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Management Accountant

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IDEALS**THE INSTITUTE STANDS FOR**

□ to develop the Cost and Management Accountancy profession □ to develop the body of members and properly equip them for functions □ to ensure sound professional ethics □ to keep abreast of new developments.

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Energy intensity is a measure to show how efficiently energy is used in the economy. The energy intensity of India is over twice that of the matured economies, which are represented by the OECD (Organization of Economic Co-operation and Development) member countries. India currently ranks as the world's 11th biggest energy producer, accounting for about 2.4% of the world's total annual energy production. The energy sector in India has been receiving high priority in the planning process. On the eve of the 59th Independence Day (on 14 August 2005), the President of India emphasized that energy independence has to be the nation's first and highest priority, and India must be determined to achieve this within the next 25 years.

Increasing pressure of population and increasing use of energy in different sectors of the economy is an area of concern for India. Despite the global financial crisis, India's energy demand continues to rise. With a targeted GDP growth rate of 8% during the 10th Five Year plan, the energy demanded is expected to grow at 5.2%. Driven by the rising population, expanding economy and a pursuit for improved quality of life, the total primary energy consumption is expected to be about 412 MTOE (million tons oil equivalent) and 554 MTOE in the terminal years of 10th and 11th plans respectively. Energy requirement increased from 390 BkWh (billion kilowatt-hours) during 1995/96 to 1234 BkWh by the year 2010 and peak demand increased from 61GW (gigawatts) to 123 GW over the same period. The country experienced peak shortage of 18.56% of energy during 2009-10. Though growth in electricity consumption over the past decade has been slower than the GDP's growth, this increase could be used to high growth of the service sector and efficient use of electricity.

India now ranks third amongst the coal producing countries in the world, which are the other major components of energy. It accounts for 55% of the country's total energy supplies. Coal consumption is expected to increase to 315MT over the forecast period. In India, slightly less than 60% of the projected growth in coal consumption is attributed to the increased demand of coal in the electricity sector while the industrial sector accounts for most of the remaining increase. The use of coal for electricity generation in India is expected to increase by 2.2% per annum during 2002-25 thus requiring an additional 59,000 MW of coal fired capacity.

Oil demand in India is expected to increase by 3.5% per year during the same period. Some of the existing oil and gas fields were experiencing a decline in their production since they had already been in production for several years and were passed their plateau phase. Given this context, particularly the high import dependence, the New Exploration Licensing Policy (NELP) was envisaged in 1997 (and operationalized in 1999) by the MoPNG (Ministry of Petroleum & Natural Gas), as part of its Hydrocarbon Vision 2025, a landmark 25-year planning document. In addition to NELP, other efforts were made to address the need for achieving energy security such as; acquisition of oil and gas assets abroad, developing strategic storage facilities at identified locations, exploring alternate sources of Energy, including coal bed methane, gas hydrates, etc. and improving the recovery of oil and gas through Enhanced Oil Recovery (EOR) and Increased Oil Recovery (IOR). India's consumption for natural gas has risen faster than any other fuel in the recent years. International Energy Outlook 2010 projects India's gas consumption to grow at an average annual rate of 5.1% thereby reaching 2.8trillion cubic feet by 2025 with the share of electric power sector being of 71% by that time.

Generation of electricity from sun is a flagship Programme of the government. The solar market potential is huge, while only a fraction of the aggregate potential has so far been realized. India has one of the world's largest programmes in solar energy which includes R&D, demonstration and utilization, testing and standardization, industrial and promotional activities, processed material for solar cells, inverters, charge controllers etc. The solar sector is expected to see an increased participation and collaboration especially in the technology and manufacturing space.

Government of India expects investments of up to \$55 billion in the next five years in the renewable energy sector which would generate 325,000 MW of power. India, one of the leading producers of wind power, is encouraging investment in renewable energy to curb emissions and reduce dependence on oil as the country imports nearly three quarters of the oil it consumes. IREDA (Indian Renewable Energy Development Agency) established in 1987, promotes renewable energy and energy conservation projects which is administered by the ministry of Renewable energy (MNRE). Renewable sources account for about 60,000MW out of India's capacity of about 80,000 MW.

The total outlay on energy in the Tenth Five-year Plan has been projected to be 4.03 trillion rupees at 2001-02 prices, which is 26.7% of the total outlay. An increase of 84.2% is projected over the Ninth Five-year Plan in terms of the total plan outlay on energy sector. The Government of India in the mid-term review of the Tenth Plan recognized the fact that under-performance of the energy sector can be a major constraint in delivering a growth rate of 8% GDP during the plan period. It is, towards this end, the Government of India's plan allocation for power sector excluding Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) doubled from Rs. 2,230 crore (US\$ 483.06 million) in 2009-10 to Rs. 5,130 crore (US\$ 1.11 billion) in 2010-11. Government of India expects investments of up to \$55 billion in the next five years in the renewable energy sector, which would generate 325,000 MW of power.

Understanding energy cost is vital for creation of awareness and savings calculation. In many industries sufficient meters may not be available to measure all the energy used. In such cases, invoices for fuels and electricity will be useful. The annual company balance sheet is the other sources where fuel cost and power are given with production related information. Hence the need to conserve energy, particularly in industry and commerce is strongly felt as the energy cost takes up substantial share in the overall cost structure of the operation. It calls for Management of Energy and the objective of which is to achieve and maintain optimum energy procurement and utilization, by minimizing energy costs and wastes (without affecting production & quality) and to reduce environmental effects. Very concerted efforts in a planned manner are to be established for Energy Management. Strategy needs to be established based on the target of energy conservation and the role of the Cost & Management Accountants are huge in this aspect.

To achieve Economic Growth, we need to and have to use more and more energy. In terms of end use, energy demanded in the transport sector is expected to be particularly high as vehicle ownership, particularly of four wheel vehicles is expected to increase rapidly in the years ahead. The judicious and effective use of energy to maximize profits and minimize costs should be implemented so as to strengthen India's position in the World scenario. Cost & Management Accountants have already demonstrated their skill and expertise in this field. In future, it is hoped that their contribution will be increased further. Wishing you A Happy, Successful & Prosperous New Year, 2011

Despite the global financial crisis, India's energy demand continues to rise.



B. M. Sharma, President

"To accomplish great things, we must not only act, but also dream; not only plan, but also believe."

— Anatole France

Dear Professional Colleagues,

Happy new year 2011 to all of you!

May ICWAI achieve its long cherished goals this year.

India is becoming a hot destination for the investment among the top countries in the world. This is evidenced by the recent visits of Heads of States of all the important economic powers in the international arena. Starting with UK, followed by USA, France, Russia and China alongwith some other states, it is clear that India occupies the center stage of scheme of things in the near future. This is a manifestation of growing clout of India based on solid economic performance of many sectors of Indian economy. New co-operation axes have been conceived by the stakeholders. While some time ago, it was Brazil, Russia, India and China (BRIC) now it is Chindonesia comprising China, India and Indonesia. As can be seen from the various blocks, India is a common entity for almost all the new trade blocks. This is not a mere coincidence; it is based on strength in various sectors. A large market, a vast pool of educated people led by scientists, engineers, accountants, improvement in infrastructure, English speaking population, thriving democracy, strong Defence forces under the control of a committed democratic leadership, presence of institutional network (Judiciary, RBI, Financial institutions) etc. are some of the magnets which attracted the most powerful men on Earth to India. This trend may result in creation of jobs and expansion of professional practice for our members. This is an opportunity for our members that should be capitalized by equipping themselves with market friendly skills which will help them garner maximum benefits.

I had the privilege to attend the meeting of members of other institutions involved in the organisation of India Corporate Week chaired by Shri R Bandyopadhyay, IAS, Secretary to Ministry of Corporate Affairs, Government of India. While reviewing the progress of the preparations of India Corporate Week 2010 by the Secretary, ICWAI agreed to organise 60 programmes as a part of its commitment towards the success of India Corporate Week. I am happy to note that ICWAI has been true to its word and Regional Councils, Chapters and CAT ROCCs of ICWAI put together has surpassed the target of 60 programmes. For this, I compliment the Regional Councils, Chapters and CAT ROCCs of ICWAI for their interest and organisational capabilities.

Dr. Manmohan Singh, Hon'ble Prime Minister of India inaugurated the India Corporate Week 2010 on 14th December, 2010 at Vigyan Bhawan, During the inauguration, ICWAI distributed two monographs on "Sustainability" in line with the theme of the India Corporate Week "Sustainable Business". The monographs titled "Sustainability Makes Business Sense" and ""A Primer on Sustainable Development, Sustainability & the Cost and Management Accountant", which were appreciated by the participants.

During, India Corporate Week programmes, I had the privilege to attend and address one day seminar organized by Nagpur Chapter of ICWAI on "Cost management and Economic Legislation" on 19th December, 2010.

On 18th December, 2010 Eastern India Regional Council organised a Practitioner Convention at Kolkata. I gave my views on the emerging areas for the practicing members of the Institute.

Kalyan-Ambernath Chapter of ICWAI, one of the oldest Chapters in the country, with Western India Regional Council organised the WIRC Regional Cost Convention at Kalyan, near Mumbai on December 24-25, 2010. The Theme of the two day convention was "Emerging Challenges to Sustain Growth and Build Competitiveness".

ICWAI delegations met Mr. Rahman Khan, Hon'ble Vice Chairman, Rajya Sabha; Mr. A K Antony, Hon'ble Minister of Defence, Government of India; Mr. Veerappa Moily, Hon'ble Minister of Law, Government of India; Mr. Vylar Ravi, Hon'ble Minister for Indian Overseas Affairs, Government of India. The matters related to Institute were discussed with them. The first ever SAFA Summit was held at Kathmandu, Nepal during 11-12 December 2010.

A delegation of Mr. A N Raman, Vice President, SAFA, Mr. Gopalakrishnan, Vice President, ICWAI, Mr. Chandra Wadhwa and Mr. Kunal Banerjee, Past Presidents, participated in the SAFA Summit held at Kathmandu, Nepal. Cost Accounting Standards issued by ICWAI were part of the major discussion in the summit, which generated a lot of interest by the participating members.

Initiative on GRI

Members may be aware GTZ and GRI are the leading organisations working for Sustainability. GTZ and Global Reporting Initiative (GRI) are organizing an event on Network Partner on Responsible Investment and Mainstreaming of Environment, Social and Governance factors to be held in January, 2011 at Mumbai and have invited ICWAI as a partner. This would be attended by leading authorities and think tanks on the subject, wherein ICWAI will deliberate on the topic and share its expertise on the topic.

Membership Directorate

Some of the new initiatives started by the directorate are:

1. Issuance of Photo signature cards for members for obtaining their updated signatures.
2. Making arrangement for providing information to members through SMS & e-mail. Detailed information in this regard shall be provided in due course.
3. Taking steps for providing information to members on their due position and other particulars on the website through password protection.
4. Updating the records of final passed students who are yet to become members of the Institute. Intimation shall be sent to all these candidates to strengthen the membership base of the Institute.

Elections to the Central Council and Regional Councils of the ICWAI

The next elections to the Central and Regional Councils of the Institute are due to be held in 2011. The Council has decided the date of polling to be June 3, 2011 for the term 2011-2015. Accordingly, notice in pursuance of Clause (3) of Schedule 2 of the Cost and Works Accountants (Election to the Council) Rules, 2006 has been issued on December 30, 2010. Members are requested to take due note of this and may kindly intimate their preference for the polling booth in cities where there are more than one booth, viz., Kolkata, Chennai, Mumbai, Hyderabad, Pune and New Delhi within the stipulated time. The list of such polling booths has been hosted on the website of the Institute. Election notification shall be issued in due course.

President, SAFA

It is an issue of great pride for ICWAI that Mr. A N Raman, one of the members of the Central Council of Institute has taken over as President of South Asian Federation of Accountants (SAFA) with effect from January 1, 2011. ICWAI has occupied this position after 1996, a gap of 15 years. I join the members of the Institute in wishing Mr. Raman for his successful tenure.

I express my condolences to the family of Mr M Sreenivasa Rao, President of Institute during 1975-76, who passed away on 18th December, 2010 at Bangalore. All the offices of ICWAI were closed as a mark of respect after paying homage to him. May the departed soul rest in peace.

I request all of you to make it a point to attend the National Convention of Cost and Management Accountants at Hotel Le Meridien, Chennai during January 6-8, 2011. Please note Conventions for Practitioners and Students are being organised simultaneously on 5th January, 2011. The details of these events are available at the website "www.ncc2011.in".

My best wishes to the members and their families for harvesting festivals of Lohri, Sakranti and Pongal followed by Republic Day.

With best Wishes



(B.M. Sharma)
President
3rd January, 2011

Oil & Gas Reserves, methodology of calculations—its importance to Auditors & the need of Energy Audit

Sankar Dattagupta*

Extraction of oil/gas is done from wells. The classification of well is determined by geological and engineering data and are done by geologists and engineers and not by accountants. However, they follow the definition of proved, proved developed reserves and proved undeveloped reserves which are important in gas and oil accounting. Estimation of reserve is an inexact science, especially, when on the basis of an exploratory well the entire field reserve is calculated. It has ascertained on a study by PWC that estimates done initially on exploratory well was inaccurate by + 50% approx while after five years of production estimate was inaccurate + 20%. It is significant to ascertain the volume and correctness of oil reserves based on clear, scientific studies, characterized by reality and credibility and supported by international documents and certificates.

The petroleum industry generally considers the definitions of Proved (1P), Proved plus Probable (2P) and Proved plus Probable plus Possible. (3P) as promulgated jointly by the Society of Petroleum Engineers (SPE) /World Petroleum Congress (WPC) /American Association of Petroleum Geologists (AAPG) which work under the auspices of United Nation. Reserves have been defined as 'quantity of petroleum which is anticipated to be commercially recovered from known accumulations from a given date forward'. Reserves are categorized as **Proved, Unproved, Probable and Possible**. These sub-sets of reserves are expressed through varying degrees of probability as P90, P50, P10 stating the quantities commercially viable out of the estimated quantities.

Proved Reserve are those quantities of petroleum which by analysis of geological and engineering data can be estimated with reasonable certainty to be commercially recoverable from given date forward from known reservoirs and under economic condition operating method and government regulations. In general, reserves are considered proved, if the commercial producibility of the reservoir is supported by actual production or formation tests. There should be at least 90% probability that the quantities actually recovered will equal or exceed the estimate.. In some cases proved reserves is derived on the basis of well logs and/or core analysis that indicate that the subject reservoir is hydrocarbon bearing and is analogous to reservoirs in the same area. The area of reservoir is considered as proved only when the area is delineated by drilling and fluid contacts and undrilled portion of the reservoir is based on available geological and engineering data which are commercial acceptable. In the absence of fluid contacts, the lowest unknown occurrence of hydrocarbons controls the proved limits unless the engineering and other data proved otherwise. Proved reserves again may be developed and undeveloped.

Proved developed reserves

Reserves may be defined as proved and developed if the facility to process and transport those reserves exists at the time estimates were made. The reserves are expected to be recovered through existing wells, equipments and operating methods. Proved reserves is also increased by increased recovery mechanism through a successful pilot project or favorable response from an installed programme in the same or analogous reservoir with similar rock formation and fluid properties and support analysis. Reserves to be recovered by improved recovery methods yet to be established through commercially successful applications are included in the proved classification, only if, there is favourable response from the subject reservoir either through representative pilot project or installed programme and there is a reasonable certainty the project will proceed.

Proved undeveloped reserves

In case of proved but undeveloped reserves the locations are direct offsets to wells that have indicated commercial production in the objective formation, the locations are within the known proved productive limits of the objective formation and the location confers to existing well spacing locations and there is a certainty that the area will be developed. Location of other areas are considered as proved and undeveloped if the geological and engineering data from wells indicate with reasonable certainty that the objective formation is laterally continuous and contains commercial recoverable petroleum.

Unproved reserves are reserves based on estimates of proved reserves but due to technical, contractual, economic or regulatory uncertainties cannot be classified as proved. Unproved reserves are classified into probable and possible reserves.

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Probable reserves are unproved reserves which stands not to be recoverable on analysis of geological and engineering data. There is 50% probability that the quantities actually recovered will equal or exceed the sum of estimated prove plus probable reserves. It includes (1) reserves anticipated to be proved by nominal step-out drilling but subsurface control is inadequate (2) reserves information appears to be productive based on well-log characteristics but core data is not sufficient (3) closure statutory spacing has been approved at the time of estimate will affect the incremental reserves (4) incremental reserves has been established through improved and repeated commercial successful applications (5) the area is structurally higher than the proved area due to fault and geological interpretation (6) reserves attributable to future work-over treatment, change of equipment etc and other mechanical procedure which have proved to be not successful in an analogous reservoir (7) alternative motion developed for measuring proved reserves.

Possible reserves are unproved reserves which are likely to be recoverable after consideration of geological and engineering data. There is at least 10% probability that the quantities actually recovered will exceed the sum of estimated proved plus probable plus possible reserves.

Methodology of calculation of oil/gas Reserves

Reserves calculations of a E&P company is also based on the premise that Reserve can be economically produced, License and Agreements to which the company is a party are effective at the date on which the audit is started, the proposed continued developments as planned will proceed without interruption.

The reservoir engineer while calculating reserve considers the Size of the reservoir, porosity and permeability of the reservoir, pressure and temperature in the reservoir, oil, gas and water contained in the reservoir.

The process of estimating oil and gas reserves for a producing field continues throughout the life of the field but uncertainty in estimation is affected by the type of reservoir, source of reservoir energy ,quality and quantity of the geological , engineering and geophysical data ,Assumption adopted when making the estimate, available technology, experience and knowledge of the evaluator. The magnitude of uncertainty decreases with time until the economic limit is reached and the ultimate recovery is realized.

Estimation methods

The methods have been grouped under the following categories;

- Analogy
- Volumetric

- Decline analysis
- Material balance calculations for oil & gas reservoirs
- Reservoir simulation

Reserves estimates are restricted to the analogy and volumetric calculations by comparing factors for the analogous and current fields or wells in the early stage of development. Oil reservoirs that have not been produced (exploratory field) have recovery factors which need to be assigned by analogy. A close to abandonment **analogous field** is taken as an approximate to the current field.

The **volumetric method** is concerned with the extent of the reservoir, the rock pore volume, the fluid content within the pore volume. This indicates the estimates of hydrocarbons-in-place. Volumetric calculations for each reservoir are audited and compared with the existing figure to ascertain any variation and oil in - place problems .Special attention is required where recovery factor is low. Low recovery factors may be responsible for poor performance instead of oil in-place problems. Gross reservoir thickness is taken from well formation and relevant maps of reservoir as well as net oil and gas. Gross Rock Volumes (GRV) are calculated accordingly .The next step is to determine the values for Stock Tank Oil (STOPII) and Gas initially in Place (GIIP) are then determined for the 1P, 2P, 3P cases The rock volume depicts the degree of certainty/ un-certainty. Any significant variation needs to be audited in depth.

Through the application of appropriate recovery factors, the ultimate recovery can be estimated. However the factors have inherent uncertainties that when combined cause significant uncertainties in the reserves estimate.

Fluid contact determination

It is necessary to test the depths for gas-water contact (GWC) and gas oil contact(GOC) and oil water contacts (OWC).This is done with the help of data from production testing results and wire logging. Incase of direct penetration of a contact and in absence of any ambiguity about location, the contact depth is used for 1P, 2P and 3P cases. Oil drawn to (ODT) and gas drawn to (GDT) measurements are considered for volumetric calculations where a contact has not been penetrated. Absence of clear indication of contact, 2P hydro carbon limit represents the mid point between the 1P and 3P cases.

Decline analysis and material balance calculations become the predominant methods of calculating reserves as production and pressure data from a field become available. The curve analysis

provides the most reliable basis for estimating the Proved Developed Producing (PDP) reserves. A copy of monthly production database along with pre defined data base queries used for extraction of oil, gas water are examined . The trend of the curve gives a probable picture of future reservoir behavior. In fields/reservoir etc where there is a clear trend, the trend data are extrapolated and a regular life line trend can be established. This method greatly reduces the uncertainty in reserves estimates despite the fact during early depletion caution should be exercised.

Decline curve analysis considers uniform and greater production periods and is suitable for oil wells which are produced only on bottom- hole pressures. In case of gas wells, there is fluctuation in back pressure making varying production and thus not reliable. At present there is a swing towards declining rates proportional to production rates (hyperbolic or harmonic extrapolations) as greater numbers of low producing wells have come into scene. But these should be only for specific cases as this relationship can depict excessive reserves estimates.

Material Balance (M BAL)

It is an excellent tool for estimation of gas reserves. A group of oil pools with recent pressure and production data are audited to determine STOIP values .Generally the pressure in the reservoir will decline proportionately to the amount of gas produced. Exception takes place when bottom water drive in gas reservoirs contributes to depletion and performance of reservoir and thus results in optimistic reserves estimates. The tool helps to assess how far the geological model of the pools prepared by the concerned department and drainage area to the wells are correct.

Two calculation procedures ie deterministic and probabilistic are resorted to in calculation of reserves. While the former procedure are most commonly used and are tangible and explainable as for each parameter single value is used and applied to a single equation to have a single answer. Probabilistic methods incorporates more variance in the data as for each input there is a distribution curve and with the help of a simulation (Monte Carlo) an answer can be developed through a distribution curve. Various results can be obtained through measures of central tendency ie mean, median, mode values and standard deviation, percentiles etc. However only the end results are known but not the exact value of each parameter.

