been drilled in 50 boreholes. Out of 50 boreholes 45 boreholes are falling in coal bearing area of 1.95 sq km resulting in a density of about 29 boreholes/sq km.

**6.2 Location of Kistaram OCP:**

Sathupalli – Chintalapadu coal belt represents the South eastern continuation of Kothagudem sub-basin covering an area of 11 sq.km. Kistaram OCP is located on the North Western side of JVR OCP I expansion project covering an area of 1.95 Sq.km. the project OCP forms part of Kothagudem Region of SCCL.

The block is well connected by a 63 KM asphalt road from Kothagudem Town in the northwest. Annapureddypalli – Kistaram PWD road is passing along the western side of Kistaram OCP. Aswaraopet Khammam state high way is passing about 500 m away from the project on the southern side. Bhadrachalam road railway station (Kothagudem) is the nearest railhead located in the northwest at about 63 KM on a branch line from Dornacal junction of Chennai – New Delhi main line of SC railway. The commercially important town Vijayawada is located 80 KM away in SSW direction. Khammam the district head quarter is located at a distance of 70 KM towards west of the project. Kistaram OCP is located about 5 KM from Sathupalli town located on the eastern side.

**6.3 Salient features of the project**:

* Kistaram opencast project is designed with an installed capacity of 2.00Mtpa.
* The total mineable coal reserves are 21.61 MT and OB to be removed is 129.58 Mcum with an average stripping ratio of 6.00 cum/t.
* The life of the project is 13 years including construction period.
* Total land required to be acquired for this project is 435.68 Ha. Out of the above, 285.44 Ha is forest land and 150.24 Ha is non forest land.
* The total man power 370 will be redeployed from other mines of SCCL after suitable training in a phased manner. Contract man power is not considered.
* The planned OMS is 20.73 tonnes at 100% performance level.

**6.5 Coal seams:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sseam | Parting |  Thickness / Parting (m)  |   |   |   |
|   |   |  Range |   |  usual |   |
| B4 |   | 0.35-0.87 |   | 0.53 |   |
|   | parting |   | 6.20-9.75 |   | 8 |
| B3 |   | 0.29-1.26 |   | 0.75 |   |
|   | parting |   | 0.94-4.44 |   | 1.5 |
| B2 |   | 0.88-2.56 |   | 1.58 |   |
|   | parting |   | 0.75-5.11 |   | 3 |
| B1 |   | 1.15-3.87 |   | 2.89 |   |
|   | parting |   | 21.88-28.75 |   | 25 |
| Index-2 |   | 0.50-3.2 |   | 1.47 |   |
|   | parting |   | 7.48-14.17 |   | 12 |
| Index-1 |   | 0.50-3.2 |   | 1.44 |   |
|   | parting |   | 1.08-10.50 |   | 7 |
| A |   | 4.10-8.72 |   | 6.44 |   |
|   | parting |   | 24.12-34.24 |   | 32 |
| LB1 |   | 0.25-1.40 |   | 0.87 |   |
|   | parting |   | 14.96-21.90 |   | 20 |
| LB2 |   | 0.30-1.94 |   | 0.88 |   |

The coal seams LB1 and LB2 are not considered for extraction since the coal seams not developed over major portion of the area and have very limited thickness.

|  |  |  |
| --- | --- | --- |
| **Seam** | **Net Geological reserves (mt)** | **Mineable reserves (mt)** |
| B4B3B2B1Index IIIndex IA seam | 0.270.571.643.112.062.5113.90 | 0.230.481.482.801.852.2512.51 |
| **TOTAL** | **24.06** | **21.61** |

**6.6 Coal reserves:**

 Total coal (21.61 MT) to be extracted and OB (129.58 Mcum) to be removed with a stripping ratio (6.00 cum/t)

Grading: The coal mined and marketed by SCCL is graded as for the notification of Gol (S.O. 13/E dt jan 1984) w.e.f. 1.1.1985 as show below:

|  |  |  |
| --- | --- | --- |
| **Grade** | **Specific gravity** | **UHV (K.Cal/Kg)** |
| BCDEFG | 1.451.501.551.601.671.75 | 5600-62004940-56004200-49403360-42002400-33601300-2400 |

Useful Heat Values (UHV) = 8900 – 138 (Ash%- + Moisture %)

Quality data available on 60% RH at 400 C is made use of in arriving at the grades of the seam. For the estimation of the reserves the respective specific gravity is considered.

The average UHV of the Kistaram project of 4330 K.Cal/Kg i.e. Grade D. A 5% dilution is made for OC operations. After considering 5% dilutions due to contamination, the coal from the project will be of E grade with an average UHV of 4113 K.Cal/Kg. The percentage of availability of D grade coal is 77.46% and F grade coal is 22.54%.

**6.7 Mining system**:

The geo mining characteristics of all the seams with their considerable thickness and the potentiality of thin seams make them ideally suited for exploitation by OC method. The OC mining system adopted in KISTARAM OC both for coal and overburden is shovel dumper combination.

**6.8 Cost of Overburden**:

The cost of OB removal considered for the feasibility report of Kistaram OC is estimated based on the recent contract awarded for similar work at GK OCP with suitable escalation (updated & equated). The average cost of outstanding OB removal is estimated at Rs 88.76 per cum.

**6.9 Equipment**:

|  |  |  |
| --- | --- | --- |
| S.NO | Description | No |
|   AB C | **coal**3 – 3.50 cum Diesel hydraulic Shovel35 T Rear Dumper150-16- mm High speed, steep gradient drills410 HP Dozer410 HP Dozer with rippers**Common**280 HP motor Grader20 T Crane8/10 T Crane1 Cum Diesel backhoe5-6 cum FELDiesel bowsersFire tenderBoom truckLine truckTipping truckTyre handler 28 KL water sprinklerMobile maintenance Van**Reclamation**280 HP motor Grader410 HP Dozer28 KL water SprinklerFarm truck | 21211111333211121121111111 |

**6.10 coal Handling Arrangement:**

A pit head CHP is proposed to be installed on the southern side of the quarry. Kistaram OC is planned to produce two different grades i.e., D and F through different streams of belt conveyors. These two grades are handled and dispatched separately by providing two pre – weight bin truck loading systems.

Rudrampur CHP is presently catering to the needs of JVR OCP I expansion project and some of the mines of Kothagudem area.

The sized coal from this project will be transported by tippers to Rudrampur CHP which is situated about 65 KM away from the project site.

The two grades of coal crushed by 500 TPH feeder breakers to 200 mm size will be transported by two spate 1X 125 HP 1000 mm wide belt conveyors up to pre – weigh bin truck loading bunkers.

A provision of Rs 1868.28 lakhs is made in the cost estimates for the above Pit Head CHP.

 **6.11 Rehabilitation and resettlement: (R & R policy):**

SCCL has been implementing the policy of the Government of AP known as PRR 2005 issued vide GO Ms no. 68 I & CAD Department dt 8.4.2005 and subsequent amendments issued to the said GO so far that would be issued from time to time.

**6.12 cost of production (Rs in tonne):**

|  |  |  |
| --- | --- | --- |
| performance level | As per FR May 2013. | As per updated FR August 2014. |
| At 100% | At 85% | At 100% | At 85% |
| A Operating cost |   |   |   |   |
| 1 Wages | 63.17 | 69.78 | 58.61 | 64.75 |
| 2 power | 6.95 | 7.1 | 8.43 | 8.61 |
| 3 stores | 68.5 | 69.74 | 68.3 | 69.58 |
| 4 OB removal cost by hiring HEMM. | 433.04 | 434.03 | 461.24 | 465.65 |
| 5 post-project Environmental monitoring. | 1.53 | 1.84 | 1.53 | 1.84 |
| 6 Reclamation cost. | 119.33 | 119.33 | 152.5 | 152.5 |
| 7 Mine closure cost. | 0 | 0 | 14.93 | 14.93 |
| 8 General Administration | 17.5 | 17.5 | 121.18 | 123.13 |
| 9 Interest on working capital | 16.24 | 16.5 | 21.61 | 21.96 |
|  **sub-Total(A)** | **726.27** | **735.81** | **908.33** | **922.94** |
| B Fixed cost |   |   |   |   |
| 1 Interest on loan. | 17.72 | 17.72 | 17.73 | 17.73 |
| 2 Depreciation. | 89.11 | 102.81 | 100.2 | 115.61 |
|  **sub-Total(B)** | **106.83** | **120.53** | **117.94** | **133.35** |
|  **Total cost of production.** | **833.1** | **856.34** | **1026.27** | **1056.29** |

The construction of the project is scheduled to be completed by the 4th year. The project is scheduled to yield rated production from 4th year onwards. All the revenue nature expenses, net of sales receipts are capitalized up to 3rd year and the projects is brought to revenue from the beginning of 4th year.