In order to have a quality assurance of estimation of reserves it is necessary to have a comparison between then two workings and any significant variation may warrant recalculation of results.

Auditor's duty regarding reserves.

Correct calculation of oil / gas reserves is very important to auditors in case of upstream oil and gas companies. Reserves levels are drivers of market value of shares of companies whose shares are traded in public. Moreover the income of these companies is affected through depletion and impairment of assets arising from change in oil and gas reserve levels. Since these companies have greater control in world market a material change in reserves has an impact on global financial system. Window-dressing of reserve coupled with overstatement of capital expenditure incurred in joint venture leads to fraud by deceiving the co-venturer to make disproportionate cash-call contribution.

Under successful effort (SE) accounting, a direct relationship exists between cost incurred and reserves discovered. Thus under SE method only successful exploration cost that directly result in the discovery of proved reserves are considered to be part of the cost of funding oil or gas and are capitalized. Unsuccessful exploration cost does not result in an asset with future economic benefit and are, therefore, expensed.

The size of the cost centre in SE is a lease, field or reservoir. The costs which are capitalized are expensed as expiration takes place either through abandonment, impairment. In India, in case of upstream oil companies the producing properties including acquisition costs are depleted using the 'Unit of Production Method' based on the related Proved Developed Reserves. The rate of depletion is computed on a consistent basis with reference to an area designated as oil/gas field or a group of oil and gas fields, which are geologically homogeneous. The Proved and Developed Reserves of oil and gas are technically assessed regularly and are finally reviewed and estimated at the end of each year by in-house by following International Reservoir Engineering Procedures.

Energy audit (Oil)

The world has witnessed oil-field technology revolution. Technology can simulate being able to 'see into reservoir'. Despite this estimation of reserves, much emphasis is given to actuarial estimates of reserves resulting into a 'scientific guess'. Moreover quality of Proved reserve data is hazy. In the era of high costs there is a trend to choose only 'sweet spot area' for proving of existence of economically viable reserves of oil and gas .Appraisal wells often becomes risky and expensive for drilling . As per expert, group geophysical data itself accounts for \$ 0.05 of \$ 1.00 of real costs. There is also picture of countries loosing

proved reserves between 1982 and 2002 as per BP Statistical Review of Energy 2003. The prominent are USA 4.7, Canada 1.4, Mexico 21.4, UK 9.2, Egypt 0.4, Indonesia 4.6 and China 1.2 billion barrels either due to incorrect estimation, lesser additions or clearly lost reserves due to some unexplainable reasons. In USA there is also some doubt on the integrity of Annual Report and Auditors Certificates based on GAAP.

With the escalating demand of oil and gas there is an apprehension whether production of 1.5 to 2 millions barrels per day is a safe and sustainable cushion. Experts are of opinion that transparency is urgently required in the following areas so that producers of oil and gas are not under trouble;

- Transparent updated production through field by field production history and reported wells by field,
- Transparent reserves data to cover original oil in place, ultimate recoverable reserves and cumulative production,
- Independent audit of the above.

Realising the importance of the above, Security and Exchange Commission (SEC) of USA has recently (January 2010) altered regulations on oil and gas reporting to combat short term and seasonal price fluctuation. Important changes include;

- Replacement of year end pricing by twelve months average pricing in determining the economic producibility of a reservoir.
- Changes in the definition on 'proved undeveloped oil and gas reserves' by insertion of 'reasonable certainty' standard from 'certainty' provision.
- Expanding the definition of oil and gas reserves to include non-traditional and unconventional resources like coal bed methane, shale, bitumen etc.
- A new definition 'reliable technology' has been introduced to allow a company to adopt new technologies as it deems fit once the reliability can be documented.
- Third party reports/audit on gas and reserve estimates wherever done must be disclosed and submitted to SEC.
- Disclosure by companies Reserves estimates by geographical area and for each country containing 15 percent or more of companies' reserves.
- In case of deterministic reserve evaluation, it is compulsory to disclose individual estimates for each category and the difference in certainty should be fully explained.
- In case of production sharing contracts, a company must obtain all governmental

approvals (from relevant hosts countries) before claiming proved reserves

- For reserves above a 'Highest Known oil' (HKO) limit, only the lower value product should be assigned above the HKO where there is equally likely that oil or gas is present and that too where there is a market for gas/oil. If it is otherwise, the company may not classify as reserves any assumed gas cap.
- Similarly if there is no data available below the 'Lowest Known hydrocarbon' (LKH) limit, then no reserves should be assigned.
- In calculating undeveloped reserves, a company can classify undrilled locations having undeveloped reserves only when a developed plan has been adopted for drilling in the next five years.
- A company may assign probable or possible undeveloped reserves beyond areas containing proved undeveloped reserves using reliable technology but not to an area of fault or penetration of that area is not possible. Besides companies are required to indicate investments and progress during the year to convert proved undeveloped reserves to proved developed reserves.
- A company must consider equity method investments for determining whether it has significant oil and gas producing activities.
- Internal controls over reserves estimation and reporting are required to test the efficacy in the estimation along with the credentials of the persons overseeing the preparation of the calculation or audit.

Since the above are considered as the best practices in E&P industry, it is also necessary for the Indian E&P companies to implement the same. More so with IFRS just knocking at the door and acquisition of mineral rights (India and abroad) by Indian companies have been a common feature. With more and more shares of E&P companies shares are traded in the Indian market, it is also necessary to safeguard the interest of stakeholders majority of them have either no or less technical knowledge of reserves and its impact in share value. It would be appreciating if market regulators, SEBI, the Institute of Chartered Accountants of India take leading roles to prepare necessary guidelines in consultation with the Ministry of Petroleum and Natural Gas Government of India for strict observance of the same by its Members. Specific International Standards are also required to be set up for defining the qualification, scope and responsibilities of auditors for reserve estimation for governing the audit and review of oil and gas. □

Dimensions of Energy Sustainability — Role of Renewable Energy

Dr. B. K. Mohanty*
Subasish Mohanty**

The European Commission defines Energy Security as "uninterrupted physical availability of energy products on the market at a price which is affordable to all consumers (private and individual)". Energy security risk may be defined as "the degree of probability of disruption to energy supply occurring. It is the loss of economic welfare that may occur as a result of a change in the price and availability of energy."

Energy security risk can be categorised as :

- (a) Energy market instabilities caused by unforeseen changes in geographical or other external factors or compounded by fossil fuel resource concentration.
- (b) Technical failures such as power "outages" caused by grid or generation plant malfunction; and
- (c) Physical security threats such as terrorists, sabotage, theft or piracy as well as natural disasters (earthquakes, hurricanes, volcanic eruptions, the effect of climate change, etc.)

DIREC 2010

DIREC (Delhi International Renewable Energy Conference) is the fourth in the series of global ministerial level conference on renewable energy, which was held from the initiative taken at the 2002 world summit on sustainable development in Johannesburg, acknowledging the significance of renewable energy for sustainable development. The conference was an international platform for government, private sector and civil society leaders to jointly address the goal of advancing renewable energy. It has built upon the success and outcomes of the previous events in Washington in 2008, Beijing in 2005 and Bonn in 2004.

The World has tapped only a small percentage of its vast renewable energy resources. Policy efforts need to be strengthened in order to encourage a massive scale up of renewable technology so as to build a long term, stable, low carbon economy. Countries all over the world fully recognise the imperative to promote widespread adoption of renewable energy into their country's energy sources to promote sustained economic growth, social development and environmental stewardship. It is estimated that renewable energy could contribute at least half of electric power in each of the large economies by 2050.

Renewable energy provides millions of people with access to electricity and improving their living conditions and reducing poverty. Renewable energy equipment manufacturing and installation is high quality labour intensive.

Future of Renewable Energy

It is estimated that wind energy is about 2% of the total solar energy reaching the earth, which is almost 2 billion tons of oil equivalent a year, or 200 times that is consumed by all the world's economies. However, only a small fraction of the potential has been tapped, although India is one of the world leaders in installed wind power generation with a capacity of over 10,000 mw. India currently ranks as the world's 11th biggest energy producer, accounting for about 2.4% of the world's total annual energy production. Again, we are the world's 6th largest energy consumer accounting for about 3.3% of the world's total energy consumption. Although India is the 3rd largest producer of hard coal after China and the US, India also imports around 1.4 million barrels of oil per day – 60% of its total needs. This dependency is projected to grow to 90% by 2020. India's crude oil imports are projected to reach 5 million barrels per day in 2020 – which is more than 60% of current Soudi Arabian oil production.

70% of the coal produced every year in India has been used for thermal generation. Fossil fuels for long have been the initial sources of energy even in India. However, constant use of fossil fuels has led to large scale problems. The green house Effect, caused by the emission of Greenhouse gases as a result of burning up these fossil fuels, has long been documented as a major source of trouble for environmental safety.

Consumption can be classified into two major parts – Industrial and Domestic. The industrial sector in India is a major energy consumer accounting for nearly 50% of energy produced. The Indian industry is a highly energy intensive one and its energy GDP efficiency is around 1.5 – far higher than the developed nations. Indian industries have been regarded as a role model across the world when it comes to social responsibility. Energy saving is today in top in the list of social responsibilities of every

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individual. Energy saving measures also help in curtailing pollution that is one of the major factors contributing to global warming.

India is one of the fastest growing countries in terms of energy consumption. Currently, it is the 5th largest consumer of energy and will be the 3rd largest by 2030. The country is heavily dependent on fossil sources of energy for most of its demand. This has necessitated the country to start aggressively pursuing alternative energy sources – solar wind, bio-fuels, small hydro and more.

India is ranked the 3rd most attractive country to invest in renewable energy, after USA and Germany. The Green Peace international European renewable Energy (EREC) in its report released in March 2009 has projected that, by 2050, about 69% of the electricity produced in India will come from renewable energy sources. Up to 2030, wind will remain the main new power source.

Growth of Renewables

During the five years from the end of 2004 to 2009, worldwide renewable energy capacity grew at rates 10-60% annually for many technologies. For wind power and many other renewable technologies, growth accelerated in 2009 relative to the previous four years. More wind power capacity was added during 2009 than any other renewable technology. However, grid connected PV increased the fastest of all renewable technologies, with 60% annual average growth rate for the five year period.

Table 1 : Selected Renewable Energy Indicators

Selected Global Indicators	2007	2008	2009
Investment in new renewable capacity (annual)	104	130	150 billion USD
Existing renewable power capacity, including large scale hydro	1070	1140	1230GWe
Existing renewable power capacity, excluding large hydro	240	280	305GWe
Wind power capacity (existing)	94	121	159GWe
Solar PV capacity (Grid connected)	7.6	135	21GWe
Solar hot water capacity	126	149	180GWe
Ethanol production (Annual)	50	69	76 Billion liters
Bio-Diesel production (Annual)	10	15	17 Billion liters
Countries with policy targets for renewable energy use	68	75	85

Source : Internet

Wind Power market

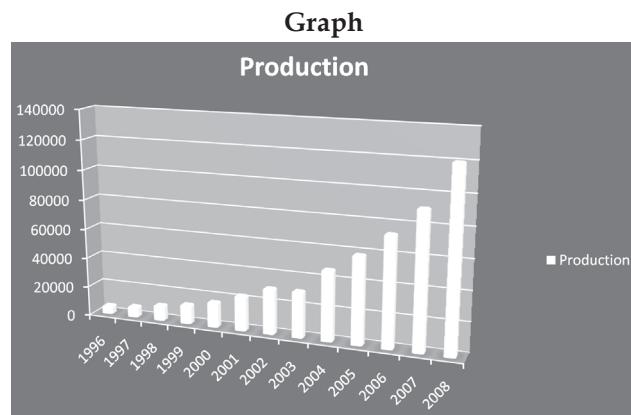
At the end of 2009, worldwide wind farm capacity was 1,57,900MW, representing an increase of 31%

during the year, and wind power supplied some 1.3% of global electricity consumption. Wind power accounts for approximately 19% of electric use in Denmark, 9% in Spain and Portugal, and 6% in Germany and the republic of Ireland. The US is an important growth area and installed US wind power capacity reached 25,170MW at the end of 2008. As of November 2010, the Roscoe wind farm (781MW) is the world's largest wind farm. As of September 2010, the Thanet offshore wind project in UK is the largest offshore wind farm in the world(300MW) followed by Horns Rev-II (209MW) in Denmark. The UK is the world's leading generator of offshore wind power, followed by Denmark.

Table 2 : Wind Power Market (MW)

Year	Production (MW)
1996	6100
1997	7600
1998	10,700
1999	13,400
2000	17,400
2001	23,900
2002	31,100
2003	31,411
2004	47,620
2005	59,091
2006	74,052
2007	91,623
2008	1,20,791

Source : Internet data



Energy Security

The IEA defines energy supply to be "secure" if it is adequate, affordable and reliable – consumers expect the lights to always come on at the flick of a switch, their buildings to be maintained at a comfortable temperature all year round, and to be able to purchase vehicle fuel or public transport tickets whenever they

wish to travel. Electricity, heat and mobility are usually considered to be the basic necessities of life and, therefore, should be affordable to all at any time. India emerged as an aspiring producer of solar power. Generation of electricity from sun is a flagship programme of the government. The solar energy market potential is huge while only a fraction of the aggregate potential has so far been realised. India is one of the world's largest programmers in solar energy which include R&D, demonstration and utilisation, testing and standardisation, industrial and promotional activities. India is endowed with vast solar energy potential about 5,000MW. Solar is currently high on absolute costs compare to other sources of power such as coal. The objective of the mission is to create conditions, through rapid scale-up of capacity and technological innovation, to drive down costs equal with Grid. The mission anticipates achieving Grid parity by 2022 and parity with coal based thermal power by 2030, but recognises that this cost computation will depend upon the scale of global deployment and technology development and transfer.

Initiatives taken by Government

Government of India expects investments of up to \$55 billion in the next five years in the renewable energy sector which would generate 325,000 MW of power. India, one of the leading producers of wind power, is encouraging investment in renewable energy to curb emissions and reduce dependence on oil as the country imports nearly three quarters of the oil it consumes.

Generation of electricity from sun is a flagship programme of the government. The solar market potential is huge, while only a fraction of the aggregate potential has so far been realised. India has one of the world's largest programmes in solar energy which include R&D, demonstration and utilisation, testing and standardisation, industrial and promotional activities, processed material for solar cells, inverters, charge controllers – all have good potential in India.

IREDA (Indian Renewable Energy Development Agency), established in 1987, promotes renewable energy and energy conservation projects. It is administered by the Ministry of Renewable Energy (MNRE). Renewable sources account for about 60,000MW out of India's capacity of about 80,000 MW, but the government believes that the country can raise output of renewable energy to 80,000 in a little over a decade. New and renewable energy minister Faoq Abdullah said that the government is targeting to electrify 10,000 remote villages across the country by March 2012.

Making Use of Solar Power

SunBorne Energy, funded by General Catalyst and Khosla Ventures, is set to make solar power affordable

and widespread across India. Over the next three years, SunBorne will deploy over Rs. 1,500 crore in over 100 MWs of utility-scale solar plants, and develop sites across India for several Giga Watts of solar power. The company is partnering with MNRE on an R&D project to indigenise and decrease the cost of solar plants. Over the next decade, the plant is to cut the costs in half, making solar power competitive with other sources. **SunBorne**'s affordable solar power can help India grow without risking the environment or energy security.

Indosolar is one of India's leading manufacturers for photovoltaic cells. The company started its operations in the year 2008. It started producing high efficiency multi-crystalline cells on its first manufacturing line of 80MW during July 2009. Subsequently the company started its second manufacturing line of 80MW during 2010 making the total installed capacity at 160MW. The company further plans to increase its production capacity to 260 MW by 2011 by installing another line of 100MW from the proceeds of recently concluded IPO. It has recently been listed on the NSE and BSE. Located in Greater Noida, UP. **Indosolar** is fabricated over an area of 300,000sqft and can accommodate a maximum of four fully automated production lines. **Indosolar** will also set up a strong R&D centre in association with global partners to continuously improve the efficiency of its PV cells.

World's 1st Energy Market in India

India will have the world's first market for trading in energy savings. Under the National Action Plan on climate change, the power ministry has prepared the blueprint for trading in energy by industrial plants that save energy beyond the targets set for them. The government will set mandatory targets to be achieved by each large industrial unit and plant in energy intensive sectors. Which include cement, aluminium, steel, power, textiles, fertilisers, railway, paper and pulp industries. India should further strengthen its energy security which will automatically bring co-benefits of reduction in the global warming causing emissions. Named the "Perform, Achieve and Trade" or PAT scheme, energy reduction targets would be set in terms of the specific energy consumption for each plant individually to ensure that there are no blanket benchmarks that create an uneven turf for different sizes and type of players. The industry will be given three years to achieve them. Those units that surpass their targets will be provided "energy certificates". These certificates will be tradable on the existing power exchanges in the country. Companies that fail to meet the targets set for them will have to buy these certificates under an open market mechanism.

If the failed units do not meet their target—either by achieving energy savings or by buying the energy certificates—they would be penalised by the government under the Energy Conservation Act. Under the plan, BEE will accredit private agencies to audit the actual energy consumed by the industrial units and retain the powers to carry out random checks.

Suggestions and Policy Implementation

(1) Carbon reduction by using LED Lights

Conventional lights are one of the major avenues whereby a huge amount of electric energy can be saved and carbon emission caused due to this can subsequently be avoided. Electricity consumed by these conventional lights is high against which LED lights is a boon, which not only reduces carbon emission by consuming way too little electricity but is also free from any type of emission of harmful rays and gases. These lights are as bright and clear as the conventional lights. The available variety of these lights in India in such that they can replace any kind of conventional light. By switching over to these lights corporate India will not only help the government achieve its plan of carbon reduction but also generate huge amount of savings and earn carbon units too. Though the cost of these lights work out to be more than the conventional lights its benefits in terms of monetary savings and improved work atmosphere makes the additional investment worth.

(2) Earning through Carbon Credit

Carbon credits as now is considered to be very good investment taking into consideration anticipated spurt in demand due to the results of commitments made by developed nations to reduce carbon emission which will force them to set strict norms in their country. As planned by India, to reduce its carbon emission by nearly 25%, by 2020. This target is difficult but not impossible to achieve. Proper planning and implementation of, these plans would help achieve these targets. LED lights are one of such gifts which, if used, can help reduce carbon emission to quiet a considerable level.

(3) Role of Government

Government should take an imitative stand and set an example by replacing all the conventional street lights by LED lights and use these lights in the government offices too. They should also take an initiative to educate the masses of the advantages of using LED lights. It could make a deliberate effort voluntarily adopting the LED lights.

(4) Enhancement of Grid Efficiency

There are tremendous opportunities for energy conservation through enhanced grid efficiency and improved industrial productivity facilitated by better

utilisation of scarce energy resources. To give one example, about 40% of electricity is consumed by industry, and two-third of that is used by electric motors. Devices to regulate the speed of a motor can reduce their energy consumption by 50% in many applications. Yet less than 10% of motors are equipped with such a device. Fitting them to all the motors can avoid 200 million tons of carbon dioxide emission per year. And, there are many more energy saving opportunities like this.

(5) Awareness of the Financial Benefits

It is necessary to raise awareness of the financial benefits of energy efficiency. Payback times can be extremely short but many businesses still focus on the purchase price when buying equipment, instead of considering its cost over its entire lifespan. The purchase price of a electric motor, for instance, is just 1% of what the owner spends on energy to run the equipment over its lifetime.

(6) Create Incentives to save Energy

Create incentives for businesses and local authorities to save energy. The fairest would be a global price on emissions through the trading system. This will take time to achieve and in the meantime national governments can use standards, rules for public procurement or other means to promote energy efficient technologies. Governments should make energy efficiency a criterion of every project they fund, treaty they negotiate, research agreement they support, school or hospital they build, etc.—others will follow where government leads. Politicians should also consider legislation. Australia plans to ban conventional light bulbs and the European Union is likely to follow suit.

(7) Incentives to Promote Renewable

Incentives for promoting renewable should be linked to outcomes and not just outlays. Power regulators should create alternate incentive structures such as mandated feed-in laws or differential tariffs or specifying renewable portfolio percentage in total supply. An annual renewable energy report should be published providing details of actual performance of different renewable technologies at the State and national levels. Fuelwood plantations, bio-gas plants, wood gasifier based power plants, bio-diesel and ethanol need be promoted.

(8) Adoption of Lucifer Products

The term Lucifer—which means Jugnu (firefly, insect which emits lights without consuming any energy) was choosen as the name of a company as “Lucifer”. The Lucifer company products are having certain special features for which it is recommended for continuous use of these products.

The key features of Lucifer products are :

- Delivers light by consuming very less electricity as compared to conventional products
- Does not emit infrared or ultraviolet rays
- Does not contain mercury or other harmful gases
- Do not have blasts – thus no interference
- Saves energy
- No emission of gases or harmful rays. Totally eco-friendly
- No maintenance required
- Reduces carbon footprints – making it viable to earn carbon credits
- Suitable for various applications for indoors and outdoors.