Thus, revenue expenditure capitalized (REC) is estimated at Rs 41.57 Cr.

**6.14 Tentative production schedule:**

|  |  |  |  |
| --- | --- | --- | --- |
| year | Coal(MT) | OB(m.cum) | SR(cum)/T |
| 1 |   |   |   |
| 2 | 0.5 | 15.51 | 31.02 |
| 3 | 1.5 | 12.78 | 8.52 |
| 4 | 2 | 11.5 | 5.75 |
| 5 | 2 | 10.58 | 5.29 |
| 6 | 2 | 10.68 | 5.34 |
| 7 | 2 | 12.25 | 6.13 |
| 8 | 2 | 12.08 | 6.04 |
| 9 | 2 | 12 | 6.01 |
| 10 | 2 | 12.26 | 6.13 |
| 11 | 2 | 12.15 | 6.08 |
| 12 | 2 | 5.45 | 2.73 |
| 13 | 1.61 | 2.34 | 1.45 |

 ****

**6.15 Capital Requirement:**

|  |  |  |  |
| --- | --- | --- | --- |
| S.No |  Particulars | As per May 2013 | As per updated FR August 2014 |
| 123456789 | LandCost of buildingProspecting & DrillingPlant & EquipmentFurniture & FixturesEnvironment related costDevelopment**Total capital outlay**Revenue expenditure capitalizedInterest during construction **Net capital requirement** | 25.3227.021.2340.090.9320.9525.39**140.92**28.0025.11**194.03** | 25.3229.551.2337.200.9320.9525.80**140.99**41.5725.17**207.73** |

Since the project attains rated capacity by 4th year, all revenue nature expenses are capitalized up to 3rd year and the project is brought to revenue account from the beginning of 4th year.

Keeping in view the availability of resources in SCCL, it is proposed to fund the project in a combination of loan and internal resources at a

**DEBT Equity Ratio of 1.806:1.**

It is proposed to borrow loan during 1st and 2nd years. Balance capital shall be met through internal resources.

Ministry of coal vide letter no.43011/5/2001 – CPAM dt 24.11.2004 has communicated the norms for bringing projects to revenue account for compliance in all future projects:

1. The periods of construction and capacity build up in a project have to be clearly defined in the Project Reports.
2. The periods of construction has to be defined to determine the commercial readiness of the project to yield production on a sustainable basis. Most of the basic infrastructure facilities like CHP, Railway siding, development activities, service buildings, water supply etc., required for implementing the project would need to be completed within the construction period is over.
3. Based on the above, the capitalization of revenue expenses / opening of revenue account will be decided. Revenue expenditure to be capitalized should be net of sales receipt during the construction period.
4. The initial capital of projects will be investment till the year of achieving the rated capacity of coal production and corresponding overburden removal in that year for opencast projects.

**6.13 Interest during construction:**

As per the policy interest payable during construction period is capitalized. The project construction period is 4 years. It is proposed to borrow loan during 1st and 2nd years, thus utilizing equity/ internal resources for the balance capital outlay. The project is brought to revenue from the beginning of 4th year. Interest payable up to 3rd year is thus capitalized. Repayment of loan along with interest capitalized is scheduled from 4th year onwards.

**6.14 Power supply:**

The total power requirement for this project is 2048 KVA as most of the HEMM for OB and coal extraction are diesel operated. The estimated annual power cost based on the two part tariff of APTRANSCO is Rs 142.41 lakh for the targeted level of production. The capital investment for electrical power supply, distribution etc., has been estimated at Rs 190.01 lakh.

**6.15 Development:**

Total capital requirement under various heads is estimated at Rs 25.80 Cr.

|  |  |  |
| --- | --- | --- |
|  S.NO |  Particulars |  Total capital(Rs Cr) |
| 12345ABCD | Power supply and other arrangements.Roads and culverts.Water supply and sewerage.Coal handling arrangement.sPilot schemes and scientific research.Geo- technical investigations.Hydro geological investigations.Other investigations FR preparation cost**Total**  | 0.535.041.1018.680.050.050.200.15**25.80** |

**6.16 Plan Provision**:

Considering that the construction of project would start during 2011-12, net capital requirement for the project is estimated at Rs 63.83 Cr during XI plan period. Capital required during XII plan period is estimated at Rs 141.96 Cr.