Conclusion

India's energy demand is increasing with the robust growth in economy. A steady forecasted growth for manufacturing sector would need more power generation through fossil fuels. This raises serious concern over the depleting resources and environmental pollution. Energy security is important for India, which is largely dependent on fossil fuel imports to foster its economic growth. In

order to insulate itself for any future supply disruption and price shocks of fossil fuels and to achieve energy security and also meet global change objectives renewable have indeed caught the imagination of India. □

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THE INSTITUTE OF COST & WORKS ACCOUNTANTS OF INDIA

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CANCELLATION OF REGISTRATION UNDER REGULATION 25(1) OF CWA ACT, 1959 REGISTRATION NUMBERS CANCELLED FOR JUNE-2011 EXAMINATION UPTO

**ERS/002184, NRS/ 001793-2546,2601-3012 (except 3007,3008,3009),3101-3103,3141-3175
SRS/ 007040, WRS/005094, RSW/ 077028, RAF/005848**

RE-REGISTRATION

The students whose Registration Numbers have been cancelled (inclusive of the students registered upto 31st December-2003) as above but desire to take the Institute's Examination in June-2011 must apply for DE-NOVO Registration and on being Registered DE-NOVO, Exemption from individual subject(s) at Intermediate/Final Examination of the Institute secured under their former Registration, if any, shall remain valid as per prevalent Rules.

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With Season's Greetings.

Date : 21st December, 2010

Arnab Chakraborty
Director of Studies

Strategic Management Approach in Energy Sectors in India : The Role of Cost and Management Accountants

Dr. Arindam Ghosh*

Asit Gope**

Introduction

Energy has been universally recognized as one of the most important inputs for economic growth and human development. There is a strong two-way relationship between economic development and energy consumption. On one hand, growth of an economy, with its global competitiveness, hinges on the availability of cost-effective and environmentally benign energy sources, and, on the other hand, the level of economic development has been observed to be reliant on the energy demand. Energy intensity is an indicator to show how efficiently energy is used in the economy.

The energy intensity of India is over twice that of the matured economies, which are represented by the OECD (Organization of Economic Cooperation and Development) member countries. India's energy intensity is also much higher than the emerging economies—the Asian countries, which include the ASEAN member countries as well as China. However, since 1999, India's energy intensity has been decreasing and is expected to continue to decrease.

The indicator of energy-GDP (gross domestic product) elasticity, that is, the ratio of growth rate of energy to the growth rate GDP, captures both the structure of the economy as well as the efficiency. The energy-GDP elasticity during 1953-2001 has been above unity. However, the elasticity for primary commercial energy consumption for 1991-2000 was less than unity (Planning Commission 2002). This could be attributed to several factors, some of them being demographic shifts from rural to urban areas, structural economic changes towards lesser energy industry, impressive growth of services, improvement in efficiency of energy use, and inter-fuel substitution.

The energy sector in India has been receiving high priority in the planning process. The total outlay on energy in the Tenth Five-year Plan (2002-2007) has been projected to be 4.03 trillion rupees at 2001/02 prices, which is 26.7% of the total outlay. An increase of 84.2% was projected over the Ninth Five-year Plan (1997-2002) in terms of the total Plan Outlay on energy sector. The Government of India in the mid-term review of the Tenth Plan recognized the fact that under-performance of the energy sector can be a major constraint in delivering a growth rate of 8% GDP during the Plan Period. It has, therefore, called for acceleration of the

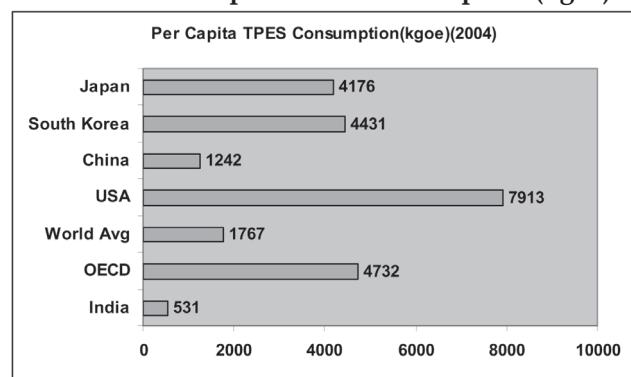
reforms process and adoption of an integrated energy policy. In the recent years, the government has rightly recognized the energy security concerns of the nation and more importance is being placed on energy independence. On the eve of the 59th Independence Day (on 14 August 2005), the President of India emphasized that energy independence has to be the nation's first and highest priority, and India must be determined to achieve this within the next 25 years.

Energy Scenario in India

Energy is the prime mover of economic growth and is vital to the sustenance of a modern economy. Future economic growth crucially depends on the long-term availability of energy from sources that are affordable, accessible and environmentally friendly. In 2003, India ranked sixth in the world in total energy consumption and needed to accelerate the development of the sector to meet its growth aspirations. The country, though rich in coal and abundantly endowed with renewable energy in the form of solar, wind, hydro and bio-energy, has very small hydrocarbon reserves (0.4% of the world's reserve).

By world standards, India's current level of energy consumption is very low. For the year 2004-05, the total annual energy consumption for India is estimated at 572 Mtoe (million tons oil equivalent) and the per capita consumption at 531 kgcoe (kilograms oil equivalent).

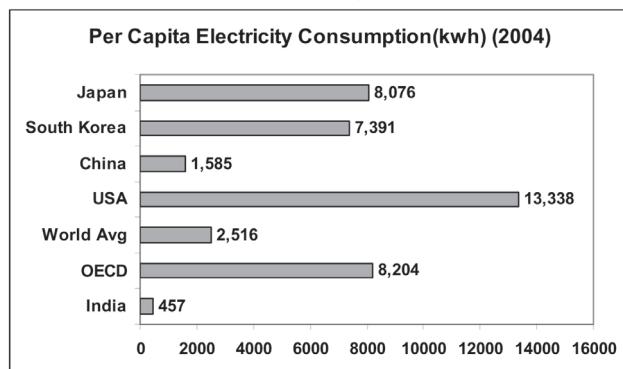
Table 1 : Per Capita TPES Consumption (kgcoe)



Source: International Energy Agency, Key World Statistics, 2006

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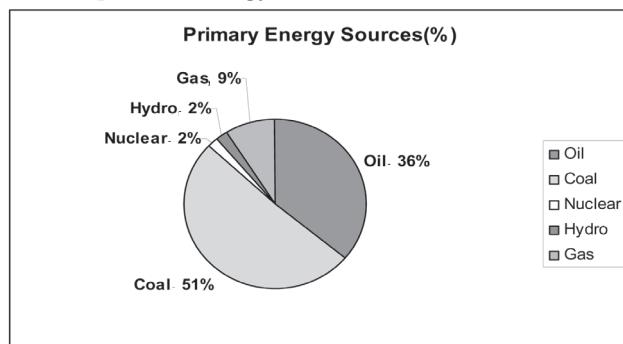
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Table 2: Per Capita Electricity Consumption (Kwh)

Source : International Energy Agency, Key World Statistics, 2006

India is well endowed with coal. However, it is poorly endowed with oil assets and has to depend on crude imports to meet a major share of its needs (around 71 percent).

The present energy basket is shown :



Source: Planning Commission of India, 2006

The above diagram reflects that only primary energy sources are commercially exploited. A large population of India in the rural areas still depends on traditional sources of energy such as firewood, animal dung, and biomass.

The Strategic Approach

Strategic planning of energy resources and energy supply is not new to the region. Many countries in Asia and the Pacific have developed plans and programmes for energy development in the past decade. Some of these countries have done this in the context of a sustainable development strategy. A growing group of countries in the region is developing a long-term perspective on energy services as part of their overall economic plan.

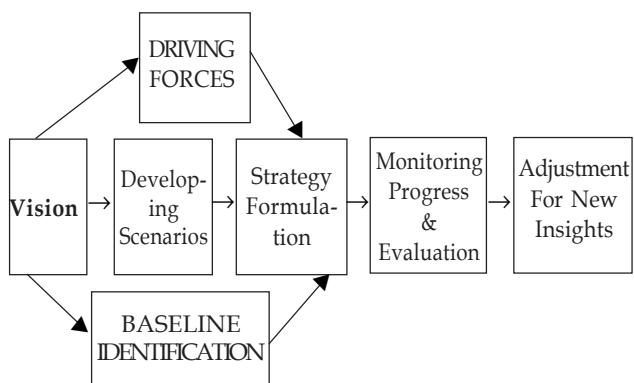
There should be a sustainable management operating in the sector concerned. The concept of sustainable management of energy is best described as the process of planning, providing and financing energy services to society in a manner that balances the economic, ecological and social impacts, without jeopardizing the opportunities of future generations to

do the same. It is important to note that this process is dependent on national circumstances, level of economic development, availability of energy resources, financial resources and other factors. Each country will have to decide for itself what sustainable management of energy means in concrete terms. In many countries in the Asian and Pacific region the first priority is to alleviate poverty through the provision of energy services to the poor. Rural electrification is another area of concern to many countries.

Strategic planning of energy resources provides governments with an approach to build an energy future in close cooperation with all relevant players, focusing on long-term benefits in social, economic and ecological terms. Benefits include :

- A clear sense of direction for 15 to 25 years into the future.
- Commitment of relevant stakeholders.
- Investment security due to long-term arrangements.
- Integral assessment of alternative energy scenarios.
- Cost-effective measures where possible.
- Demand-side and supply-side management.
- Rural electrification as an integral element of the national plan.
- Provision of energy services to the poor.
- Reduction of negative health impact due to cleaner air.

There are no simple solutions to the sustainable management of energy resources. As the world turns more complex, the dawning of a new energy future will depend largely on the interaction of a growing number of players within one society. It will also depend on cross-border interaction between countries. Involvement of all relevant players in all phases of decision-making processes on energy and related issues will be necessary. Governments continue to be important, as director of the process, bringing together stakeholders, setting the stage, and facilitating the play. A model of strategic planning and management is depicted here :



A Strategic Planning and Management Model

Objectives or Vision

Strategic planning should be based on a vision. Many countries have set economic and social development goals on the national, regional and/or local level either through integrated five-year plans or through a series of sector-specific plans and programmes. Economic growth and social wellbeing require a vast amount of energy resources. Many countries have access to domestic sources of fossil fuel (such as oil, gas, and coal), or to hydropower or biomass, while others depend largely on energy imports. Energy is an important driver for economic growth. The energy vision needs to contribute to the national social and economic development goals.

"India, for example, integrates the vision on renewable energy in its main planning cycle. The Indian Government gave new impetus to renewable energy in its Eight Five-Year Plan (1992-1997), by promoting commercialization through the private sector, rather than increased public investment. This was followed by a new Strategy and Action Plan in 1993" (Dasgupta Somit, 2000).

Driving Forces

For any strategic planning process it is important to understand the underlying driving forces. What makes energy demand grow? The vision on the long-term energy resource planning and management should preferably be based on the understanding of the complexity of economic, social, demographic and political drivers. "India has a National Population Policy formulated in an Action Plan (2000). Whether it will be successful or not, energy demand for domestic use in urban as well as rural areas will rise, facing the country with a huge challenge. Thousands of Indian villages may not be provided with energy from the grid in the next 20 years, continuing a situation of energy poverty for many years in the future. In response to this challenge, India is now planning to prepare a vision for 2012 to narrow the gap between energy demand and supply" (Chaturvedi Pardeep, 2000).

Baseline Identification

The most successful examples of the application of strategic planning in the world have had some sort of identification of the baseline as the starting point of the process. The baseline is defined as the national energy situation at the start of the process. For strategic planning of a sustainable energy future, the baseline would preferably include—Energy use per capita in the base year and expected trend towards the target year, Energy demand in absolute terms per type of resource in the base year and expected trend per type, Net import/export in the base year, Sectoral energy demand in the base year and target years,

Energy intensity of the economy, Expected reserve of domestic energy resources, etc.

Developing Scenarios

A scenario calculates the effects of a certain policy on a given goal. Different scenarios take alternative policies, very often differentiated in levels of ambition. "India has used scenarios in its policy development for the import of primary energy. In 1999, the Planning Commission defined three scenarios:

- (a) Business as usual;
- (b) Accelerated hydropower development (5 per cent increase in share of hydro in total installed generation capacity);
- (c) Savings of 10 per cent in domestic electricity and oil consumption. India also performs sensitivity analysis on these calculations.

"(Chaturvedi Pardeep, 2000)

Strategy Formulation

The main challenge of strategic planning of a sustainable energy future lies in the strategy formulation itself. Having the vision and the scenarios and understanding the drivers, the real work is yet to come. A strategy sets out the way forward, both in terms of substance and process. It is the core of the whole SPM approach. "India defined an energy strategy in its Ninth Five-Year Plan (1997-2002), with a short-term, medium term and long-term strategy, clearly prioritising in a situation where needs and means need to be balanced over time" (Chaturvedi Pardeep, 2000).

Monitoring Progress and Evaluation

The main purpose of monitoring as an integral element of strategic planning is to ensure that the activities of all stakeholders relevant to the success of the sustainable energy future plan are being executed and result in the desired outcome. There are many ways to monitor progress. A few of the most commonly used are: (1) Statistical information collection and dissemination on energy generation, use, import and export, intensity, etc., by the statistical bureau. (2) Qualitative study based on a questionnaire by a scientific organization or consultant. (3) Inspection or supervision by a separate government agency. (4) Use of indicators.

Making Adjustments to New Insights

Strategic planning is not a one-time event, it is a continuous process. New information, new insights, monitoring progress, new stakeholders and new alliances between stakeholders, all indicate a system of continued renewal and evaluation. Even if the plan is on track, new energy demands may require revision of existing scenarios and additional measures. Some other examples are structural reforms, technological

developments and availability of funds from the Clean Development Mechanism.

Role of Management Accountants

The Accounting Profession is the most important and challenging profession in the world economy today – in terms of resource allocation, and controlling & measuring business performance. Its role has become more important now due to the severe impact of the global recession. The role of the Management Accountant, in particular, has become more important, not only in the corporate level, but also at the national level, and even more importantly, at the international level.

Management Accountants are closely involved in supporting, planning, controlling, directing, communicating & coordinating the decision-making activities of organizations in the private sector, as well as the public sector. Managers of an organization are considered to be the Customers of the Management Accountant, so far as management accounting information is concerned, and Management Accountants should be continuously aware of the need to satisfy their requirements. The two main work areas of Management Accountants are 'advisory services' and 'information services'.

Advisory services

These include the tendering of opinions, assisting the making of evaluations or the formation of expectations, and the development of norms or objectives.

Information services

These include the provision of historical information, and future-oriented information. It has also been identified that Compliance, Control and Competitive support are the three factors which influence management accounting work.

Other areas of work

Strengthening the Organisation by Improving Energy Management & Control :

Improving energy efficiency in refineries should be approached from several directions. A strong, corporate-wide energy management program is essential. Cross-cutting equipment and technologies, such as boilers, compressors, and pumps, common to most plants and manufacturing industries including petroleum refining, present well-documented opportunities for improvement. Equally important, the production process can be fine-tuned to produce additional savings. Compliance, Control and Competitive support are the three factors which influence management accounting work. Over time, the relative emphasis on these three factors has changed. Previously, a great deal of management

accounting work was driven by the need for Compliance and Control. But now, the emphasis on Compliance and Control is declining, while the emphasis on Competitive support is increasing. The greater need for Competitive support has risen due to increased competition, greater customer focus, globalization, and the importance of quality.

Providing Strategic Cost Management

Cost management plays a significant role at companies. Cost management is important to their organization's overall strategic goals. There may be several reasons for this. First, the economic slowdown in the recent past has generated greater demand for cost management and cost transparency, pushing companies to seek better ways of managing costs and financial bottomlines. Second, the role of management accountants has changed, and they're being increasingly perceived as business partners who focus on key strategic issues well beyond the boundaries of traditional finance. Making contribution to core strategic issues is a high priority for management accountants today. Uncertain energy prices in today's marketplace negatively affect predictable earnings, which are a concern – particularly for the publicly traded companies in the petroleum industry. Improving energy efficiency reduces the bottomline of any refinery. For public and private companies alike, increasing energy prices are driving up costs and decreasing their value added. Successful cost-effective investment into energy efficiency technologies and practices meets the challenge of maintaining the output of a high quality product while reducing production costs.

Cost Efficiency Driver

Strategic management accounting analyzes and delivers essential information for management in term of choosing the best investment and the business process in order to gain cost efficiency. Management accountant delivers all relevant information – both financial and non financial – for management to make investment decisions. Not only delivering information but also giving advice and proposing the best investment alternative for management. Strategic management accounting plays important role as business control management. As a business control management, strategic management supports a company to attain good corporate governance by increasing the quality of internal control. By implementing rigid internal control, the management accountant will protect company's assets and make sure all employees do their work in accordance with the rule. Gaining cost efficiency is very essential in every industrial sector including the energy sector. There is massive opportunity to reduce emissions

from power sector by increasing power generation through solar and offshore wind energy installations and increasing end-use efficiency (demand management) and by reducing transmission and distribution losses in the grid.

Role as a Strategic Planner

Management accountants are now directly involved in the decision processes. They must also consider long-term as well as short-term planning horizons. They must develop management accounting systems capable of providing information which supports both strategic & operational decisions. Importantly, management accountants must become directly involved in the formulation, and the implementation of organizational strategies.

Provider of Information

The role of the management accountant in an organization is to support the information needs of management. The type, size, structure and form of ownership of the organization will influence the management role, and, thus, determine the complexity of the management accountant's role. Such differences in size do not change the basic role of the management accountant, nor the basic work which he or she does. However, the size of the organisation may change the degree of formality or sophistication with which the function is carried out, or the level of resources devoted to management accounting. But, the management accounting function remains essentially the same.

The strategy sets out the specific responsibilities of every stakeholder, including the Government at all levels, in a transparent and open manner. This will provide for clarity about every stakeholder's contribution to the overall solution of the problems. The strategy outlines the results to be achieved by stakeholders, not necessarily the methods to get to the results. Effective strategic management of a sustainable energy future may benefit from a result management approach. There will be freedom to choose the method as well as the time plan—as long as the targets are met in the long-term. Obviously, sufficient progress must be shown along the way. This will provide the stakeholders with an opportunity to react in a cost-effective manner, choosing options and timetables that match their own investment cycles and budgets. Therefore the information provided by the management accountants will be helpful in choosing the best strategy which will serve the stakeholders interest.

Conclusion

From a few years back, India's energy sector has seen notable progress on the policy and reforms front.

While in some sectors the policy initiatives have moved forward, in others actual private participation has also made progress. In order to fuel a rapidly growing economy, the Indian energy sector requires investments to the tune of USD 120 - 150 billion over the next five years. The imperative for private sector investment is strong in order to complement the public sector in meeting this investment requirement and to bring in the required capabilities and technologies to enhance energy resource extraction.

In Energy Sector, the key reforms advocated are unbundling of State electricity boards, privatization of generation and eventually distribution, investments in Transmission & Distribution (T&D) sector to minimize technical losses, effective mechanisms to eliminate corruption and theft, demand-side management to improve efficiency of end use and minimize wastage, elimination of redundancies in work force, and, most of all, realization of more economical user-charges.

T & D losses are staggering in many power boards. To take the example of a State regarded as one of the leaders in energy sector reform, in Andhra Pradesh, only 43% of the energy is supplied to consumers with metered connections. About 24% of the energy is estimated to be supplied to the agricultural consumers through unmetered connections. The rest 33% is estimated to be T & D losses. Of this, about 4% is transmission loss. About 29% of the total power produced or purchased is either lost through bad T & D network, or stolen. The technical losses are of the order of 20% and thefts about 9%. In a modern system, transmission losses can be brought down to 2%, technical losses to 10% and thefts eliminated altogether. Clearly, over 20% of power is lost to the system through mismanagement and corruption. Therefore strategic demand management is required to reduce such losses.

The management accountants help in getting the cost and financial information analysed and providing the same to the stakeholders to make correct decisions.

Management accountants must be equipped with the idea of strategic management methodology in order to provide adequate information to the higher authority while making important decisions. There is widespread acceptance that management accounting can play a vital and increasingly important role in strategic management. Management accountants today spend their time on 'strategic management accounting' with a view to broadening the span of traditional management accounting. The sector (Energy) specific strategic framework will give them the opportunity to guide the Indian Energy Sectors to march ahead and have a stand in the global market. □

Impact of Working Capital Management on Profitability (A Case Study of National Thermal Power Corporation Ltd.)

Dr. Kartik Chandra Nandi*

Working capital is an important issue during financial decision making since its being a part of investment in asset that requires appropriate financing investment. This study has examined the influence of working capital management on corporate profitability. For assessing the impact of working capital management on profitability of National Thermal Power Corporation Ltd. during the period of 10 years i.e. from 1999-2000 to 2008-09 Pearson's coefficient of correlation and multiple regression analysis between some ratios relating to working capital management and the important measure relating to profitability ratio (ROI) have been computed and applied. An attempt has also been undertaken for measuring the sensitivity of return on investment (ROI) to changes in the level of working capital, working capital leverage (WCL) has been computed and applied.