**6.19 Justification**:

* Coal deposit is amenable for extraction by opencast technology with a stripping ratio of 6.00 cum/t.
* Open cast method of work provides better recovery of coal with low gestation period.
* Opencast method is as safe method of mining compared to underground method.
* The development of coalfield will provide better social and economic life to the area. It will also give a boost to the industrial activity in the area and help in creating national wealth.
* In order to meet the ever increasing coal demand, it is essential to enhance the production. The project will contribute 2.00 MT of coal per annum.
* These seams, which are mot amenable for extraction by underground method can now be extracted by Opencast method.

*CHAPTER -7.*

*FINANCIAL VIABILITY ANALYSIS*

***FINANCIAL VIABILITY ANALYSIS***

***7.1*** *Total capital outlay of the project* is estimated at Rs140.99 Cr. The project attains rated capacity during 4th year. Considering the revenue expenditure during construction period of initial 3 years, net of sales, net capital requirement of the project is estimated at Rs 207.73 Cr at August 2010 price level.

Overburden removal is envisaged to be outsourced through-out the life of the project. Coal extraction is envisaged entirely with departmental HEMM.

**7.2 Capacity of the project and its schedule:**

The year-wise schedule of production and capital outlay are as shown below:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Year | PS | 1 | 2 | 3 | 4 | 5 | Total |
| Coal production(MT) |   | 0 | 0.5 | 1.5 | 2 | 2 |   |
| OB Removal (M.cum) |   | 0 | 15.51 | 12.78 | 11.5 | 10.58 |   |
| Capacity outlay (Rs cr) | 1.42 | 57.45 | 48.78 | 24.82 | 7.74 | 0.77 | 140.99 |

**7.3 OMS and EPM:**

Output per manshift (OMS) at 100%performance level at mine level: 20.73 Tonnes

Earnings per manshift(EPM): Rs1196.07

**7.4 Accounting analysis:**

**7.4.1 Cost of production**: (Rs per tonne):

|  |  |  |
| --- | --- | --- |
| performance level | As per FR May 2013. | As per updated FR August 2014. |
| At 100% | At 85% | At 100% | At 85% |
| A Operating cost |   |   |   |   |
| 1 Wages | 63.17 | 69.78 | 58.61 | 64.75 |
| 2 power | 6.95 | 7.1 | 8.43 | 8.61 |
| 3 stores | 68.5 | 69.74 | 68.3 | 69.58 |
| 4 OB removal cost by hiring HEMM. | 433.04 | 434.03 | 461.24 | 465.65 |
| 5 post-project Environmental monitoring. | 1.53 | 1.84 | 1.53 | 1.84 |
| 6 Reclamation cost. | 119.33 | 119.33 | 152.5 | 152.5 |
| 7 Mine closure cost. | 0 | 0 | 14.93 | 14.93 |
| 8 General Administration | 17.5 | 17.5 | 121.18 | 123.13 |
| 9 Interest on working capital | 16.24 | 16.5 | 21.61 | 21.96 |
|  **sub-Total(A)** | **726.27** | **735.81** | **908.33** | **922.94** |
| B Fixed cost |   |   |   |   |
| 1 Interest on loan. | 17.72 | 17.72 | 17.73 | 17.73 |
| 2 Depreciation. | 89.11 | 102.81 | 100.2 | 115.61 |
|  **sub-Total(B)** | **106.83** | **120.53** | **117.94** | **133.35** |
|  **Total cost of production.** | **833.1** | **856.34** | **1026.27** | **1056.29** |

1. **Wage cost**:

At the rated capacity of the project, the requirement of manpower is estimated as 344. The wage cost for manpower estimated considering NCWA VII & Executive pay revision and latest AICPI of 3896 points valid for the quarter ending August 2010. Average wage cost works out to Rs 58.61 per tone.

**b) Stores cost:**

 The store cost per tonne has been considered at Rs 68.30 which includes, spares, diesel, lubricants, tyres, POL of vehicles, explosives.