Introduction

The most important component of corporate finance is working capital management because it directly affects the liquidity and profitability of the company. It deals with current assets and current liabilities. Working capital management is important due to many reasons. For one thing, the current assets of a typical manufacturing firm accounts for over half of its total assets. For a distribution company, they account for even more. Excessive levels of current assets can easily result in a firm's realizing a substandard return on investment. However firms with too few current assets may incur shortages and difficulties in maintaining smooth operations (Horne and Wachowicz, 2000). Profitability is the rate of return on firm's investment. An unwarranted high investment in current assets would reduce this rate of return (Vishnani, 2007). The purpose of working capital management is to manage the firm's current accounts so as to attain a desired balance between profitability and risk (Ricci and Vito, 2000). Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short term obligations on the one hand and avoid excessive investment in these assets on the other hand (Eljelly, 2004). Most of the surveys have indicated that the managers spend considerable time on day-to-day problems that involve working capital decisions (Raheman and Nasr, 2007). One of the reasons for this is that current assets are short-lived investments that are continually being converted into other asset types (Rao, 1989). With regard to current liabilities, the firm is responsible for paying these obligations on a timely basis. Liquidity for the on going firm is not reliant on the liquidation value of its assets, but rather on the operating cash flows generated by those assets. Taken together, decisions on the level of different working

capital components become frequent, repetitive, and time consuming (Appuhami, 2008). Working Capital Management is a very sensitive area in the field of financial management (Joshi, 1995). It involves the decision on the amount and composition of current assets and the financing of these assets. Current assets include all those assets that in the normal course of business return to the form of cash within a short period of time, ordinarily within a year and such temporary investment as may be readily converted into cash upon need. It is observed that working capital management is important because its effects on the firm's profitability and risk and consequently its value (Smith, 1980). The way in which working capital is managed can have a significant impact on both the liquidity and profitability of the firm (Deloof, 2003). For example, decisions that tend to maximize profitability tend to minimize the chances of adequate liquidity. Conversely, the entire focus on liquidity will tend to reduce the potential profitability of the firm.

Review of Previous Studies

Few research studies have been undertaken on the working capital management in India. Some of the significant studies are highlighted below :

The study conducted by Smith and Begemann (1997) showed that those who promoted working capital theory shared that profitability and liquidity comprised the salient goals of working capital management. The problem arose because the maximization of the firm's returns could seriously threaten its liquidity, and the pursuit of liquidity had a tendency to dilute returns. Their study established the relationship between traditional and alternative working capital measures and return on investment (ROI), specifically in industrial firms listed on the

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Johannesburg Stock Exchange (JSE). The problem under investigation was to establish whether the more recently developed alternative working capital concepts showed improved association with return on investment to that of traditional working capital ratios or not. Results indicated that there were no significant differences amongst the years with respect to the independent variables.

Shin and Soenen (1998) highlighted in their study that the efficient Working Capital Management (WCM) was very important for creating value for the shareholders. The way working capital was managed had a significant impact on both profitability and liquidity. They found a strong negative relationship between lengths of the firm's net trading Cycle and its profitability. In addition, shorter net trade cycles were associated with higher risk adjusted stock returns.

Narware (2000) developed a study on the relationship between working capital and profitability. The study examined the interrelationship between working capital and profitability with the help of some selected ratios relating to the working capital management and the important measure (ROI) of profitability. His study established a significant impact of the measures of working capital on the profitability of the National Fertilizer Ltd.

Bhayani (2004) conducted a study to make an empirical study on Gujarat Ambuja Cements Ltd for assessing the impact working capital on its profitability during 1993-94 to 2002-03. His study also highlighted a significant association between the working capital and profitability.

Objectives of the Study

The study has the following objectives :

(i) To measure the impact of working capital on profitability by computing Pearson's simple correlation coefficients between ROI and each of some selected ratios relating to working capital management and to test the significance of such correlation coefficients.

(ii) To assess the joint effect of the selected measures relating to working capital on the profitability of the selected company under study by applying multiple correlation and multiple regression equation and to test the significance of the multiple correlation coefficients and the partial regression coefficients.

(iii) To ascertain the working capital leverage (WCL) for examining the sensitivity of ROI to changes in the level of working capital of the company.

About the Company

NTPC Ltd. is the India's largest power company, was incorporated on 7.11.1975 under the Companies

Act, 1956 to accelerate power development in India. It is emerging as an 'Integrated Power Major', with a significant presence in the entire value chain of the power generating business. NTPC ranked 317th in the '2009, Forbes Global 2000' ranking of the world's biggest companies. With a current generating capacity of 31,704 MW, NTPC has embarked on plans to become a 75,000 MW company by 2017. It is a schedule-'A' / Navratna CPSE in Generation (Power) sector under the administrative control of M/o Power with 89.50% shareholding by the Government of India. Its Registered and Corporate offices are at New Delhi. NTPC Ltd. is engaged in an integrated and efficient development of Thermal, Hydel and Nuclear power and power through Non-Conventional / Renewable energy sources in India and abroad including planning, investigation, research, design and preparation of preliminary, feasibility and detailed project reports, construction, generation, operation & maintenance, renovation & modernization of power stations and projects, transmission, distribution, sale of power generated at stations in India and abroad in accordance with national economic policies and objectives. The company diversified across the power value chain in India by considering backward and forward integration into areas such as power trading, transmission, distribution, coal mining, coal beneficiation etc. Geographically, its business extends throughout India in states like Delhi, U.P., Rajasthan, Haryana, Gujarat, Kerala, Himachal Pradesh, Chhattisgarh, Uttarakhand, Andhra Pradesh, Assam, Orissa, Madhya Pradesh, Maharashtra, Bihar and West Bengal. It has six subsidiaries namely Pipavav Power Development Co. Ltd., NTPC Hydro Ltd., NTPC Vidyut Vyapar Nigam Ltd., NTPC Electric Supply Co., Kanti Bijlee Utpadan Nigam Limited and Bhartiya Rail Bijlee Company Ltd. While first four are wholly owned subsidiaries, NTPC Ltd. has controlling stake of 74% and 51% respectively in the last two companies. The company also has 11 joint venture projects with a share holding of 50% in 8 JVs and 8% and 5.28%, 28.33% and 49% respectively in three JVs.

Data Source

The study is mainly based on secondary sources of information. The required data have been collected from published Annual Reports of the NTPC Ltd. and also from the published Annual Reports of the Public Enterprise Survey by the Ministry of Heavy Industries, Govt. of India over the period of ten years i.e. 1999-2000 to 2008-09. For collecting relevant data for the purpose of conducting this study internet surfing has also been made for obtaining the requisite and latest information. Editing, classification and tabulation of the financial data collected from the

above mentioned sources have been done as per requirement of the study.

Methodology of Study

In order to analyse the data some important ratios relating to working capital management and an important measures of profitability have been calculated on the basis of data available of the National Thermal Power Corporation Ltd. (NTPC Ltd.) The ratios which have been applied for highlighting the efficiency working capital management are Current Ratio (CR), Quick Ratio (QR), Current Assets to Total Assets Ratio (CATAR), Current Assets to Sales Ratio (CASR), Working Capital Turnover Ratio (WCTR), Inventory Turnover Ratio (ITR), Debtors Turnover Ratio (DTR) and Cash Turnover Ratio (CTR) and the measure of profitability which has been selected is Return on Investment (ROI). For assessing the degree of relationship between the working capital management and the profitability Pearson's simple correlation coefficient have been applied taking into account their magnitudes. For judging the joint influence of the selected measures relating to working capital management on the profitability, multiple correlation analysis has been applied. In order to assess the joint effect of the selected measures of working capital management on the profitability, multiple regression analysis has been applied. In order to examine whether the computed values of correlation coefficients, partial regression coefficients are statistically significant or not 't' test has been used and whether the multiple correlation coefficient (R) is statistically significant or not, 'F' test has been used. In addition to this, to judge the effectiveness or the reliability of this relationship the multiple coefficient of determination (denoted by R^2) has been used and it is defined as the ratio of explained variation to the total variation of the dependent variable (ROI). For measuring the sensitivity of ROI to changes in the level of working capital, working capital leverage (WCL) has been computed. All statistical computations have been done through SPSS 10.2 version.

Findings of the Study

Analysis of Correlation between the selected ratios relating to Working Capital Management and the measure of Profitability:

In Table-1, an attempt has been made to measure the impact of working capital on profitability by computing Karl Pearson's correlation coefficients between ROI and the selected measures relating to the working capital management. Table-1 shows that the correlation coefficient between ROI and CR is (-) 0.41 which indicates that there is a negative association between the profitability and the current ratio of the

company and the correlation coefficient is found to be statistically insignificant both at 5% and 1% levels respectively. This insignificant correlation coefficient implies that there is insignificant association between ROI and CR of the company during the study period.

It is observed from Table-1 that the correlation coefficient between ROI and QR during the period under study is negative and is calculated at (-) 0.40 which is found to be statistically insignificant both at 5% and 1% levels respectively. It also reveals that there is a negative relationship between the ROI and QR. It is evident from these two ratios that the higher the company's margin of safety to the short-term creditors, the lower is the profitability of the company.

It is highlighted from Table-1 that the coefficient of correlation between ROI and CATAR during the study period is (-) 0.10. It implies that there is a negative correlation between the profitability of the company and the ratio of current assets to total assets. The coefficient of correlation is found to be statistically insignificant both at 5% and 1% levels during the study period. It is evident from these two ratios that the greater the CATAR, the lower the profitability of the company. The computed value of correlation coefficient between ROI and CATAR under study conforms to the accepted principle.

Table-1 exhibits that the coefficient of correlation between ROI and CASR during the period under study is (-) 0.27 which is also found to be statistically insignificant both at 5% and 1% levels respectively. It indicates a lower degree of negative association between the two variables. Generally speaking, the lower the current assets to sales ratio (CASR), the greater the efficiency of the employment of working capital and larger is the scope of profitability and vice-versa. The calculated value of correlation coefficient between CASR and ROI conforms to this principle.

It is seen from Table-1 that the correlation coefficient between ROI and WCTR is 0.12 which implies that there is a positive relationship between these two variables. The calculated value of correlation coefficient is found to be statistically insignificant both at 5% and 1% levels of significance respectively. It is an accepted principle that the faster the working capital turnover ratio (WCTR), the slower is the relative investment and greater is the profitability of the company. The computed value of correlation coefficient between ROI and WCTR under study conforms to this accepted principle.

It is observed from Table-1 that the correlation coefficients between ROI and ITR is positive and is computed at 0.33 during the period under study. The coefficient is found to be statistically insignificant at

5% and 1% levels. The most acceptable principle is that the higher the ITR, the greater is the efficiency of inventory management and the larger is the scope of profitability. The computed value of correlation coefficient between ROI and ITR under study conforms to the accepted principle.

Table-1 highlights that the correlation coefficient between ROI and DTR is positive and is computed at 0.20 during the period under study. It is found to be statistically insignificant at 5% and 1% levels respectively. The study of the relationship between the profitability (ROI) and the receivable management (DTR) conforms to the generally accepted rule that the faster the DTR, the lower is the relative investment in receivable and the higher is the profitability.

Lastly, the correlation coefficient between ROI and CTR shows (from Table-1) a negative association of (-) 0.60 which is found to be statistically insignificant at 5% and 1% levels of significance respectively. The more acceptable principle is that higher the CTR, the more will be the efficiency of cash management and the larger will be the scope of improving capital productivity. The study of correlation coefficients between ROI and CTR reveals that the computed value of correlation coefficient does not conform to this acceptable principle.

Table- 1
Simple Correlation Analysis between selected ratios relating to Working

Capital Management and Return on Investment of NTPC Ltd.

Years	CR	QR	CATAR	CASR	WCTR	ITR	DTR	CTR	ROI
1999-2000	2.39	2.13	0.43	1.07	1.61	8.45	9.57	15.16	13.86
2000-01	2.39	2.09	0.38	0.85	2.03	9.59	8.41	16.49	13.63
2001-02	3.49	3.07	0.37	0.94	1.49	8.82	1.54	14.76	11.93
2002-03	4.23	3.85	0.39	1.02	1.28	10.74	1.53	34.92	10.88
2003-04	1.67	1.46	0.23	0.72	3.46	10.85	40.12	30.95	12.93
2004-05	1.91	1.65	0.20	0.56	3.77	13.07	17.25	3.82	12.77
2005-06	2.56	2.18	0.22	0.59	2.78	11.39	30.72	3.15	12.46
2006-07	3.16	2.80	0.27	0.68	2.15	12.96	25.98	2.44	13.89
2007-08	3.22	2.88	0.29	0.69	2.10	13.81	12.39	2.47	14.07
2008-09	2.89	2.59	0.30	0.74	2.07	12.89	11.66	2.57	14.29
Correlation Coefficient(r)	-0.41	-0.40	-0.10	-0.27	0.12	0.33	0.20	-0.60	-
Calculated Value of $ t $ at (n-2) d.f.	1.27	1.23	0.28	0.64	0.34	0.99	0.58	2.12	-

Note : (i) Tabulated Values of ' t ' with (n-2) d. f. i.e. 8 d. f. both at 5% and 1% levels of significance for both tailed test are 2.31 and 3.36 respectively.

(ii) Since calculated values of $|t|$ in all cases are less than the tabulated values of ' t ' with 8 d. f., so the correlation coefficients are statistically insignificant for both 5% and 1% levels of significance.

(iii) Formula used for calculating $|t| = \frac{r \times \sqrt{(n-2)}}{\sqrt{(1-r^2)}}$ with (n-2) d. f.

Source: Compiled and Computed from Published Annual Reports of NTPC Ltd.

Analysis of Multiple Correlation & Multiple Regression

The joint influence of the selected measures relating to working capital management on the profitability of the selected company under study has been studied in Table-3. While fitting the regression equation, ROI has been taken as the dependent variable and CR, WCTR, ITR, DTR & CTR have been considered as the independent or explanatory variables. The multiple regression equation which has been fitted in this study is: $ROI = b_0 + b_1 \cdot CR + b_2 \cdot WCTR + b_3 \cdot ITR + b_4 \cdot DTR + b_5 \cdot CTR$ where b_0 is the constant, b_1, b_2, b_3, b_4 , and b_5 are the respective partial regression coefficients.

In order to select the independent variables in this analysis, the Correlation Matrix has been constructed in Table-2 which represents the correlation coefficient between the independent variables. It is observed from Table-2 that there is a very high degree of correlation between CR and QR (0.999), between CATAR and CASR (0.950), and between CATAR and WCTR (-0.872). This high degree of correlation indicates that there is an existence of multicollinearity because multicollinearity refers to the existence of high correlation between the independent variables. Theoretically we know when two independent variables are highly correlated they basically convey the same information and logically only one of the two variables could be used in the regression equation (Srivastava & Rego, 2008). For this purpose QR, CATAR and CASR have not taken into account while fitting the regression line (i.e. the regression equation of ROI on CR, WCTR, ITR, DTR and CTR).

Table-3 shows the detailed results of the multiple correlation coefficient (R), multiple coefficient of determination (R^2) and the regression coefficients of ROI on CR, WCTR, ITR, DTR and CTR showing the strength of relationship between dependent variable (ROI) and all the independent variables (CR, WCTR, ITR, DTR & CTR) taken together and the

impact of these five independent variables on the profitability of the NTPC Ltd. during the study period from 1999-2000 to 2008-09. It is observed from Table-3 (the multiple regression equation of $ROI = 9.321 - 2.550 \cdot CR - 2.481 \cdot WCTR + 0.578 \cdot ITR + 0.0118 \cdot DTR - 0.01431 \cdot CTR$) that when CR is increased by one unit (keeping WCTR, ITR, DTR and CTR remain constant), the ROI is decreased by 2.550 units and this adverse impact of CR on the profitability is found to be statistically significant at 1% and 5% levels. While for one unit increase in WCTR (other independent variables held constant) the ROI is reduced by 2.481 units and the negative influence of WCTR on the profitability of the company under study is statistically significant both at 1% and 5% levels. When ITR is increased by one unit (keeping CR, WCTR, DTR and CTR constant), the ROI is increased by 0.578 unit. This positive influence of ITR on the company's profitability is found to be statistically significant at 1% level and also at 5% level. However for every additional unit in DTR (when CR, WCTR, ITR and CTR held constant), the profitability (ROI) of the selected company is increased at a very low rate (i.e. increased by 0.0118 unit). This positive influence of debt management on the profitability is found to be statistically insignificant both at 5% and 1% levels. Table-3 shows that for one unit increase in CTR (keeping CR, WCTR, ITR, and DTR remain constant), the company's profitability (ROI) is decreased by 0.01431 unit. The adverse impact of cash management (CTR) on profitability (ROI) is found to be statistically insignificant both at 5% and 1% levels during the study period.

It is exhibited from Table-3 that the multiple correlation coefficient of ROI on CR, WCTR, ITR, DTR and CTR for the study period from 1999-2000 to 2008-09 is 0.984. It reveals that the profitability of the company is highly influenced by the selected indicators of working capital management i.e. CR, WCTR, ITR, DTR and CTR. This multiple correlation coefficient is found to be statistically significant at 1% level and also 5% level. It indicates that the joint influence of the selected measures relating to working capital management on the profitability has been satisfactory during the study period. It is also evident from Table-3 that the multiple coefficient of determination (R^2) is 0.968 which interprets that the 96.8% of the total variation in ROI is explained jointly by the variation in the CR, WCTR, ITR, DTR and CTR. Therefore, it may be concluded that the

contribution made by these five indicators of working capital management for improving the profitability of the NTPC Ltd. is 96.8% during the study period.

Table-2

Correlation Matrix of NTPC Ltd. for the study period from 1999-2000 to 2008-09

Ratios	ROI	CR	QR	CATAR	CASR	WCTR	ITR	DTR	CTR
ROI	1.00								
CR	-0.41	1.00							
QR	-0.40	0.999	1.00						
CATAR	-0.10	0.476	0.491	1.00					
CASR	-0.27	0.442	0.462	0.950	1.00				
WCTR	0.12	-0.796	-0.800	-0.872	0.792	1.00			
ITR	0.33	0.005	0.008	-0.697	0.767	0.427	1.00		
DTR	0.20	-0.629	-0.637	-0.764	-0.656	0.746	0.316	1.00	
CTR	-0.60	0.134	0.159	0.404	0.604	-0.195	-0.551	-0.093	1.00

Source : Compiled and Computed from Published Annual Reports of NTPC Ltd.

Table-3

Analysis of Multiple Correlations and Multiple Regression of NTPC Ltd.

for the period from 1999-2000 to 2008-09

(Multiple Regression Equation: $ROI = b_0 + b_1 \cdot CR + b_2 \cdot WCTR + b_3 \cdot ITR + b_4 \cdot DTR + b_5 \cdot CTR$)

Variables	Regression Coefficients	Standard Error	Calculated value of 't'	Significant 't'
Constant (b_0)	19.321	1.005	19.224	0.000
CR (b_1)	(-) 2.550	0.308	(-) 8.291*	0.001
WCTR (b_2)	(-) 2.481	0.320	(-) 7.742*	0.001
ITR (b_3)	0.578	0.098	5.910*	0.004
DTR (b_4)	0.0118	0.012	1.000	0.374
CTR (b_5)	(-) 0.01431	0.011	(-) 1.312	0.260
Multiple Correlation Coefficient (R) = 0.984	Coefficient of Multiple Determination = 0.968	Adjust (R ²) = 0.927	Standard Error of (R) = 0.2934	F ratio = 24.004

Durbin-Watson (d) = 2.271

Note: (i) Tabulated values of 'F' at 1% and 5% levels with $\{k, (n-k-1)\}$ d. f. are : $F_{0.01, (5, 4)} = 15.52$ and $F_{0.05, (5, 4)} = 6.26$

(ii) Tabulated values of 't' at 1% and 5% levels with $(n-k-1)$ d. f. for both tailed test are: $t_{(0.01, 4)} = 2.78$ and $t_{(0.05, 4)} = 4.60$

(iii) * Statistically significant at 1% level and ** Statistically significant at 5% level.

Source: Table-1

Analysis of Working Capital Leverage

In order to assess the impact of the level of working capital on the profitability of selected company under study the working capital leverage (WCL) for the

period from 1999-2000 to 2008-09 has been computed. It measures the sensitivity of return on investment (ROI) due to changes in the level of current assets (CA). The higher the degree of WCL, the greater is the risk and vice versa. But at the same time, it increases the possibility of higher return on investment. The formula used for measuring the WCL is given below :

$$WCL = \frac{CA}{TA \pm DCA}$$

Where, CA = Current Assets, TA = Total Assets

DCA = Change in the level of current assets.
(Sharma and Gupta, 1999)

An assumption has been made while calculating the WCL that the change in current assets investment in the previous year will be maintained in the current year also. The WCL of the selected company under study for the period from 1999-2000 to 2008-09 is depicted in Table-4. It is observed from Table-4 that the WCL of NTPC Ltd. is fluctuated during the study period. It is highest (i.e. 0.28) in the year 2002-03 indicating that the maximum sensitivity of ROI due to changes in the level of investment in current assets during the period under study. In the year 2004-05, the WCL of NTPC Ltd. is found lowest which is computed at 0.09 showing the least responsiveness of ROI for variability of the level of investment in current assets. Therefore, the variability in the level of investment in current assets is more helpful in the 2002-03 and least supportive in the year 2004-05 for improving the profitability of the company under study. The Table-4 also reveals that the values

Table-4

**Analysis of Working Capital Leverage (WCL) of NTPC Ltd.
for the study period from 1999-2000 to 2008-09**

Years	Current Assets (Rs. in Million)	Total Assets (Rs. in Million)	DCA	WCL [CA/(TA + DCA)]
1999-2000	99915	401711	—	0.25
2000-01	93432	423489	-6483	0.22
2001-02	119653	450411	26221	0.25
2002-03	148282	493319	28629	0.28
2003-04	54527	596346	-93755	0.11
2004-05	61606	659483	7079	0.09
2005-06	95843	717371	34237	0.13
2006-07	151564	807643	55721	0.18
2007-08	176189	893880	24625	0.19
2008-09	202367	1042514	26178	0.19

Source : Compiled and Computed from Annual Report of NTPC Ltd.

of WCL in all the years under study are less than one (1). It signifies that in all the years under study, the increase in the rate of return on investment is less than the proportion to decrease in the level of working capital investment i.e. level of investment in current assets.

Conclusion

The study of correlation analysis reveals both positive and negative coefficients. Out of eight ratios relating to working capital management selected during the period under study, in case of three ratios namely, WCTR, ITR and DTR registered positive association with the selected profitability ratio (ROI) and the remaining ratios like CR, QR, CATAR, CASR and CTR witnessed negative association with the selected profitability ratio. All these eight selected ratios have no significant association with the profitability ratio.

The study of multiple regression analysis reveals that the slope of regression line associated with CR, WCTR, ITR, DTR and CTR reveals both positive and negative impact of the independent variables on the profitability of the company under study. Out of five partial regression coefficients of the ROI line, the partial regression coefficients of ITR and DTR are found to be positive indicating a positive influence on the profitability and the remaining regression coefficients witnessed a negative impact on the company's profitability. Of the five regression coefficients, three coefficients (i.e. in case of CR, WCTR and ITR) are found to be statistically significant at 1% and 5% levels which signifies that there is a significant influence of these three measures of working capital management on the profitability of the company and the remaining coefficients are found to be statistically insignificant during the study period. The study of multiple coefficient of determination (R^2) reveals that 96.8% of the total variation in the profitability of the company is jointly explained by the five independent measures relating to working capital management.

The study of working capital leverage (WCL) of the company under study registered a fluctuating trend during the study period. The values of WCL in all the years under study are always less than unity (i.e. less than one). Hence, it may be concluded that the increase in the profitability of the company is less than the proportion to decrease in working capital throughout the study period. □

Ethanol : Time to Consider as Vehicle Fuel

Prof. Amardeep D. Jadhav*

In a significant move to deal with a massive oversupply of sugar that could also give a major boost to environment-friendly fuel, a group of ministers (GoM), headed by External Affairs minister Pranab Mukherjee, has recommended that India adopt a mandatory blending of 10% ethanol with petrol to run motor vehicles. While blending – at 5% – is currently optional for individual states, the GoM has recommended that 10% blending of ethanol be made mandatory by October 2008, with only exceptions being Jammu and Kashmir, the north-eastern states, Andaman and Nicobar Islands, and Lakshadweep. The recommendation now goes to the Cabinet Committee on Economic Affairs (CCEA) for approval.

No matter how it is produced – from biomass or petrochemical and carbochemical processes –, ethanol is a fuel that releases significant amounts of heat as it is burned. Nevertheless, ethanol is quite different from conventional fuels derived from petroleum. The main difference is in the high oxygen content, which represents 35% of the mass of ethanol. Ethanol's characteristics enable cleaner combustion and better engine performance, which contribute to reduce pollutant emissions – even when it is mixed with gasoline. In these cases, it behaves as a true additive for regular fuels, improving their properties. Notwithstanding the extensive experience with ethanol fuel in some countries, particularly Brazil, it is surprising how, in some countries where ethanol is not routinely used, prejudices and misleading information about the actual use conditions and the advantages associated with this fuel and additive persist.

This paper seeks to present technical, economic, and environmental issues that are important for ethanol as a fuel in internal combustion engines, either in gasoline blends (anhydrous ethanol, that is, without water) or pure (hydrated ethanol). It discusses the main physical and chemical characteristics that define the specifications for ethanol and reviews its suitability and compatibility with the elastomers and metals most used in engines, highlighting the view of the auto industry on its use. Air emissions associated with the use of ethanol, as compared to gasoline, are analyzed.

Also of interest to those considering using ethanol as a fuel, the paper addresses generic legal terms for the use of ethanol for vehicular purposes, economic issues such as fuel pricing in markets where ethanol competes, and taxation mechanisms and logistics for fuel market incorporating ethanol.

Technical and environmental aspects of ethanol

Ethanol, or ethyl alcohol, represented by the molecular formula C₂H₆O, may be used as fuel in spark-ignition internal combustion engines (Otto cycle) in two ways : 1) in gasoline and anhydrous ethanol blends; or 2) as pure ethanol, usually hydrated. Table 1 summarizes the main characteristics of ethanol and a typical gasoline. It is worth emphasizing that these properties do not refer to a strict specification covering several other properties and parameters related to safety, performance, contamination and chemical hazards.

In the Brazilian case, specifications to be observed by producers and the entire distribution chain are set forth by the National Petroleum Agency (ANP) Administrative Rule 309/2001 for gasoline with anhydrous ethanol, and by ANP Resolution 36/2005 for anhydrous and hydrated ethanol. In the Brazilian legislation they are referred to as anhydrous ethyl alcohol fuel (AEAF) and hydrated ethyl alcohol fuel (HEAF), respectively. According to that legislation anhydrous ethanol must contain less than 0.6% of water by mass, while for hydrated ethanol the content must be between 6.2% and 7.4%. These values correspond to a

maximum content of 0.48% for anhydrous ethanol and a range of 4.02 % to 4.87% for hydrated ethanol when expressed on a volume proportion basis, at 20° C.

Table 1 : Gasoline and bio-ethanol properties

Par Lower calorific value	kJ/kg	43,500	28,225
	kJ/litre	32,180	22,350
Density	kg/litre	0.72 – 0.78	0.792
RON (Research Octane Number)	–	90-100	102-130
MON (Motor Octane Number)	–	80-92	89-96
Vaporization latent heat	kJ/kg	330-400	842-930
Stoichiometric relation	air/fuel	14.5	9.0
Steam pressure	kPa	40 – 65	15 – 17
Ignition temperature	oC	220	420
Solubility in water	% in volume	~0	100

Source : API (1998) and Goldemberg and Macedo (1994)

In Brazil, for several decades now, the only types of fuel for internal combustion engines that can be found at all service stations are: regular, and premium gasoline, with minimum average octane ratings of

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87 and 91 (according to RON and MON methods, respectively) and both with an anhydrous ethanol content of 20% to 25%; these federal standards apply to all domestic and imported vehicles with gasoline engines, including luxury cars; hydrated ethanol, with an average octane rating higher than 110, for vehicles with engines suitable for this fuel or with flex-fuel engines, capable of using blends of gasoline with 20% to 25% hydrated ethanol content. Pure hydrated ethanol must be used in engines manufactured or adapted specifically for this purpose, in particular those with higher compression ratios, which seek to use ethanol's higher octane rating (relative to gasoline) and achieve efficiencies on the order of 10%. In other words, ethanol's higher octane rating allows engines to obtain more useful energy vis-a-vis gasoline.

Other modifications must be made in the fuel feed system and ignition, in order to compensate for differences in the air-fuel relationship, among other properties. Furthermore, modification of some materials that come in contact with the fuel are required, such as anticorrosive treatment of the metal surfaces of fuel tanks, fuel filters and pumps, substitution of fuel lines, and use of materials which are more compatible with ethanol. After decades of experience in improving engines designed for ethanol, automotive technology has evolved to the point where vehicles using pure hydrated ethanol achieve similar performance parameters, drivability, cold start conditions and durability as gasoline engines, especially in countries with mild winters.

Incorporating extensive use of electronics in advanced systems that control fuel-air mixing and ignition, cars introduced in Brazil since 2003 use flexible or so-called "flex-fuel" engines which are capable of using – without any interference from the driver – gasoline (with 20% to 25% ethanol), pure hydrated ethanol, or mixtures of these two fuels in any proportion, while meeting standards of efficiency and drivability, and complying with the legal limits for exhaust emissions [Joseph Jr. (2007)]. Since 2005 vehicles equipped with flex-fuel engines have represented the majority of the new car sales in Brazil and cold-start systems have been improving in terms of performance and functionality. Currently there are over 60 different engine models produced by ten U.S., European and Japanese manufacturers operating in Brazil. It should be emphasized that the Brazilian approach to flex-fuel vehicles gives the driver complete discretion to choose the fuel to be used, from 100% hydrated ethanol to gasoline-ethanol blends containing 20% to 25% ethanol.

In the United States, Canada and Sweden, vehicles with flexible engines are also sold, but under a different context: they use gasoline-ethanol blends ranging from

pure gasoline (without ethanol) to a blend of 85% anhydrous ethanol and 15% gasoline, a product known as E85, with limited, but growing availability.

However, the simplest and fastest way of expanding the use of ethanol as a fuel is by using gasoline-ethanol blends in vehicles already on the road, without the need for modifying engines. This is an attractive option both for developed and developing countries. Developing countries because, in many cases, they can produce ethanol but currently depend on increasingly expensive fuel imports for their fuel supply. And developed countries because they currently have a limited capacity to produce cost-efficient ethanol with good energy and environmental balances, but can diversify their liquid fuel options by adding ethanol imported from regions with favourable conditions for bio-fuel production. Then, it is important to consider the consequences of adopting gasoline-ethanol blends on engine performance, drivability and durability of vehicles, as well as the associated environmental impacts.

Since the 1980s, the anhydrous ethanol content of all gasoline sold at service stations in Brazil has exceeded 20%. That same decade the United States also began using a gasoline-ethanol blend, known as E10, with ethanol content capped at 10%. The cap was favoured by the auto industry because it did not require changes in materials or components, nor engine recalibrations.

In recent years several countries, including India (exceptions being Jammu and Kashmir, the north-eastern states, Andaman and Nicobar Islands, and Lakshadweep), China, Thailand, Australia and Colombia adopted E10 as a starting point for the introduction of ethanol in their markets. In such concentrations, ethanol acts as an octane booster and reduces pollution, replacing tetraethyl lead and other oxygenating additives facing imminent environmental restrictions (eg, MTBE), or whose use has already been banned in several countries. The experience of several countries with E10 allows us to affirm that this blend can be introduced to supply the existing vehicular fleet without requiring major changes.

Table 2 presents the modifications to vehicle engines required for different ethanol contents in gasoline [Joseph Jr. (2005)]. In the case of flex-fuel engines, the American approach of using blends of up to 85% ethanol in gasoline is simpler than the Brazilian one, since it does not require an auxiliary cold-start system. It does, however, mean that such engines cannot use pure ethanol. In a near future, with the development of more advanced injection systems, there should be no need for auxiliary systems, and, thus, it may be possible for Brazilian engines to be simplified.

Table 2 : Required modifications for vehicles using gasoline with different bioethanol contents

% of bioethanol in gasoline	Changes to a Pure Gasoline Vehicles										
	Carburettor	Fuel injection	Fuel pump	Fuel filter	Ignition system	Fuel tank	Catalytic converter	Basic Engine	Engine oil	Intake header	Exhaust system
≤ 5%	Any Vehicle										
≤ 10%	Vehicles produced from 1990 on										
≤ 25%	Brazilian gasoline vehicle										
≤ 85%	Flexible Vehicle used in the USA and in Canada										
≤ 85%	Flexible Vehicle used in Brazil										

No changes are necessary

Changes are probably necessary

Source: Adapted from Joseph Jr. (2005)

When ethanol is blended with gasoline, a new fuel is formed; some of its characteristics are distinct from the values determined by the direct measurement of the properties of each component, because of the non-linear behaviour of certain properties. While ethanol is a simple chemical substance, regular gasoline is itself a blend with over 200 different kinds of petroleum oil hydrocarbon derivatives. In the next sections we comment on the main properties of the gasoline-ethanol blends and their environmental behaviour.

Octane rating

Octane rating is a measure of a fuel's resistance to self-ignition and detonation. There are two main ratings, the Motor (MON) and Research (RON) methods, which permit to infer how engines fed with a particular fuel will behave in high load or steady

of the first countries in the world to completely eliminate tetraethyl lead, and only occasionally resorted to the use of MTBE in a few regions during the 1990s. These additives are still used in some countries, but are associated with environmental problems and are being phased out. As shown in Table 3, the addition of ethanol affects the RON octane rating more than the MON octane rating. It is also possible to see the importance of the base gasoline's composition and, consequently, its original octane rating on how the addition of ethanol impacts the octane rating. A general and clearly important rule is that the lower the octane rating of the base gasoline, the more significant the boost due to ethanol.

Volatility

For a fuel to burn properly, it must be well mixed with air. Therefore, the vaporization capacity of a

Table 3 : Effect of bio-ethanol in the octane rating of base gasoline

Composition of base gasoline			Increased octane rating with								
			5% de Bio-ethanol		10% de Bio-ethanol		15% de Bio-ethanol		20% de Bio-ethanol		
Aromatics	Olefins	Saturated	MON	RON	MON	RON	MON	RON	MON	RON	
50	15	35	0.1	0.7	0.3	1.4	0.5	2.2	0.6	2.9	
25	25	50	0.4	1.0	0.9	2.1	1.3	3.1	1.8	4.1	
15	12	73	1.8	2.3	3.5	4.4	5.1	6.6	6.6	8.6	
11	7	82	2.4	2.8	4.6	5.5	6.8	8.1	8.8	10.6	

Source: Carvalho (2003)

load conditions, respectively. Ethanol is an excellent anti-detonating additive, and significantly improves the octane rating of the base gasoline. Brazil, the only country that adds ethanol to all its gasoline, was one

liquid fuel is an important property, which directly affects several performance parameters of the vehicle, including cold or hot start conditions, acceleration, fuel economy and dilution of lubricant oil. Thus, fuels

derived from petroleum must have a balanced composition of light and heavy fractions, so as to produce a distillation curve in which the product starts to vaporize at relatively lower temperatures and ends at temperatures much higher than the ambient temperature. The addition of ethanol tends to shift the distillation curve, especially its first half, affecting the so-called T50 temperature – 50% of the mass evaporated – although the initial and final distillation temperatures are not significantly affected. In this regard, the addition of ethanol has limited impact on engine behaviour.

However, the addition of ethanol significantly affects steam pressure, an important property associated with volatility. Steam pressure determines the level of evaporative emissions and the possibility of steam forming in fuel lines, a problem which is minimized today with the use of fuel pumps inside the tank of most modern vehicles. It is interesting to note that, although the steam pressure of pure gasoline is higher than that of pure ethanol, as shown in Table 2, the addition of ethanol to gasoline raises the steam pressure of the blend. The increase typically presents a maximum of around 5% of the volume of ethanol in the gasoline, falling gradually as the ethanol content grows. For example, for a given composition of gasoline in which 5% ethanol is added, the steam pressure increased to 7 kPa, whereas, with 10% ethanol, this pressure goes to 6.5 kPa [Furey (1985)]. This effect can be easily compensated by adjusting the composition of the base gasoline, so as to ensure that the blend meets specifications. In Brazil and in other countries which have introduced ethanol as a gasoline additive, steam pressure has been specified at levels comparable to those of pure gasoline. In other words, the effect of ethanol on steam pressure can be readily controlled.

Performance

Given that gasoline-ethanol blends can be adjusted to meet the normal specifications of a pure gasoline, there are usually no performance and drivability problems, provided that the quality standards for fuels are maintained.

Nevertheless, when compared to pure gasoline, a 10% ethanol blend needs 16.5% more heat to totally vaporize, which can be challenging in very low temperature conditions [TSB (1998)]. On the other hand, the higher vaporization heat required by gasoline-ethanol blends is one of the main reasons that the efficiency of an engine which uses such fuel improves 1% to 2% in comparison with the performance of pure gasoline. Therefore, even if a gasoline with 10% of ethanol contains 3.3% less power

per unit volume, the final effect on fuel consumption is smaller and depends on particular driving conditions [Orbital (2002)].

The relevant point is that in blends of up to 10% the effect of ethanol on fuel consumption is smaller than the variation in consumption from one driver to the next. Thus, in practical terms, one litre of these low ethanol content blends produces practically the same effects as a litre of pure gasoline [Salih & Andrews (1992) and Brusstar & Bakenhus (2005)]. For higher ethanol contents, such as a 25% blend, which corresponds to a 10% lower energy content per volume, one sees, on average, an increase in consumption of only 3% to 5% over pure gasoline. These results, confirmed in many field tests, suggest that ethanol, although displaying lower calorific power, allows an improvement in engine efficiency, thanks to lower intake temperature and a greater volume of combustion products.

This effect is even more pronounced using pure hydrated ethanol, as long as the engine is properly adapted, by increasing its compression rate. Although it generates 40% less calorific power compared to gasoline, the final effect on contemporary engines is a 25% to 30% increase in fuel consumption relative to gasoline. Over the intermediate term, the adoption of more advanced concepts in engine engineering, such as direct fuel injection, higher compression rates and intelligent turbo systems, may bring significant improvement in fuel economy in hydrated ethanol engines even outperforming the measures seen with pure gasoline [Szwarc (2008)].

Phase Separation

The possibility of water phases separating from a gasoline-ethanol blend is frequently cited as an obstacle to greater acceptance of ethanol fuel. The concern is that somehow water is introduced with ethanol or condenses in the fuel tank of a vehicle, separating at the bottom and interfering with the normal operation of the engine. Strictly speaking, the more ethanol is added to gasoline, the less this problem tends to occur. While pure gasoline basically does not absorb water, anhydrous ethanol does have an affinity for water. As shown in the ternary diagram in Figure 4, gasoline-ethanol blends have a capacity to dissolve water that is directly proportional to the ethanol content. The higher the ethanol content, the wider the range that defines the region where total solubility occurs, as observed in the upper part of the diagram. Under very low temperatures this effect is weaker but, generally speaking, ethanol acts as a co-solvent between gasoline and water, reducing the risk of separation of the water phase in gasoline.

Auto Industry and Users' Views

Lastly, it is worth mentioning the Worldwide Fuel Chart (WWFC) – a set of specifications for vehicular fuels prepared by trade associations of automobile manufacturers in the United States (Alliance of Automobile Manufacturers – Alliance), Europe (Association des Constructeurs Europeens d'Automobiles – ACEA), India (Association of Indian Automobile Manufacturers – AIAM) and Japan (Japan Automobile Manufacturers Association – JAMA) and by the Engines Manufacturers Association (EMA), as well as their proposal to fuel producers [Autoalliance (2006)]. According to such proposal, the presence of up to 10% of ethanol is welcomed as an oxygenator for gasoline, with the explicit recommendation that the product fulfills quality specifications.

Now-a-days, virtually all car manufacturers – whether ethanol is present in the gasoline to be used or not – try to produce models capable of using the new fuels. To this end, car owner manuals emphasize the benefits of ethanol in gasoline: "Toyota permits the use of oxygenated gasoline with up to 10% ethanol. This fuel enables excellent performance, reduces emissions and improves air quality" [Toyota (2007)].

Although the WWFC limits its recommendation to E10, some international initiatives in favour of blends with 20% of anhydrous ethanol (E20) are being discussed. For example, Thailand and the US state of Minnesota have proposed adopting a 20% ethanol blend. As a response to these trends, there are models already being sold in Thailand, such as the Ford Escape and the Ford Focus, compatible with E20. Ford acknowledges that the experience accumulated in the Brazilian market allowed the quick introduction of these models in the Thai market.

Economic and Institutional Aspects of Fuel Ethanol

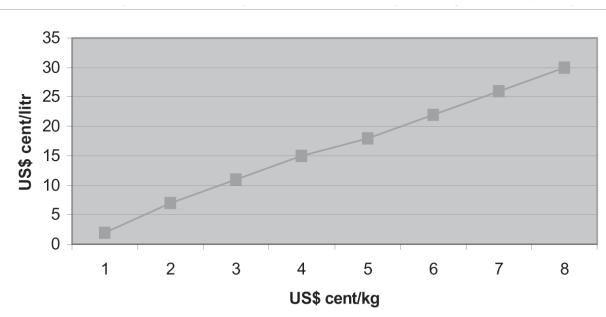
After reviewing technical aspects which make the case for ethanol as a fuel, it is important to explain how – in market terms – bio-fuel prices are calculated, especially bio-ethanol prices. In recent years and in most countries fuel markets have evolved into free markets, where prices are determined by local economic forces or mirror more competitive markets – so-called parity pricing. Within this scenario, bio-ethanol consumer prices are determined by the producer's costs, which, in turn, are determined by production and logistics chains, including tax and sale margins. This analysis is crucial for determining if bio-ethanol is viable and how it would impact the market. As we will see in the next part, bio-ethanol can be produced from a wide range of raw

materials, each with its corresponding production and market opportunity cost, both used in determining bio-ethanol prices. Therefore, the minimum price producers will want to charge for their bio-ethanol which should meet two conditions: a) cover production costs, which obviously include raw material and plant operational costs, as well as capital costs corresponding to production investments; and b) be equal to, or higher than the price that could be obtained if the raw materials were used in the best manufacturing alternative.