**c) Power cost:**

The total power units required at peak are 33.16 lack kwh and the total cost at peak works out to Rs1.73 Cr. Power charges applicable for the year 2010-11 are as per the notification of the APDISCOM. The average power cost per tone works out to Rs8.43

**d) OB removal cost** (outsourcing):

Entire OB shall be removed by outsourcing. Drilling & excavation, transportation and explosive cost are estimated based on the recent contract awarded for similar work at GK OCP with suitable adjustment for diesel price increase. This includes service tax and education cess @ 10.30% on excavation component. The Average cost of OB removal per tonne of works out to Rs 461.24.

|  |  |  |  |
| --- | --- | --- | --- |
| S.NO | Particulars | Rs/Cum | Rs/ Tonne of Coal |
|  1 | Excavation | 44.80 | 232.78 |
|  2 | Diesel | 34.87 | 181.21 |
|  3 | Explosive | 9.09 | 47.24 |
|  | Total | 8.76 | 461.24 |

**(e) Post-project Environmental monitoring costs:**

An amount of Rs 30.00 lack has been provided per annum as recurring cost towards post-project environmental monitoring activities from the year of production. The cost per tone from revenue production works out to Rs 1.53.

 **(f) Reclamation cost:**

Keeping in view the stipulations of ministry of Environment & Forests. The final void of the project is planned to be reclaimed with overburden up to a depth of 35m from surface. As this activity shall be undertaken after exhausting the coal reserves, a reclamation reserve is envisaged to be created so as to meet the reclaimed during 14th to 16th year. Considering the prevailing rates, the total reclamation cost works out to Rs 152.50 per tone of coal output at rated capacity.

 **(g) Mining closure cost:**

As per guidelines of ministry of coal (dt 27.8.2009) an amount of Rs 6.00 lakhs per hectare of land in open cost mines is made available towards the mine closure expenses. As per the methodology suggested in the guidelines, this provision is made in the project which works out to Rs 14.93 per tone of coal produced.

**(h) General Administration overheads:**

In order to cover various administrative costs at area and corporate level such as Establishment, personnel, finance, welfare, guesthouse, schools, transport, traveling allowances, etc., Board of SCCL directed (17.7.2010) to incorporate 15.83% of direct costs towards administrative overheads which are based on actual expenditure incurred by SCCL during 2009-10. This works out to Rs 121.18 per tonne at rated capacity.

**(i) Interest on working capital:**

The working capital for the operation of project is assumed at three months operating cost. The current short term loan interest rate of 9.75% is considered to work out the interest on working capital. Based on the above parameters, the interest on working capital per tonne of coal works out to Rs 21.61 at 100% performance level.

**(j) Interest on loan capita:l**

The capital requirement of the project would be met from internal resources and by raising loans from financial institutions. The total capital outlay of the project is accordingly segregate into debt and equity / internal resources considering the debt equity ratio of 1:1806.1. it is proposed to raise loans from financial institution to finance the project capital requirement. An amount of Rs. 90.74 cr is proposed to be raised as loan during 1st and 2nd years. Since the project is under capital, interest payable up to 3rd year is capitalized (at Rs. 25.17 Cr) and the original loan along with capitalized interest are proposed to be repaid from 4th year onwards. Accordingly, loan outstanding is Rs 115.92 Cr. Accordingly the interest is calculated on loan component at 12.00% per annum. The interest is calculated on principle that each loan amount will be repaid in 5 equal installments in the respect of loan drawls.

The interest is computed every year on the reduced outstanding loan. Average interest burden is Rs. 17.73 Cr per tonne.

**(k) Depreciation:**

The depreciation of the project is estimated taking into account the effective life of each of the capital items. The average depreciation cost per tonne works out to Rs. 100.20 at rated capacity.

**7.4.2 Average selling price**:

The project yields 77.46% of D grade and 22.54% of F grade coal throughout the life. The average sales price during the revenue period is Rs. 134.96 per tonne.

 **7.4.3 Profitability:**

Based on the current selling prices of D and F grades of coal from project, the profitability of the project at 100% and 85% performance levels is as given below:

|  |  |  |  |
| --- | --- | --- | --- |
| Sl .No | PARTICULARS | AS PER FR MAY 2013 | AS PER FR AUG2014 |
|  | Performance level | 100% | 85% | 100% | 85% |
|  | Production MT | 2.00 | 1.70 | 2.00 | 1.70 |
|  | Cost of production Rs/T | 833.10 | 856.34 | 1026.27 | 1056.29 |
|  | Avg sales realization Rs/T | 1152.39 | 1152.39 | 1346.96 | 1346.96 |
|  | Profit Rs/T | 319.29 | 296.05 | 320.69 | 290.67 |

At the prevailing sales price, the project yields a profit of Rs. 320.69 per tonne at 100% performance level and Rs. 290.67 per tonne at 85% performance level.

**7.4.4 Break-even analysis**:

Break-even output where there is no profit no loss has been computed for the project. The project breaks even at 55.28% of rated capacity by producing 11.06 LT.

**7.4.5 Financial IRR:**

Base on flow of cost, replacement and operating cost together with sales realization at the prevailing prices, internal rate of return for the project id estimated.

|  |  |  |
| --- | --- | --- |
|  PARTICULARS | AS PER FR MAY 2013 |  AS PER FR AUG 2014 |
|  Performance level | 100% | 85% | 100% | 85% |
|  Financial IRR | 30.61% | 25.80% | 29.64% | 24.33% |

s

 **Calculation of financial IRR at 100% performance level**

(Based date: August 2014)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | Output  (MT) | Capital cash outflow | Outflows operating cost outflow |  Total outflow | Cash inflow for sales  | Net cash flows |
| PS | 0.00 | 2 |  | 2 |  | -2 |
| 1 | 0.00 | 60 |  | 60 |  | -60 |
| 2 | 0.50 | 133 |  | 133 |  | -133 |
| 3 | 1.50 | 21 |  | -21 |  | 21 |
| 4 | 2.00 | 8 | 191 | 199 | 299 | 99 |
| 5 | 2.00 | 1 | 176 | 177 | 262 | 85 |
| 6 | 2.00 | 0 | 178 | 178 | 262 | 85 |
| 7 | 2.00 | 0 | 196 | 196 | 259 | 63 |
| 8 | 2.00 | 0 | 194 | 194 | 259 | 65 |
| 9 | 2.00 | 0 | 202 | 202 | 259 | 57 |
| 10 | 2.00 | 0 | 210 | 210 | 259 | 49 |
| 11 | 2.00 | 16 | 206 | 221 | 259 | 38 |
| 12 | 2.00 | 12 | 136 | 148 | 290 | 143 |
| 13 | 2.00 | 3 | 92 | 95 | 232 | 138 |
| RV | 1.61 | -33 |  | -33 |  | 33 |
|  | **21.61** | **180** | **1781** | **1961** | **2641** | **680** |

Financial IRR: 29.64%



 **Calculation of financial IRR at 85% performance level**

(Based date: August 2014)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | Output  (MT) | Capital cash outflow | Outflows operating cost outflow |  Total outflow | Cash inflow for sales  | Net cash flows |
| PS | 0.00 | 2 |  | 2 |  | -2 |
| 1 | 0.00 | 60 |  | 60 |  | -60 |
| 2 | 0.50 | 133 |  | 133 |  | -133 |
| 3 | 1.50 | -21 |  | -21 |  | 21 |
| 4 | 1.70 | 8 | 171 | 179 | 254 | 75 |
| 5 | 1.70 | 1 | 160 | 160 | 223 | 63 |
| 6 | 1.70 | 0 | 159 | 159 | 223 | 64 |
| 7 | 1.70 | 0 | 164 | 164 | 220 | 56 |
| 8 | 1.70 | 0 | 169 | 169 | 220 | 51 |
| 9 | 1.70 | 0 | 167 | 167 | 220 | 53 |
| 10 | 1.70 | 0 | 175 | 175 | 220 | 45 |
| 11 | 1.70 | 16 | 173 | 189 | 220 | 31 |
| 12 | 1.70 | 12 | 168 | 180 | 247 | 66 |
| 13 | 1.70 | 3 | 151 | 154 | 222 | 68 |
| 14 | 1.43 | 0 | 98 | 98 | 202 | 104 |
| 15 | 1.18 | 0 | 54 | 54 | 170 | 116 |
| RV |  | -33 |  | -26 |  | 26 |
|  | **20.11** | **187** | **1810** | **1997** | **2641** | **644** |

Financial IRR: 24.33%



**s**

**7.4.6 Modified financial IRR:**

Normally, the cash flows generated during the life of the project are assumed to be Reddy-invested at the rate if IRR that the project yields. The project yields high IRR with unrealistic returns on Reddy-investments. Keeping this in view, modified IRR is estimated considering the cost of capital for the company at 12% per annum. Based on this presumption, the modified IRR is worked out as follows.

|  |  |
| --- | --- |
| PARTICULARS | AS PER Updated FR AUG 2014 |
| Performance level | 100% | 85% |
| Modified Financial IRR | 29.64% | 24.33% |