Sugar and molasses are among the alternative products that sugarcane can be used for, the latter a by-product of the sugarcane industry that has value as an industrial input or as animal feed. According to the chemical equations for transforming sucrose into bio-ethanol, 1 kg of sugar can, theoretically, produce 0.684 litres of anhydrous ethanol. Considering typical fermentation and distillation yields of 90% and 98%, respectively, we obtain the correlation indicated in the equation and depicted in Graph 1, a indifference curve which enables us to estimate an indifference price for anhydrous ethanol price (PIEa) for a given market price of sugar (PA.):

$$\text{PIEa} (\$/\text{litre}) = 1,67 * \text{PA.} (\$/\text{kg})$$

Graph 1 : Indifference price curve for anhydrous



Source: Elaborated by Luiz Augusto Horta Nogueira

Equation considers only the value of sucrose and excludes the costs related to other investments and operation of the production plant. Nevertheless, the indifference price is an important value for the producer: it only makes sense to produce bio-ethanol if it can be sold at prices higher than the price of sugar. This reasoning, however, does not always hold; for example, when the sugar market is saturated. In such a scenario, producing more sugar would not be as profitable as producing bio-ethanol because sugar prices would tend to decline due to an excess supply. The use of molasses – a sugar by-product – for bio-ethanol production can be subjected to a similar analysis, which should favour bio-ethanol since the

price of molasses is always lower than the price of sugar. The availability of molasses is directly related to sugar production and, because of lower ethanol yields, may be inadequate for large scale bio-ethanol production. While one ton of raw sugarcane juice produces 80 litres of bio-ethanol, one ton of molasses by-product produces 12 litres of ethanol, in addition to the sugar. Therefore, in most sugar producing Latin American countries, molasses could be an important source of bio-ethanol and a way for them to begin to meet domestic fuel needs. For example, Central American countries could produce – without cultivating one additional hectare of sugarcane – 22% of the bio-ethanol needed to introduce 10% ethanol to the gasoline currently imported by these countries, just by using molasses [Horta Nogueira (2004)].

Obviously, any viability assessment of bio-ethanol production should consider other factors, such as commitments and market strategies, in addition to fluctuations in the price of sugar and other commodities. Another unavoidable issue is the relative rigidity of international sugar markets, in which sizable volumes of the product are traded within quotas and prices that do not reflect supply and demand pressures. Several developing countries expect that these distortions will be gradually reduced

and that greater efficiency and realism will be introduced to the sugar market.

A recent World Bank study modelled how sugar prices would respond if price controls were abandoned, using several market scenarios, and estimated that average sugar prices would increase by only 2.5%. The most important benefits would accrue to countries in Latin America and sub-Saharan Africa [World Bank (2007b)].

Two important factors that directly influence international sugar prices are: a) preferential contracts with the United States – i.e., quotas set forth by the US Department of Agriculture – with prices determined by No. 14 Contracts of the New York Board of Trade (NYBOT), and with Europe under the terms of the Africa, Caribbean and Pacific (ACP) and Special Protocol Sugar (SPS) agreements, which set quotas to sugar-producing countries; and b) free or excess contracts, that may follow the prices of No. 5 Contracts of the London Stock Exchange or No. 11 Contracts of the NYBOT.

Although these contracts determine international reference prices – based on electronic operations in such commodity exchanges – preferential contracts reflect higher prices in smaller markets. □

ANNOUNCEMENT

South Orissa Chapter of ICWAI is going to host their 2nd Regional Cost Convention in Hotel Welcome at Gopalpur-on-Sea, Berhampur, Orissa from 11th to 13th February, 2011. The theme of the convention is "Corporate dynamics today and tomorrow". The deliberations will also be made on various current topics by eminent personalities which include Merger & Acquisition, IFRS, DTC, GST, Accounting Standard, Business Valuation, Business Ratings, Changes in Corporate Laws etc.

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AT THE HELM



Shri Kulumani Biswal has taken over as the Director (Finance), Mahanadi Coalfields Ltd. (MCL), a Subsidiary of Coal India Ltd. Prior to this he was working as Chief (Finance) in Central Electricity Regulatory Commission (CERC), New Delhi. Shri Biswal is having about 25 years of rich experience in coal and power sector with regulatory affairs experience both at the state level as well as national level. He is also instrumental in bringing out various regulations in OERC and as well as in CERC.

Shri Biswal is a Fellow Cost Accountant with MBA (Finance), and also hold L.L.B., PGDFM.

Challenging Role of CMAs in Energy Sector

Dr. Sukamal Datta*
 CMA Tamal Taru Roy**
 Abhik Datta***

Energy has been universally recognized as one of the most important components for economic growth and human development. Energy is the driving force for all the development and plays a pivotal role in the growth of a country. It multiples human labour and drastically increases productivity in all sectors – industry, agriculture and service sectors. To sustain the growth rate in economy of a country, energy supply has to grow continuously and at the same time energy supply should be uninterrupted. A country's future economic growth depends upon the long-term availability of energy from such sources that are affordable and environmentally friendly. But for a large country like India with its population more than 100 crore and rapid economic growth rate no single source of energy can fulfil the huge requirement in all the economic sectors. There exists a strong two-way relationship between economic development and energy consumption. Growth of economy of a country with its global competitiveness depends, on the one hand, upon the availability of cost effective and environmentally friendly energy sources, and, on the other hand, the demand of energy for the economic development. In India, energy sector plays a key role in accelerating the economic growth but the Indian energy sector faces some problems of inadequate capital technology, environment, low level of productivity and higher level of pollution. On the other hand, India has a great advantage of efficient human resource at lower cost. Fast growing industrialization and significantly higher economic growth with highly qualified cheap manpower have undoubtedly transformed India into one of the largest potential markets in the world in near future. So the energy sector needs special attention to fulfil the future need of energy. Considering the future need the energy sector in India has been receiving high priority in the planning process. The Government of India has rightly recognized the energy security concerns of the nation. The President of India, on the eve of the 59th Independence Day, emphasized that energy independence is the nation's first and highest priority and we have to achieve this within the next 25 years.

Sources of Energy in India

Both the non-renewable energy like petroleum, natural gas and coal as well as renewable energy like

solar, hydroelectric, wind, tidal, hydrogen, chemical, nuclear, biomass or bio-fuel and geothermal have been used in India. The energy policy of India should be used of as maximum as possible the renewable source of energy and minimum use of non-renewable energy to keep it for future generation.

Different Sources of Energy

- Fossil fuels provide petroleum and natural gas.
- Coal mining provides coal energy.
- Solar energy comes from sun-ray that is converted into electrical energy using solar panels.
- Wind energy comes from windmills by transformation of the kinetic energy of wind into energy unit.
- Hydroelectric comes from vast water resources around India converting the kinetic energy from flowing waterfalls and the dams built on various rivers for this purpose.
- Tidal energy is derived from tidal waves which is utilized for electrical energy harvesting.
- Bio-fuel energy in India derived from burning bio-mass available in large quantities in rural India due to huge number of domestic cattle.
- Nuclear energy or atomic energy comes from radioactive materials which has been developed into a vast industry itself.
- Chemical energy is used batteries using various chemicals.
- Hydrogen energy is produced by reacting hydrogen with oxygen which are available in large quantities in the environment.
- Geothermal energy is one unlimited natural energy source that utilizes the steam from hot water spring.

The Indian energy policy states that energy need should be met not only by using conventional energy resources like coal, petroleum, natural gas, burning of wood which are perishable source of energy but also using other non-conventional source of energy like wind, water, geothermal, bio-fuel, hydrogen

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energy etc. The Indian energy policy gives weightage on development of newer and non-conventional energy sources that are more environmentally friendly and non-perishable. In the present scenario India has one of the highest potentials for efficient use of renewable energy. At present India is the world's fifth largest producer of wind energy after Denmark, Germany, Spain and the USA.

Present Scenario of Indian Energy Sector

India is currently the world's fourth largest economy in Purchasing Power Parity (PPP) terms (the GDP in PPP terms is estimated at approximately USD 3.2 million) and the third largest energy consumer in the world just after China and the USA which is observed from **Table 1**. But per-capita consumption is extremely low.

Table 1 : Energy consumption in the year 2009

	Unit : Mtoe
China	2,234
United States	2,201
India	655
Russia	621
Japan	459
Germany	315
France	254
Canada	244
Brazil	238
South Korea	233

Mtoe = million tons of oil equivalent

Source : *Yearbook Statistical Energy Review 2010*

While the world average of per-capita consumption of energy is approximately 1,800 kg of oil equivalent (kgoe), the per-capita energy consumption in India is only 530 kgoe.

Indian economy recorded a sustained growth during the last few years in spite of world recession. It is expected our economy will continue to demonstrate robust growth in coming years. The Finance Minister of India, Mr. Pranab Mukherjee, said in his valedictory address at the Petrotech-2010 Oil and Gas Conference : "If we can put into effect some important structural measures, there is no reason why India cannot achieve double-digit gross domestic product (GDP) growth. However, the contribution of the energy sector is vital for achieving this economic growth". He also mentioned that structural reform of the energy sector is needed to attract investment in energy sector and to ensure double-digit growth of Indian economy. The Government has already been trying to reform the energy sector by linking

petroleum product prices with global market movements. Consequently, in June 2010, petroleum prices have been deregulated keeping diesel, kerosene and cooking gas under the control of the Government.

In the energy supply mix in India, coal is the dominant player because India is the 4th largest producer of coal with estimated reserves of 214 billions tons. Natural gas is indigenously producing but oil is dominated by imports. It is observed from **Table 2** that only thermal energy holds 64.6 percent share in total energy capacity. Out of which, coal accounts 53.3 percent, gas 10.5 percent and oil only 0.9 percent. The hydropower accounts 24.7 percent, while nuclear 2.9 percent and all other renewable energy source constitute 7.7 percent share in installed capacity of energy.

Table 2 : Total Installed Capacity of Power Sector in India as on 31.09.2010

Fuel	MW	Percentage
Total Thermal	1,06,517.98	64.60
Coal	87,943.38	53.30
Gas	17,374.85	10.50
Oil	1,199.75	00.90
Hydro(Renewable)	37,328.40	24.70
Nuclear	4,560.00	02.90
RES**(MNRE)	16,429.42	07.70
Total	1,64,835.80	100.00

** RES = Renewable Energy Sources include Small Hydro Project, Bio-mass Gasifier, Biomass Power, Urban and Industrial Waste Power and Wind Energy

Source : CEA

The Energy sector is among the first sectors to be opened up for private sector investment. Some reform measures have been initiated by the Government to attract private investment to increase power generation capacity and promote energy efficiency in the country. Accordingly, the 'Electricity Act 2003' has been enacted by the Government for overall development of the energy sector. 'National Electricity Policy' in consultation with State Government and CEA has been prepared by the Central Government under the Electricity Act 2003. The policy prepared guidelines for accelerated development of the power sector and supply of electricity to everywhere considering the energy resources, technology and economics of generation. The Ministry of Power has set 'power for all by 2012' which is a comprehensive blueprint for power sector development and requires installed generation capacity at least 2,00,000 MW by 2012. This will provide reliable, sufficient and quality

power supply to all areas at an optimum cost and, at the same time, will enhance commercial viability of power industry. In addition to that the Ministry envisages an integrated 'National Power Grid' in the century in a phased manner by the year 2012. Under the grid, the cumulative inter-regional power transfer capacity is expected to rise more than 30,000 MW by 2012.

The ownership pattern of Power Sector in India is shown in **Table 3**. It is observed from the Table that the State Sector holds 52.5 percent installed capacity and Central Sector accounts 34 percent of installed capacity. Balance 13.5 percent of installed capacity goes to Private Sector due to liberalization of Indian economic policy and inviting private capital in energy sector.

Table: 3 Ownership Pattern of Power Sector in India as on 31.09.2010

Sector	Installed Capacity MW	Percentage (%)
State Sector	80,844.12	52.5
Central Sector	51,867.63	34.0
Private Sector	32,124.05	13.5
Total	1,64,835.80	100.0

Source: CEA

India's energy consumption, in recent years, has been increasing at one of the fastest rates in the world for two reasons: (i) for population growth, and (ii) economic development. Among the different sources of energy, coal, oil and natural gas are the three primary commercial sources of energy. Coal is still now the largest source of energy though the primary energy mix has been changing over a period of time.

Though India is primarily dependent on commercial fuels yet a sizeable portion of energy requirement (40 percent of total requirement) is met by non-commercial energy sources like fuel wood, animal waste and crop residue, including human and draught animal power – particularly in the rural household sector. Though the energy supply is continuously growing, it is unable to meet the more increased demand and result of which India continues to face serious energy shortages. This compelled India to increase dependence on imports to meet the more increased demand of energy.

The Finance Minister of India, Mr. Pranab Mukherjee, in his speech on the Union Budget 2010 in parliament on February 26, 2010, declared an increase of monetary intensives for energy sector up to Rs.5,130 crore in the current fiscal year against the previous year's allotment of Rs.2,230 crore. The Government will

establish "Coal Regulatory Authority" for assessing monetary costing of coal and setting a performance benchmark. Ministry of New and Renewable Energy will get 61 percent higher incentives from previous year's allotment of Rs.620 crore to Rs.1,000 crore in the current financial year. He also suggested establishing solar plants and other micro power plants at a price of Rs.500 crore in Ladakh district of Jammu and Kashmir. In addition to that exemption of central Excise tax on electric cars and automobiles which would be eco-friendly substitute to petrol or diesel automobiles, 4 percent reduction in Central Excise tariff LED (Light Emitting Diode) light, energy-proficient supply of street, homes and offices lighting, 4 percent concessional excise tariff on battery-run rickshaws proposed in Union Budget 2010 that have a favourable impact on energy sector of India.

Investment opportunities in the Indian Energy Sector

India is a country with huge reserve of natural resources. Being large in size with diversified geographic pattern, with plenty of both renewable and non-renewable resources, and the increasing country's GDP growth and favourable Government policy offers huge investment opportunities in Indian Energy Sector. Though India has large chunk of resource, due to application of improper exploration technique and relatively flat production has left her to be hugely dependent on imports to meet the current demand. Future investment prospect for some of the energy sources are discussed :

Oil & Natural Gas

India is currently the fourth largest country in the Asian-Pacific region – after Japan, China and South Korea – in terms of oil consumption. The total oil demand is expected to reach about 368 million metric tons (MMT) by 2025. Hydrocarbon Vision projects a natural gas demand of 391 million cubic meters (MCM) by 2025. Indian lubricant oil market is second largest in Asia and seventh largest in the world. With the high growth pace of Indian automobile sector, lubes oil demand is expected to grow at 4% per annum. A number of global lubricant oil major companies have started their operations in India and the market has been opened up for the foreign companies to own retail outlets for the distribution of petrol, petroleum products and lube oils. There lies substantial opportunities in the distribution and marketing of oil and natural gas. These include development of port facilities and pipeline transportation infrastructure facilities, modernization of existing transportation facilities that are available in the petroleum and natural gas sector. The Liquefied Petroleum Gas (LPG)

requirement is heavily met by imports. Present import capacity of LPG is 700 trillion metric tonnes pre annum (TMTPA). To cope up with the rising demand new import facilities at Kandla and Mangalore are being constructed. Private and joint venture companies are also planning to set up LPG import facilities as there lies a huge investment in this sector.

Coal

Coal meets around 64% of India's total energy consumption. In the past few years, domestic coal industry has gained significant momentum with government owned PSU dominating the overall coal production. Coal acts as a supplementary product in the sectors like Power, Cement and Steel. Country's coal production is expected to grow at a CAGR of 8% during 2010-11 to 2012-12. Deallocation of coal blocks and stake sales in PSU are the indications pointing towards the government's initiatives to encourage players in the production and investment in the coal industry. Currently India has 21 big coal washeries but only two caterers powers requirement. With the government's move towards permitting buildown-operate (BOO) washery projects by coal companies there lies a enormous scope for private investment in this area.

Nuclear

Presently nuclear power holds fourth position in India among the different energy resources. Nineteen nuclear plants are in operation and generate 4,560 MW of energy. With the signing of Indo-US nuclear deal, India can now carry out international trade of nuclear power and technologies. There lies a huge investment prospect in this sector. India is targeting 470 GW nuclear power by 2050, an highly ambitious target of 11,000 percent increase. Russia's Rosatom, France's Areva, US's GE and Westinghouse has signed MoUs for initial access to the sector.

Power

Power Sector in India will witness a boom in the coming decades with huge FDI coming up in both conventional and non-conventional power generation sector. This sector is estimated to grow at a rate of 25% year on year in the coming years. Government has taken various electrification programmes which are considered in the context of socio-economic development of India. The Ministry of Power has taken Missions like 'Power for all by 2012' and 'Rural Electrification supply Technology (REST) Mission' which will accelerate the electrification for all villages and household through decentralized technologies and conventional grid connection.

Integrated Energy Policy of India envisages the installed capacity of electricity generation to reach

between 8,00,000 MW and 9,50,000 MW by 2030 with a substantial contribution from renewable energy. India's Prime Minister has called for the need of Public Private Partnership to meet the estimated requirement of Rs.60,000 billion investment over the next 25 years.

Solar energy sector looks to have a very viable prospect for investment in the coming years as the Government is showing its firm stance towards the use of renewable energy resources. As per Kyoto Protocol and Copenhagen Convention, Government has taken initiatives to reduce carbon footprint and encourage non-positing energy production technique. Jawaharlal Nehru National Solar Mission (JNNSM) forecasts 20,000 MW solar power deployments and 20 million solar lighting systems by 2022. JNNSM eyes to increase the capacity of grid connected solar power generation to 1,000 MW by 2013 and 3000 MW by 2017 through mandatory use of renewable purchase obligation off grid application is expected to reach 1,000 MW by 2017 and 2,000 MW by 2022. Government has introduced Renewable Energy Certificate (REC) which enables the obligated entities to meet their Renewable Purchase Obligation. As per Energy Act imposed by the State Electricity Commission, all energy distribution licensees are entitled to buy a minimum level of renewable energy.

Small hydro energy projects are very cost effective because it has a very low operation and maintenance cost and a high energy conversion efficiency of about 70%. Presently this sector serves 1,976 MW of power needs but has a potential of 15,000 MW in the coming years. Government has launched specific nationwide scheme for financial support for new potential small hydropower site.

Centre for Wind Technology, a R&D centre, established by the Ministry of New and Renewable Energy, has identified total potential of between 50 GW to 65 GW wind generated power in coming years. According to recent study by Global Wind Energy Council and Indian Wind Turbine Manufacturers Association, wind energy could contribute up to 24% i.e. 228 GW of total power demand by 2030.

Government Incentives and Policies to draw investments in Energy Sector

(i) To promote private investments new petroleum tax code has been developed. For investments made in north east India, a seven year tax holiday is provided after the commencement of the production.

(ii) Production sharing contract for exploration provides full tax deduction in the capital expenditures incurred in exploration and drilling operation.

(iii) Under New Exploration Licensing Policy (NELP), foreign investors are granted the same

treatment as domestic players, which were earlier restricted within national companies.

(iv) 100 per cent foreign investment as equity has been permitted with the approval of the Foreign Investment Promotion Board (FIPB).

(v) Government is encouraging liberalized foreign investment to facilitate foreign investment and technology transfer through joint venture.

(vi) Land allotment on a long term basis at token lease rent and garbage supply at free of cost at the project site by State Governments are some of the initiatives to invite investment in the projects on energy recovery from municipal wastes.

(vii) Indian Renewable Energy Development Agency (IREDA) arranges low interest loans, incentives and subsidies for the investment in renewable energy development project.

Upcoming investments in Renewable Energy Sector

India's largest energy based conglomerate – Reliance Industries Limited (RIL) – has announced that it will invest in solar energy. RIL already has a presence in this sector and has completed IMG Solar rooftop energy system recently. The company is set for a 5 MW Solar firm in Western India, which will be largest solar firm in India.

France based energy company Areva is planning for an investment of \$3 billion in solar power sector. The company's plan is to set up 1,000 MW solar thermal power capacities in next 5-7 years. Areva launched a joint venture with Astonfield to increase the capacity in biomass sector to 100 MW from its present capacity of 60 MW installed capacity. There are only few companies providing consultancy services in engineering and logistical support for designing and setting up of a solar plant. Areva is planning to serve even these services.

A Norway based private equity fund will invest Rs.400 crore in India's energy sector. The fund will invest in growing companies in energy sector. Its main focus will be oil and gas with substantial investment in hydro power, renewable energy and energy efficiency companies. The fund will look for energy companies with acquisition values between \$40 million and \$100 million.

India's first tidal power generation project is coming up at Durgaduani Creek of Sundarbans, West Bengal, where difference between high tide and low tide is greater than 4 meters. It is a 3.75 MW project.

German company Siemens has announced to set up wind turbine manufacturing in India by 2012 with an annual capacity of 250 MW.

Reduction of Carbon Footprint in Indian Energy Sector

Indian energy sector is set to achieve a record growth in the coming decades and simultaneously carbon footprint is expected to grow as the power mix will be dominated by coal based thermal sources. Looking at the current scenario of increasing environmental consciousness, government is set to take steps to reduce carbon intensity of power generation without annoying supply growth. India is committed towards reducing voluntary carbon emission of 20% - 25% by 2020. India is set to introduce energy efficiency certificate trading, that will certify energy conservation to encourage efficiency improvements across energy intensive industries. It consists of a 'Perform, Achieve and Trade' (PAT) framework that will set a certain specific energy consumption (SEC) target for power sector. If power unit operated below the benchmark, it would be able to trade excess units; else it will have to purchase energy efficiency certificates from other companies.

Coal gasification offers one of the cleanest ways to convert energy content present in coal into electricity, hydrogen and other energy forms. It provides environmental benefits with a capacity to cleanse pollutants forming impurities from coal derived gases up to a level of 99%. Through this method, sulphur in coal can be extracted and sold commercially. Similarly nitrogen present in ammonia can be derived from coal and can be used by fertilizer companies. This technique also provides efficiency gain in coal combustion plant.

Carbon Capture and Storage (CCS) technology is a breakthrough development in achieving low carbon energy. CCS uses a combination of technology to capture the CO₂ release, by fossil fuel, transport it to the desired suitable storage location, and store the CO₂ deep underground so that it cannot enter the atmosphere. This technology has a potential to reduce CO₂ emission from a coal based thermal plant by up to 90%.