 **Calculation of financial IRR at 100% performance level**

(Based date: August 2014)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | Output(MT) | capital cash outflow | outflows operating cost outflow | Total outflow | cash inflow for sales | Net cash flows. |
| PS | 0 | 2 |   | 2 |   | -2 |
| 1 | 0 | 60 |   | 60 |   | -60 |
| 2 | 0.5 | 133 |   | 133 |   | -133 |
| 3 | 1.5 | -21 |   | -21 |   | 21 |
| 4 | 2 | 8 | 191 | 199 | 299 | 99 |
| 5 | 2 | 1 | 176 | 177 | 262 | 85 |
| 6 | 2 | 0 | 178 | 178 | 262 | 85 |
| 7 | 2 | 0 | 196 | 196 | 259 | 63 |
| 8 | 2 | 0 | 194 | 194 | 259 | 65 |
| 9 | 2 | 0 | 202 | 202 | 259 | 57 |
| 10 | 2 | 0 | 210 | 210 | 259 | 49 |
| 11 | 2 | 16 | 206 | 221 | 259 | 38 |
| 12 | 2 | 12 | 136 | 148 | 290 | 143 |
| 13 | 2 | 3 | 92 | 95 | 232 | 138 |
| RV | 1.61 | -33 |   | -33 |   | 33 |
|  | **21.61** | **180** | **1781** | **1961** | **2641** | **680** |

 Estimated cost of capital 12.00%

 Estimated Re-investment rate 12.00%

 Modified financial 18.26%

 **Calculation of financial IRR at 85% performance level**

(Based date: August 2014)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | Output (MT) | Capital cash outflow | Outflows operating cost outflow | Total outflow | Cash inflow for sales  | Net cash flows |
|  PS  | 0.00 | 2 |  | 2 |  | -2 |
|  | 0.00 | 60 |  | 60 |  | -60 |
|  | 0.50 | 133 |  | 133 |  | -133 |
|  | 1.70 | -21 |  | -21 |  | 21 |
|  | 1.70 | 8 | 171 | 179 | 254 | 75 |
|  | 1.70 | 1 | 160 | 160 | 223 | 63 |
|  | 1.70 | 0 | 159 | 159 | 223 | 64 |
|  | 1.70 | 0 | 164 | 164 | 220 | 56 |
|  | 1.70 | 0 | 169 | 169 | 220 | 51 |
|  | 1.70 | 0 | 167 | 167 | 220 | 53 |
|  | 1.70 | 0 | 175 | 175 | 220 | 45 |
|  | 1.70 | 16 | 173 | 189 | 220 | 31 |
|  | 1.70 | 12 | 168 | 180 | 247 | 66 |
|  | 1.70 | 3 | 151 | 154 | 222 | 68 |
|  | 1.70 | 0 | 98 | 98 | 202 | 104 |
|  | 1.43 | 0 | 54 |  54 | 170 | 116 |
|  RV | 1.18 | -33 |  |  -33 |  | 26 |
|  | **20.11** | **187** | **1810** | **1997** | **2641** |  **644** |

Estimated cost of capital 12.00%

Estimated Re-investment rate 12.00%

Modified financial 16.37%

**7.4.7 Sensitivity analysis**

|  |  |  |
| --- | --- | --- |
| S.no | particulars | As per updated FR August 2014. |
|   | Financial IRR at | Modified IRR at |
| 100% | 85% | 100% | 85% |
| 1 | Base case(D Grade 77% + F Grade 23%) |   | 29.64% | 24.33% | 18.26% | 16.37% |
| 2 | Variation in Grade mix of coal. |   |   |   |   |   |
|   | (D Grade 50% + F Grade 50%) |   | 13.95% | 10.31% | 12.56% | 14.50% |
|   | (E Grade 100%) |   | 18.13% | 14.07% | 14.40% | 16.59% |
| 3 | Variation in OB Removal | RS/per cum |   |   |   |   |
|   | Base case OBR cost | 88.76 |   |   |   |   |
|   | 5% increase in OBR cost over base case | 93.2 | 27.86% | 2.70% | 17.71% | 20.01% |
|   | 10% increase in OBRcost over Base case | 97.64 | 26.20% | 21.21% | 17.19% | 19.44% |
|   | 15% increase in OBRcost over Base case | 102.08 | 24.49% | 19.67% | 16.64% | 18.84% |
|   | 20% increase in OBRcost over Base case | 106.51 | 22.71% | 18.08% | 16.06% | 18.20% |
| 4 | capital cost increase by 10% |   | 27.14% | 22.21% | 17.71% | 20.28% |
| 5 | capital cost +operating coal increase by 10% |   | 21.14% | 16.59% | 15.52% | 17.81% |

Sensitivity analysis is carried out considering variation in grade mix of coal. OB removal cost and capital cost. Even with 20% increase in OBR cost over the base case, the project is still viable. The following are the details.