With the changing global outlook towards climate conservation, energy sector companies need to be well prepared with upcoming climate legislation and taxes. If the company transforms itself from its conventional stature to a climate responsive organization then there lies a whole new avenue for them with loads of opportunities to grab. Beside regulatory compliance, these techniques will help the companies to curb their energy consumption and help in profit maximization. Either way it is a win-win situation for energy sector companies that foresee the need to shift to a clean tech and take necessary steps towards reducing carbon emission.

Challenging Role of CMAs

Generally Cost and Management Accountants (CMAs) work within one specified company or any Government Undertaking. Being experts in costing, finance, taxation and management they perform a series of works to ensure their company's or employer's financial security, handling essentially all financial matters and, accordingly, helping to drive the overall management and strategy of the business. In all companies of coal, oil, gas, hydroelectricity, solar, wind energy, nuclear under energy sector they could find themselves doing anything like budgeting, handling taxes and managing assets, and helping in strategic planning. The CMAs, by virtue of their expertise knowledges are essentially the key figures in taking policy decision, and success of their companies. In this sector CMAs may do statutory and financial accounting, taxation compliance, properly utilize source of fund, and prepare management report. They may work to bridging the gap between managers and accountants with looking forward to the future at what business is going on and what is going to happen. They play the role of a catalyst rather than a mere accountant. Though they work with historic data yet they think how better will be done and to what extent cost of production and distribution of energy could be reduced with their expertise knowledge and previous experience. Accordingly they help the management in decision making process and obviously help in improvement of performance of their companies. They develop alliance with finance, management information system, industrial engineering, and corporate planning. They can change the mindset of the top management from product profitability to customer profitability analysis.

The CMAs evaluate the performance of their firm to accomplish the targeted objectives on the basis of evaluating the efficiency of production and operational efficiency. They conduct in-depth analyses of sales trend for maintaining an optimum balance between the forces of demand and supply. These help preventing over/under production. Such analysis

helps in providing future pricing and costing policies and comparisons of financial performances.

During the period of business slowdown throughout the world the capabilities of the CMAs in India have already been tested. The energy companies with sound cost and management accounting system have survived in the keen competitive market under the liberalized regime. This happened due to the fact that the management of those organizations relied on their CMAs for advisory services related to different areas of project appraisal, capacity utilization, analyzing the alternative ways along with their financial implications on the organization.

In the present scenario of energy sector in India – when the Government has opened the windows for private investment, even foreign investment – the CMAs should be prepared to face the new challenges.

The CMAs will obviously improve the performance of their organizations by :

- Creating Cost effectiveness
- Quality improvement
- Technology upgradation
- Aggressive marketing
- Competitive pricing
- Incentive in-build cost structure
- Wage re-orientation
- Expansion of capacity
- Economics of scale
- Prudent application of the new foreign exchange policy.

From the above discussion it is observed that the CMAs in energy sector are not only information providers but are part of the decision making process itself. So they are accountable for devising strategies, result-oriented approaches, providing a definite direction towards individual units to survive in the global marketing, formulating cost effectiveness for the product or the service rendered, as also forecasting trends and external factors which have influence on the organization's prospects. At present CMAs co-operate the firm by leading from front – not sitting as backbench advisors. □

CONDOLENCE



With profound grief we inform the death of Sri M. Sreenivasa Rao, President of ICWAI during 1975-76. Sri Rao devoted his life for the development of the Profession and the Institute. We pray for his eternal peace and pray that his family has strength to bear the loss.

Tax Fight over Business supply of Food – The Conditional Annalakshmi from the High Courts of Bombay and Delhi – The Far-reaching Impact

P. Ravindran*

It is well known that the extent and availability of CENVAT Credit is a crucial determinant of the tax fairness of both Central Excise Duty and Service Tax which are operated as a Value Added Tax System. The litigation in the area of CENVAT credit has been phenomenal, even to put it mildly. Many interpretational battles have been fought over glaring inadequacies and omissions in the statutory provisions relating to CENVAT credit. When the law is silent or opaque or obscure, interpretation rushes in like a wind to fill the vacuum with meaning and effect.

The litigation in this area has been reaching the High Courts and even the Supreme Court of India. A particular battle has been fought between the Service Tax department and the tax payers in the area relating to "input services". The interpretation of what constitutes "input service" in the context of manufacturing industries and pure service providers has been at the heart of the troubled CENVAT Credit jurisprudence. *This particular dispute towers above all other conflicts in the CENVAT credit arena.* The department continues to resist vigorously in this matter knowing very well that a permanent loss in this area would open the floodgates of tax credit against the revenue. On the other hand, the industry and business as a whole has watched with similar anxiety knowing equally well that an outcome on this matter would make or mar their tax credit fortunes to a considerable extent.

2. Central to all service tax litigation in the interpretation of input services has been the question of whether outdoor catering service engaged by manufacturers and service providers alike is an eligible input service in terms of CENVAT Credit Rules, 2004 (For a fuller understanding of the litigation surrounding the interpretation of input services, see this author's article in the September 2010 issue of *Management Accountant*). The see-saw battle in this area seemed to have been settled with the larger Bench of the Hon'ble Customs, Excise and Service Tax Appellate Tribunal holding in the case of *Commissioner vs GTC Industries Ltd - 2008 (12) STR 468 (Tri - LB)* that the outdoor catering is an eligible service under CENVAT credit rules. The Central Board of Excise and Customs, Delhi (CBEC) seemed to sympathize with this view when they clarified that

essential business activities such as catering / canteen services and transportation of employees were eligible for CENVAT credit, *vide Circular 120/01/2010 dated 19.1.2010*. However, this development proved to be a mere line in the shifting sands. The department of Central Excise & Service Tax at the field level has viewed the trends with disfavor and has not abided by the Tribunal order and the CBEC clarification. Hundreds of show cause notices have been issued and are still being issued on this score. To add to this unifying scenario, some of the CESTAT Benches began to speak in discordant voices. The department knew that a successful outcome in the litigation in favor of the tax payers would clip their penchant for reducing the CENVAT credit on Input services and enhancing the collection of revenue. On the other hand, a successful outcome for the tax payers would liberate many other input services from being thwarted by the department, for the purposes of availing tax credit.

3. It was against this background that the Bombay High Court has delivered a very interesting and far-reaching judgment exactly on the issue of whether outdoor catering service is an eligible service for the CENVAT credit 2004. The verdict goes beyond the catering issue and would echo in several other areas. The case is *Commissioner of Central Excise, Nagpur vs Ultratech Cement Ltd. - 2010 (20) STR 577 (Bombay High Court)*. The Hon'ble High Court put paid to the many departmental interpretations regarding the input services.

This case law has formulated certain principles which are discussed :

● **Harmonizing and integrating the obstacle posed by the ratio of the case in Maruti Suzuki Ltd vs. Commissioner - 2009 (240) ELT 641 (SC)**

In the above case, the Hon'ble Apex Court dealing with the question of availability of CENVAT credit in the context of "inputs" as distinct from "input services" ruled that the scope of 'input' is restricted to the inputs having a nexus with manufacture. The department has actively sought to import this ratio into the arena of "input services" as well. This meant

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that manufacturers would have to prove a clear and direct nexus between the input service used and the manufacturing operations in the factory and the service providers would have to similarly provide proof of nexus between the input service and the output service. This requirement by the department was burdensome, well-nigh impossible and would have placed the manufacturers and the service providers at a very debilitating disadvantage. After all, how would a company manufacturing goods prove that a factory garden and the tours and travels of the executives are related to the manufacture of the products inside the factory? These services can be understood only as essential activities for the business to run productively.

The Bombay High Court has now stated that the ratio of the Apex Court in the Maruti Suzuki Ltd case would equally apply while interpreting the expressions related to input service in the language of CENVAT Credit Rules, 2004. The Hon'ble Court has said that the fact that the definition of "input service" is wider than the definition of "input" would make no difference in applying the ratio of Maruti Suzuki Ltd case while interpreting the scope of input service. Had the Bombay High Court stopped with this, it would have been music to the ears of the service tax department. But the High Court unveiled a novel but by no means outlandish interpretation without running afoul of the Apex Court. The Court held that input services having nexus or integral connection with the manufacture of final products as well as the business of manufacture of final products would qualify to be "input service" under the CENVAT Credit Rules, 2004.

- **CENVAT Credit on input service is available for the manufacture of final product as well as for the business of manufacture of final products**

The Hon'ble High Court of Bombay has done a nice balancing act vis-a-vis the expected bar of the ratio of the Apex Court in the Maruti Suzuki case. *The judges in this case have followed the Supreme Court but have extended it to one category in addition - the business of manufacture.* Now, therefore, manufacturers can claim CENVAT credit on input services which have nexus not only with the manufacture of final products but also with the business of manufacture. The High Court has ruled that the canteen is a statutory requirement and the non-compliance of which would entail penal consequences to the manufacturer. Therefore the manufacturer is entitled to CENVAT credit on outdoor catering service which has an integral connection with the business of manufacture of the final product, viz cement.

- **The observations of the Bombay High Court on the scope of input service**

(*Quote*) "28. In the present case, the question is, whether outdoor catering services are covered under the inclusive part of the definition of "input service". The services covered under the inclusive part of the definition of input service are services which are rendered prior to the commencement of manufacturing activity (such as services for setting up, modernization, renovation or repairs of a factory) as well as services rendered after the manufacture of final products (such as advertisement, sales promotion, market research etc.) and includes services rendered in relation to business such as auditing, financing..... etc. Thus, the substantive part of the definition "input service" covers services used directly or indirectly in or in relation to the manufacture of final products, whereas the inclusive part of the definition of "input service" covers various services used in relation to the business of manufacturing the final products. In other words, the definition of "input service" is very wide and covers not only services, which are directly or indirectly used in or in relation to the manufacture of final products but also includes various services used in relation to the business of manufacture of final products, be it prior to the manufacture of final products or after the manufacture of final products. To put it differently, the definition of input service is not restricted to services used in or in relation to manufacture of final products, but extends to all services used in relation to the business of manufacturing the final products" (*Unquote*)

- The Court has further held that the definition of input service seeks to cover every conceivable service used in the business of manufacturing the final products and that the categories of services enumerated after the expression "such as" in the definition of "input services" do not relate to any particular clause or category of services but refer to a variety of services used in the business of manufacturing the final products.

- The Court concurred with the decision in the case of COCA-COLA INDIA PVT LTD vs COMMISSIONER - 2009 (15) STR 657 (BOMBAY HIGH COURT) that the cost of any input service that forms part of the value of final products would be eligible for CENVAT credit. The court further stated that the observation in the Coca-Cola Case has to be construed to mean that where the input service used is integrally connected with the business of manufacture of the final product and the cost of the input service is included in the cost of the final product, the credit of service tax paid on such input service would be allowable.

4. To summarize, the following legal principles have been established in the *Ultratech Cement case* in the context of CENVAT credit on input services :

(A) The definition of "input services" is wider than the definition of "inputs" and the two cannot be strictly compared.

(B) CENVAT credit is available not only on input services used in the manufacture of final products and extends to the input services used in the business of manufacture of the final products.

(C) The input services must, however, be shown to have nexus or integral connection either with the manufacture of the final products or with the business of the manufacture of final products.

(D) The cost of such input services should form part of the final products.

(E) The legislature did not intend to restrict the definition of input service to any particular clause or category of services used in the business.

5. Impact analysis of the judgment of Bombay High Court

The *Annalakshmi* from the Bombay High Court allows credit not just on canteen/catering services. The principles established would now make credit-taking easier for both manufacturers and service providers in a wide variety of input services of which we can cite :

- Statutory establishment and maintenance of factory gardens
- Staff transportation to and fro from factory and the office of the service provider
- Asset insurance and other general insurance
- Tours and travels related to business
- Mediclaim for the staff
- Compulsory liability insurance
- Product warranty service
- Customer Care Services
- Management Services
- Rent for buildings and offices
- Opinion survey regarding products, etc.

6. Certain grey areas in the Ultratech judgment

Welcome as it is, the judgment of Bombay High Court in its path-breaking extension of CENVAT credit to the business of manufacture as distinct from manufacture simpliciter has left the field open for the interpretation of what constitutes the "business of manufacture". The "business of manufacture of final products" is a new-fangled idea. The Court could as well have simply stated the concept as "business of manufacture" or better simply as "business of the assessee". Further, the Hon'ble Court, in internalizing

the strict ratio of nexus established in the Maruti Suzuki case (so as not to cross the Supreme Court), has caused difficulty by not laying down clear guidelines on how to establish the nexus and integral connection between the input service and the business of manufacture.

The Bombay High Court seems to have accepted and proceeded on the basis (in the case of Ultratech Cement) that the canteen was a statutory requirement for the company. Then what about companies who maintain canteen as an essential business prerequisite to attract and retain workers and staff rather than as a statutory condition? Will the department seek to deny credit to such canteen /catering services where the statutory requirement is absent? In my humble view, the Court could have ruled that a canteen in the modern-day business organizations is a compelling business necessity with or without a statutory requirement. This would have applied a dampener to possible departmental misinterpretations in the future.

The definition of "business" was put in clearly wider terms in the Coca Cola case which has escaped attention in the Ultratech case. The same High Court with coordinate bench in the earlier case held that "business" of a company manufacturing products cannot be restricted to the business of manufacture of the final products but extends to the functioning of the business as a whole and includes all its activities. To the extent this Ultratech case deviates from the Coca-Cola case, it makes for a worrying detraction from the fully positive ratio of the latter.

Another difficulty with the formulation of the concept of the "business of manufacture of "final products" is that this would be needlessly restrictive and the department may seize on this unintended opening to deny proportionate input service tax credit on semi-finished products, intermediate products, by-products and waste and scrap which are cleared as such on the ground that these are not "final products" for the business of the company. This was the scenario that weighed with the Coca-Cola bench in expounding a liberal view of what constitutes business for the purposes of the CENVAT credit rules.

7. No service tax on on-board catering—Delhi High Court

Now we come to another interesting case on the same subject of canteen/catering service. The High Court of Delhi has given a remarkable ruling in the case of INDIAN RAILWAYS C. & T. CORPN. LTD. vs GOVT OF NCT OF DELHI - 2010 (20) S.T.R. 437

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MFIs : Why the Hurly-Burly?

V. Gopalan*

There are three factors to immediately focus as regards MFIs. They are: regulating the entire sector in whichever entity form they are – such as trusts, NGOs etc; making compliance provisions stringent by RBI for even non-deposit taking undertakings; and announcing national level policy on all aspects of MFI's functioning.

Micro Finance is being practiced world over for more than 150 years. Lysander Spooner, an American Libertarian, in his book "Poverty: Its illegal causes and legal cure" as early as 1846 has extensively advocated the benefits from micro loans to entrepreneurs and farmers as a way for getting them out of poverty. But it was at the end of World War II in 1945 and with the 'Marshall Plan' the concept became popular. The award of Noble Prize in 2006 to Grameen Bank of Bangladesh along with its founder Mohammad Yunus gave further impetus to Microfinance. Md Yunus is running Grameen to lift people out of poverty. But the Indian promoters had greed and converted the sector into a money spinning industry. Many a times, MFIs in India is understood as Micro Finance Industry and not Micro Finance Institutions!!

It is sad to note that many banks have stopped lending to MFIs after their repayments were hit due to the recent ordinance of Andhra Pradesh government following allegations of harassment of clients by recovery agents.

Applying a sudden brake is not the solution to the problem—as it would strangulate. Like in the case of Satyam, it is only proper to let the institutions function uninterrupted with the support of experts and with interim supervisory control from RBI, Government and other regulators, till guidelines and policies fall in place.

Ordinance is driven by compulsion

Under RBI regulations, there are two types of NBFCs, viz, deposit accepting and non-deposit accepting. The rules are not very stringent for non-deposit accepting and this made life easier for MFIs as they took this route to avoid reporting and disclosures. RBI has also not done any serious inspection or supervision in last so many years on these MFIs and their lending. Only in October 2010, after a lot of hue and cry, RBI appointed a sub-panel, under the Chairmanship of Y H Malegam, to look into the functioning of MFIs, to examine the conditions under which loans to MFIs could be classified as priority sector lending, and give appropriate recommendations to examine the prevalent practices

of MFIs regarding interest rates, lending, and recovery practices, to identify trends that impinge on borrowers' interest etc. It shows that these crucial areas were left unaddressed all these days!

The allegedly coercive methods being adopted continuously by these lenders to recover their money from poor borrowers prompted Andhra Pradesh government to promulgate the ordinance. It is this move which unraveled the current scenario of the MFIs in India. But what is surprising is that the regulators did not think it appropriate all along to regulate a fast emerging sector involving thousands of crores of public money, and, all the more, involving poor women! This is the problem faced in several states and national level policies are long overdue.

But what is also surprising is that only in August 2010 the IPO of SKS Micro Finance was subscribed 13.69 times and Rs 10/- shares were allotted at Rs 985/- per share! Did SEBI not get in to all these aspects before clearing the prospectus for such a hefty premium and, if, so, whether the RBI panel's findings would match the industry leaders' disclosures? It is a question to be answered.

Introducing various other alternatives in a hurry—such as bulk lending scheme, viz, 'Mandal Mahila Samakhya (MMS)' by Union Bank of India to provide alternative to MFIs—have also got their merits and demerits. As the sector is hit heavily now, any new initiative has to be only after due consideration of several factors and can be possible only after the release of RBI panels' report.

It is not to be compared with 'sub-prime'

MFI lending is compared to 'sub-prime' lending by some experts. As we know, sub-prime lending refers to loans extended to people with poor repaying ability but no one would agree that the MFI lending is to such people. The tall claim of the MFIs is always that the repayment is closer to 100%. The coercive methods and the alleged incidences of suicides apart, the short (weekly) repayment periods, very high interest rates—even to the extent of 60%—as stated

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in some press, lack of regulations to monitor etc are the reasons for the current situation.

Government's stand on interest rates – then and now

In June 2007, while introducing the Micro Finance Bill in the Parliament, the finance ministry opposed any cap on interest rates for small loans stating that it can kill the institution of microfinancing even before it takes off. But, recently, the government has directed the public sector banks to monitor the interest rate charged by MFIs. This was the long cry of the poor borrowers for many years, but was ignored by the officials.

MFIs in the form of Trusts, NGOs

One important factor worth noting is that the talk is always about MFIs such as SKS, Spandana, Basix,

Share, Asmitha, BSFL etc—all functioning in the form of companies established under the Companies Act. How many know that there are hundreds of unregulated trusts and NGOs doing Micro Finance lending? Also, they are funded by nationalised banks on similar lines of funding to corporate sector. RBI panel study must be comprehensive and include these aspects also so that the total sector—in whichever entity form it is functioning—is covered in its entirety.

As protection of poor people is the responsibility of the nation, policy at the national level should evolve quickly as delay might give short term remedy to the borrowers by delaying their current repayments but would have long term repercussions on the survival of the MFIs; and also on the availability of funds to the poor class. □

Contd. from Page 42

(Del.). In this case, while justifying the imposition of VAT on food and beverages supplied on board the trains of Indian Railways, the Hon'ble Court has distinguished a mere providing of food, snacks and water to passengers from the outdoor catering service. The court has held that service element in such cases is incidental and is a bare minimum required for selling food.

The following principles have been established in this case :

- Mere supply of food and beverages to passengers (of course on board the trains) is a transaction of sale of goods and not a contract for providing services nor a composite contract for supply of goods and services.
- Service element in such cases is incidental and minimal.
- The customers have no choice about the food and they have to take what is served from the fixed menu in such cases. The element of service involved in serving a passenger traveling on a train cannot be said to be higher than that involved in selling cooked food in a shop or in a restaurant.
- Service tax will not be attracted on such transaction involving sale of food.

8. IMPACT ANALYSIS – This case goes beyond catering :

This case shows that the service tax department cannot tax all catering activities without discrimination. Even though the judgment of the Delhi High Court was delivered in the context of catering provided on board the trains, the facts of the case can repeat themselves anywhere else.

For example, consider that a business organization arranges catering for an event with fixed menu as in the case of Railways. Won't the case law of the Delhi High Court apply in such cases?

Further, what about sales involving incidental services such as tyre retreading which are now taxed under Maintenance & Repair service by the Service Tax department? In this case, the intention is to sell a brand-new tyre-retread and the service element is very much incidental and minimal. The Delhi High Court verdict may be applicable in such cases too.

9. Conclusion

The above two judgments of Hon'ble High Courts of Delhi and Bombay, respectively, show that the Service Tax on catering as well as CENVAT credit on catering cannot be viewed in a restrictive way as done by the department. The cost of food served at canteens and at outdoor points is likely to become less with the availability of tax credit as well as with the prospect of no service tax being payable. In a country which is in the throes of a food inflation which is eating away a substantial chunk of income, the judgments are indeed welcome and a small consolation. Now, you can expect the Department to go hungry again. After all, the statutory abatement of 50% to the service tax assessable value on catering service comes with a unique condition not easily seen in any other law: The abatement will not apply if the food supplied is not a substantial and satisfying meal. For the Department, the two judgments of the High Courts of Bombay and Delhi will be far from satisfying. □

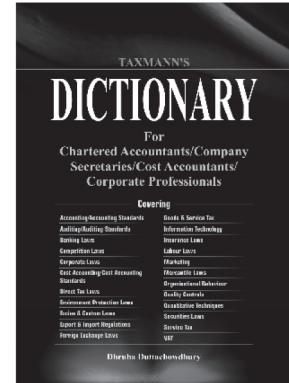
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Knowledge Management : A Psychological Perspective

Om Prakash Dani*
M. S. Srinivasan**

We are told by economic and management pundits that the contemporary world is a knowledge society and a knowledge-economy where knowledge – and not capital or natural resources – is the primary factor that will determine the competitive advantage of nations or organizations. The knowledge-worker is emerging as an influential class in the corporate world. And knowledge-management has emerged as a distinct and specialized field of study in corporate management. However, most of the modern approach to knowledge-management is external, aiming at the outer organization of knowledge through Information Technology. But for a more efficient and effective knowledge-management, we must learn to manage the inner faculties of knowledge. When all the knowledge-workers in an organization are trained in managing their inner faculties of knowledge, it leads to a more creative internal management of its knowledge-resources, complementing and reinforcing the external organization of knowledge. This article presents such a deeper approach to knowledge-management.