**8. Financial viability:**

The working relating to financial viability have also been updated taking the various norms and costs prevailing in the third quarter.

The summary of the viability analysis in comparison with original FR is given below:

|  |  |  |  |
| --- | --- | --- | --- |
| Sl No | Item | As per FR May 2013 | As per FR May 2013 |
| Performance level | At 100% | At 85% | At 100% | At 85% |
|  | Debt Equity Ratio | 1.806:1 | 1.806:1 |
|  | Production(MTPA) | 2.00 | 1.70 | 2.00 | 1.70 |
|  | Cost of production(Rs/Tonne) |
|  A. | Operating cost |
|  | Wages | 63.17 | 69.78 | 58.61 | 64.75 |
|  | Power | 6.95 | 7.10 | 8.43 | 8.61 |
|  | Stores | 68.50 | 69.74 | 68.03 | 79.58 |
|  | OB removal cost by hiring HEMM | 433.04 | 434.03 | 461.24 | 465.65 |
|  | Post- project Environmental monitoring | 1.53 | 1.84 | 1.53 | 1.84 |
|  | Reclamation cost | 119.33 | 119.33 | 152.50 | 152.50 |
|  | Mine closure cost |  |  | 14.93 | 14.93 |
|  | General administration | 17.50 | 17.50 | 121.18 | 123.13 |
|  | Interest on working capital  | 16.24 | 16.50 | 21.61 | 21.96 |
|  | **Sub Total(A)** | **726.27** | **735.81** | **908.33** | **922.94** |
| B. | Fixed cost |
|  | Interest on loan | 17.72 | 17.72 | 17.73 | 17.73 |
|  | Depreciation | 89.11 | 102.81 | 100.20 | 115.61 |
|  | Sub – total (B) | 106.83 | 120.53 | 117.94 | 133.35 |
|  | Total cost of production | 833.10 | 856.34 | 1026.27 | 1056.29 |
|  | Average sales realization | 1152.39 | 1152.39 | 1346.96 | 1346.96 |
|  Iv | Profit / loss | 319.29 | 296.05 | 320.69 | 290.67 |
|  V | Break-even production(LT) | 9.96 |  | 11.06 |  |
|  VI | Break even capacity (as % of rated capacity) | 49.79% |  | 55.28% |  |
|  VII | Financial IRR | 30.61% | 25.80% | 29.64% | 24.33% |
|  VIII | Modified financial IRR |  |  | 18.26% | 16.37% |

The above analysis indicates the project yields positive IRR on equity at a debt equity of 1.806:1

**9. Conclusions:**

The project is forwarded for appraisal and sanction by government of India.

* The total capital outlay of the project is estimated at Rs. 140.99 Cr and the project attains rated capacity during 4th year. The net capital requirement of the project is estimated at Rs. 207.73 Cr. At August 2010 price level.
* The grade of the coal is D Grade 77% and F Grade 23%. Even with 20% increase in overburden removal cost over the base case the project is still viable.
* SCCL present debt-equity ratios are 1.806:1. The project yields an IRR of 29.64% at 100% performance level.
* The project yields a profit of Rs.320.69 per tonne at 100% performance level and RS. 290.67 Per tonne at 85% performance level.
* Other consideration for accepting this project:
* The demands for coal highly increased because of the gap between supply and demand especially in southern region
* Through open – cast technology extraction of coal becomes faster.
* Nearness of Vijayawada thermal power station and Kothagudem thermal power station with established roads and railway lines.
* This project helps SCCL to strength economically.

**10. Suggestions:**

Following few suggestions are drawn from the above mentioned conclusions:

* The company may pursue Government of India for budgetary support to generate internal resource to avoid any delays in sanction of new projects for wants of funds.
* The company may allocate more funds for repayment of loan installments to reduce the debt component and ensure regular credit obligations.
* To revise selling price of coal periodically whenever cost of inputs are increased as otherwise the company may suffer losses.
* While making cost estimate of the project, revenue expenditure to be spent to be clearly mentioned and it should not fluctuate.
* Delays in commissioning of projects to be minimized.

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