The Triune Mind

The first step in this deeper and inner approach to knowledge-management is to have a clear understanding of the nature of the instruments of knowledge. The Intelligent Will, called Buddhi in Indian thought, is the primary instrument of knowledge. Knowledge can also be received through heart or vital intuitions, but man, in his present evolutionary status, is a mental being and, therefore, understanding will in the mind is the highest and most enlightened power available to him in his quest for knowledge.

So the first task for a seeker of knowledge is the purification of this faculty of understanding. In our ordinary status of ignorance, this faculty of understanding is not functioning according to its dharma but involved in the action of the lower faculties like that of our physical, emotional and vital consciousness of the surface ego-personality. These lower faculties are supposed to obey the dictates of the intelligent will like a servant obeys his master's commands. But in our present status of ego-based desire-driven ignorance, the master very frequently or most of the times forgets his dharma and becomes an accomplice of his servants, who use him as a tool to provide rational justification to indulge in their desires. So the first step in the purification of the intelligent will is to disentangle the faculty from its involvement in the surface play of the physical and vital consciousness.

The main reason for this entanglement is the very nature of our human terrestrial evolution which has progressed from matter and life to mind through a process of progressive emergence and integration. Life or vital consciousness has emerged from physical matter and was integrated into it and transformed it to become a living matter and mind has emerged from

living matter and transformed it into a living and thinking matter. Thus our mental consciousness pervades our whole being. There is a physical mind, vital or emotional mind, and a thinking, willing mind. The characteristic action of the physical mind is an obsessive repetition of habitual mental notions acquired from physical sense-perception. The vision of this physical mind is confined to a life bounded with the sensory perception of the brain. The vital mind brings up an eager, restless and anxious pursuit of desire and emotional attachment into all our mental functioning. This vital mind is always ever ready to provide convenient justifications for the desires of our vital ego.

Beyond this physical and vital mind is the thinking mind. Here also there are two elements in this part of mind. There is an element of pure reason, which is capable of a disinterested pursuit of truth or knowledge and can range freely in the realm of pure abstract ideas. But there is a pragmatic element in this mind, which is oriented towards life, and is always interested in utilizing knowledge for application, enlargement, utility and progress in life.

Though this higher part of the mind is capable of a relative freedom from desire, it is still subject to ego-sense. In the pure reason this ego-sense creates a strong intellectual attachment to certain ideas or ideals, pre-conceived notions, and an attraction towards particular forms of intellectual, aesthetic, ethical or aesthetic, ideals or pleasures. Sometimes an inordinate desire of this part of the mind for a vast accumulation of knowledge for the personal pleasure

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or satisfaction of the intellectual ego is mistaken as a "disinterested" pursuit of truth.

In the pragmatic part of the intelligence, this ego-sense creates a strong inclination to use knowledge as a tool for personal enlargement, benefit and progress of the ego.

Intelligent will, Buddhi, has to be purified of all these gross and subtle traces of ego and desire—this dark twins of ignorance are the source of all impurity—and released from its entanglement in the functioning of other forms of energies—physical, sensuous, vital, emotional—of our nature.

Disentangling the Intelligence

The first step in this discipline of purification is self-observation. We have to observe carefully the movements, workings, urges and natural inclinations of our physical, vital, emotional, thinking and pragmatic mind. We have to become fully conscious how our thinking intelligence is entangled with and constantly influenced by other and lower parts of the mind. And through a process of constant stepping back, detachment and disidentification, we have to slowly and patiently disentangle the thinking mind and will from the mixture and influence of the physical and vital mind. For example, when we are trying to arrive at a decision, judgement or conclusion or solving a problem we must observe how our emotional and vital preferences and desires or personal self-interests enter into it and colour, distort or influence our process of thinking. Similarly, we have to observe the working of the Buddhi—the pure and highest intelligence in itself. We have to see how even our higher intelligence is subtly influenced by one-sided, fixed and preconceived mental, moral and spiritual notions which prevents it from perceiving the truth in its wholeness.

The Discipline of Concentration

The second discipline needed for the Intelligence is concentration. Concentration means the ability to focus all the attention and energy of the mind on a particular point and hold on to it as long as it is needed. We must note here that concentration does not mean we must always be tensely focused on something but to acquire and possess the ability to focus our energies at will and whenever it is needed.

Our so-called "normal" conditions of mind is a state of dispersion, diffusion and wastage of the light and power of our consciousness in a multitude of thoughts, feelings and objects, scattered helplessly in an uncontrolled medley of confusion and disorder. Such a mind is the most inefficient and unproductive. For Mind is also a form of energy like Matter. When

this mental energy is scattered and diffused in uncontrolled and useless chattering it is at the lowest and at the most inefficient level of functioning. On the other hand, when this mental energy is under control, free from useless, wasteful and disturbing thoughts, focused and concentrated at a point, it functions at its highest potential. Energy, physical or mental, when focused, enhances its penetrative power. An apt analogy from modern technology is the Laser beam. Laser is the electromagnetic energy of sunlight—which falls on earth in a diffused and scattered form,—focused into a coherent and concentrated beam, which can penetrate even steel. This applies equally to mental energy. The act of focusing the mind increases and multiplies the cognitive as well the penetrative power of its energy; it grows in light, clarity, insight, understanding and also in power, intensity, strength and force of effectuation.

In fact, some form of concentration is there in all creative and productive activities. All great leaders of thought and action and all those who have attained higher levels of success or excellence in whatever field, business or politics, art, literature or religion, possess this capacity of concentration in an exceptional or above average measure. But the Science of Yoga believes that even an average man can develop and enhance his power of concentration by constant, systematic and methodical practice.

The power of concentration is developed by persistent will, vigilant mind and constant practice. We must keep in mind that there is no shortcut or quick-fix remedy for concentration. We have to work against the natural urge of the mind towards dispersion and impress upon it the opposite tendency of concentrated focus, through a patient, persistent and undeviated will.

The steps of the process are simple in paper but difficult to put into practice. The first step is to establish a minimum amount of calm in the mind. Next step is to gather and bring back the vagabonding mind to the focal point of concentration which may be an object, thought, or an activity. The third step is to hold on to it as long as possible, keeping the distracting thoughts away with a vigilant mind and a firm will. Here comes the importance of an alert and vigilant mind. A sleepy and drowsy condition is a great obstacle to concentration. And sometimes a drowsy absorption of the mind in an object is mistaken for concentration. For effective concentration, both the will and awareness in the mind has to be alert, watchful and vigilant to ward off the unwanted intruders and keep the mind focused.

The Mental Silence

But the most important discipline in perfecting the instruments of knowledge is the silencing of the mind. A settled immutable peace, silence and tranquility in the mind is an unmistakable sign that a perfect purity is established in our mental consciousness. And only in an utter silence the knowledge of deeper truth of life and things can be heard without any distorting interference.

There is a higher intuitive understanding beyond the intellectual understanding of the thinking mind. This intuitive understanding has a direct insight into the deeper truth of things bypassing logic and reason. But to awaken this intuitional intelligence, the intellectual understanding has to be stilled and learnt to receive the higher intuition in a receptive silence.

Many methods are suggested in integral yoga to establish this silence in our mind. One way is to allow the thoughts of the mind to raise and play and dance as it pleases while one part of the mind takes the poise of the detached, non-interfering witness. Gradually, the thought-process slows down and—at a certain stage—comes to a standstill.

The other way which can be very effective for those who has a certain capacity of inner vision in the mind is to see the incoming thoughts as they try to enter

into our mind, and throw them away with our will before they can enter and settle into our mind. When this discipline is persistently put into practice, mind is emptied of its contents and becomes silent.

The third way is to visualize the all-pervading immobile silence of the spirit penetrating everywhere the ether of space and try to relax our mind into this silence.

The fourth way is to allow the thinking mind itself to arrive at the understanding that thought cannot know the truth by a choiceless and unbiased self-observation of our thinking process or by intuitive thinking. If the reasoning mind can be made to understand clearly the inherent contradictions involved in the logical thinking process which can trumpet arguments for and against a proposition with an equally convincing felicity, then the logical thinking mind may lose confidence in itself and become silent.

This peace and silence should be allowed to settle down and pervade the entire mental consciousness and remain undisturbed even in the midst of an intense mental activity. In the initial stages of the path the seeker has to become conscious, by deep meditation, of a zone of silence to which he can constantly step-back from his surface activity. But the ideal to be realized by the seeker is to live in this silence and act from this silence. □

HEARTY CONGRATULATIONS



It is a matter of great pride for ICWAI that our honourable Central Council Member, Shri A. N. Raman has been elected as the President of SAFA. A Cost Accountant and a Chartered Accountant, Shri Raman has held many prestigious positions viz. member of the Financial and Management Accounting Committee of IFAC for 1995-97, Advisor to the Institute of Certified Management Accountants of Sri Lanka, member of the Review Group constituted by the IFAC Board to review its deliverables of PAIB for the term 2010. A frequent contributor of articles on cost management to leading business dailies and a consultant on training on cost management to various top rung companies, Shri Raman specializes in new trends in management accounting. We applaud him on his new responsibility and wish him all the best.

Ethical Consumerism — a Counterbalancing Approach Towards Gaps for Corporate Social Responsibility

Dr. Kajalbaran Jana*

The concept of ethical consumerism is getting momentum these days due to recent and ongoing corporate scandals, environmental disasters, child labour violations, and dangerous work environments throughout the world. Very few studies have been carried out on this subject but a recent study in the UK suggests that direct spending by consumers on "ethical products" amounts to some £18 billion a year but still this only amounts to 4 percent of the consumer spending; and one would expect the amount to be much lower in India where ethical consumerism is not at all advanced.

Actually, this is such a situation what will happen to consumer behaviour when more information is available to consumers about the social responsibility of the producer and the conditions under which a product was made. There is technology that would allow us to access instant ratings through cellphones. Some producers have been embedding radio frequency chips in the actual products themselves which will tell consumer more about the product, how it was produced; and this may offer some assurance to consumers and give them important information regarding their purchasing decisions. The corporate houses discharge their social responsibility in prescribed manner as mentioned by CSR disclosure practices, still there happens to be hard reality of 'Satyam case' which was considered as one of the most socially responsible corporate house before the actual story unveiled!! So for ensuring corporate social responsibility there should be some function on the part of the stakeholder – specially from the consumers who may compel corporate house to be socially responsible.

The Concept of Ethical Consumerism

Ethical consumerism may be defined as the practice of purchasing products and services that actively seek to minimize social and/or environmental damage, and the avoidance of products deemed to have a negative impact on society or the environment. This may mean with minimum harm to or exploitation of humans, animals and/or the natural environment. Ethical consumerism is practiced through 'positive buying' in that ethical products are favoured, or 'moral boycott', that is 'negative purchasing' and 'company-based purchasing' or 'brand purchasing'. Ethical consumerism, is the intentional purchase of products and services that the customer considers to

be made ethically (Free Encyclopedia). There is a huge debate whether there is any ethical sense which actually governs the consumer in spending on a product or service. Some say 'Yes' and some say 'No'. Actually, this depends on the societal, economic and political conditions under which the consumer is.

The Corporate Social Responsibility

The corporate social responsibility, or CSR, is concerned to ensure that companies conduct their business in a way that is ethical. This means taking account of their activities towards social, economic and environmental impact, and consideration of human rights. It can involve a range of activities such as :

- Working in partnership with local communities
- Socially responsible investment (SRI)
- Developing relationships with employees and customers
- Environmental protection and sustainability.

"It can be seen as a form of strategic management, encouraging the organization to scan the horizon and think laterally about how its relationships will contribute long-term to its bottom line in a constantly changing world" (Chartered Institute of Personnel and Development).

The practice of CSR, actually, is subject to much debate and criticism. Favourable argument for CSR is that in taking such action corporations are benefitted in multiple ways by operating with a perspective of broader and longer objectives than their immediate short-term profits. On the other hand, argument arise that CSR distracts from the fundamental economic role of businesses; others argue that it is nothing more than superficial window-dressing. Corporate Social Responsibility has been redefined throughout the years. However, it is essentially a safeguard to an organization's mission as well as a guide to what the company stands for and will uphold to its consumers.

Corporate Social Responsibility in Action

The term CSR came in to common use in the early 1970s, when many multinational corporations formed. The term stakeholders are those on whom an organization's activities have an impact, was used to describe corporate owners beyond shareholders as a result of an influential book by R Freeman in 1984.

* Assistant Professor of Commerce, Tamralipta Mahavidyalaya, W.B.

As there is no recognized standard for CSR, public sector organizations (the United Nations for example) adhere to the Triple Bottom Line (TBL). It is widely accepted that CSR adheres to similar principles but with no formal act of legislation. The UN has developed the Principles for Responsible Investment as guidelines for investing entities.

CSR in International Area

An approach for CSR that is becoming more widely accepted is community-based development projects, for example the Shell Foundation's involvement in the Flower Valley, South Africa. Here they have set up an Early Learning Centre to help educate the community's children, as well as develop new skills for the adults. Marks and Spencer is also active in this community through the building of a trade network with the community – guaranteeing regular fair trade purchases. An often alternative approach to this is the establishment of education facilities for adults, as well as HIV/AIDS education programmes. The majority of these CSR projects are established in Africa.

A more common approach of CSR is through the giving of aid to local organizations and impoverished communities in developing countries. Some organizations do not like this approach as it does not help build on the skills of the local people, whereas community-based development generally leads to more sustainable development.

The Secretary General of the United Nations launched a campaign for Corporate Social Responsibility which is termed as 'Global Impact' to convince international companies to commit themselves to universal principles in relation to protection of human rights, labour rights, and the environment. The 10 principles of the UN Global Compact can be found on the Global Compact website, together with details of participating companies and case studies.

CSR in India – Some Issues

Several major CSR initiatives have been launched in India since the mid-1990s. Among these is the first voluntary code of corporate governance, "Desirable Corporate Governance: A Code", established in April 1998. This was an initiative by the Confederation of Indian Industry (CII), India's largest industry and business association.

A National Foundation for Corporate Governance (NFCG) has been established by the Ministry of Corporate Affairs. This is a partnership with the

Confederation of Indian Industry (CII), the Institute of Company Secretaries of India (ICSI), and the Institute of Chartered Accountants of India (ICAI). The purpose of the *National foundation for Corporate*

Governance is to promote better corporate governance practices and raise the standard of corporate governance in India towards achieving stability and growth. Legislation authority in India is shared between the Central Government and the State Governments. Some laws – such as those regulating minimum wages – differ from state to state. Likewise, the implementation and supervision mechanisms may vary between states. Thus there are some issues which should be ratified by the CSR practices in India.

i. Child Labour and Right of Organization

India is a member of the International Labour Organization, and has ratified 40 of the ILO conventions. However, India has not ratified four of the ILO core conventions :

- 087 Freedom of Association and Protection of the Right to Organize (1948)
- 098 Right to Organize and Collective Bargaining (1949)
- 138 Minimum Age Convention (1973)
- 182 Elimination of the Worst Forms of Child Labour (1999)

India's domestic law on child labour, *Child Labour (Prohibition and Regulation) Act* (1986), ban employment of children in some dangerous occupations, such as factories and mines, and regulate the working conditions in others. According to this law, anyone above the age of 14 will be regarded as an adult and will not be protected by the child labour regulations.

According to UNICEF, insufficient attention has been given in India to eliminate the worst forms of child labour. The 1986 child labour law does not cover children in all sectors. India has the world's highest number of child labourers' under 14 years!!

ii. Labour Laws

India has altogether ratified 333 labour laws. The way these laws are supervised and implemented vary. Sub-contracts are common in India. One challenge is that 90% of the Indian labour is in the informal sector, which is not protected by the labour regulations.

Most Indian states have enforced an act for minimum wages for labourers in scheduled employment, as stipulated in the *Minimum Wage Act* from 1948. However, the minimum wage is often not paid. According to ILO, labour under minimum wage is considered a form of forced labour. According to ILO estimates, there are more than one million forced labourers in India, particularly in the southern part. Many of these are children. India was, in 1976, the first country in the South Asian region to enact legislation against bonded labour.

Contract labour in India is another complex area. The contract workers do not get the same protection and benefits as permanent workers. Many work as

contract labour for longer periods of time. Although the ILO Conventions related to forced labour have been ratified, certain forms of bonded labour still persist, especially in the informal sector.

India has enacted legislation that prohibits discrimination due to gender, religion, ethnicity or caste. Again, the record of implementation is varied. ILO has observed some violations in India's implementation of the Discrimination (Employment and Occupation) Convention, (No. III, from 1958). This convention obligates the state parties to hinder discrimination due to, e.g., caste or gender, such as different salary scales and labour conditions.

iii. The Environment

The main law on environment and production is *The Environment (Protection) Act* (1986). This law gives the Central Government the authority to protect and improve environmental quality, as well as control and reduce pollution from all sources. The responsibility for environmental governance is shared between the corporations and the government. Many Indian institutions have come up with voluntary guidelines on environmental friendly practice. Among these is a partnership on voluntary pollution control, developed by the Indian Ministry of Environment and Forests together with the industrial sector. Other initiatives include the Energy Efficient Initiative by the Indian Chamber of Commerce, the Indian Ecomark and the Clean Technology initiative by the Confederation of Indian Industry and others.

With regard to the implementation of environmental laws, a challenge has been lack of knowledge on how to fulfil the laws in practice. There are also weaknesses in the implementation and control mechanisms. The budget and infrastructure for control has not been sufficient, although greatly improved over the last years.

iv. Right to information and corruption

In the Transparency International Corruption Perceptions Index in 2008, India was ranked number 85 out of 180 countries. The biggest problems were found in regard to politics and governance. According to a Global Compact report, there are low levels of government capacity for law enforcement and implementation in India, causing relatively high levels of corruption.

In 2005, *Right to Information (RTI) Act* was established. This law gives the general public right to government information, and is meant to promote transparency and responsibility in the work of all governmental institutions.

The introduction of RTI has led to changes in the transparency regarding establishment and implementation of strategies, programmes and laws. It is also

opening for access to information in areas where the authorities have left out important aspects, and give the public a chance to acquire important information. RTI is additionally an important tool in regard to environmental management.

Ethical Consumerism – the Global Issue

A polar shift in social attitudes and acceptance levels has brought huge challenges to the food and beverage industry across the United States, Japan, and Europe. "In the United Kingdom ethical sourcing is becoming much more important," says Lisa Gerhard, Partner with Boyden London. With buyers increasingly aware of organic, non-GM farming, treatment of livestock, fair trade and healthy eating, social responsibility is gaining important ground. Gerhardt continues : "It's a huge undertaking for consumer goods companies to respond to this. Not only are companies like Walkers changing their frontend marketing, but they have to change entire production capabilities."

Some companies are charting a whole new future based on such specifics. Marks & Spencers £200 million investment to protect the environment puts yet more pressure on revenues. But Gerhardt is impressed :

"Most British supermarkets are becoming more environmentally attuned," she says, "and this initiative, backed by a clear and striking advertising campaign, resets the barometer for the industry."

Size of the ethical market in U.K.

According to the Co-operative Bank, London, the market for ethical products and services includes the following segments:

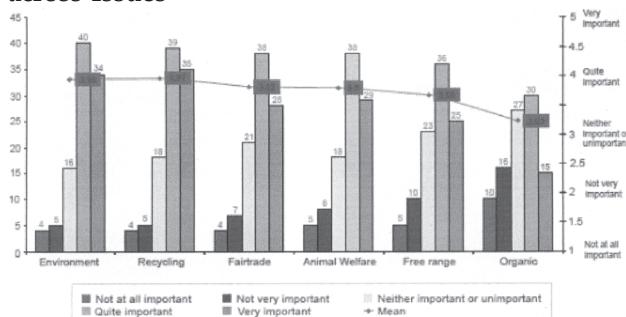
- Ethical food and drink
- Green home
- Eco-travel and transport
- Ethical personal products
- Ethical Finance

Taking the above elements together, the UK's ethical market was worth £32.3 billion in 2006, and is growing quickly, up 9% on the previous year (Source: ONS).

Consumer attitudes toward Ethical Issues-a survey report in U.K.

Even though the overall spending on ethical foods is still relatively low, consumers are concerned about ethical issues. As shown in the graph below, when asked, a high percentage of the UK public say they consider ethical issues to be important. Top-of-mind is environment and recycling due no doubt to increased media coverage on these particular areas.

Importance of Ethical Issues : Comparisons across Issues



Source : 1GD Consumer Unit

As with any product or service, clear benefits help stimulate demand. In environmental terms this has been seen with the EU labeling scheme for white goods, with the sales of A-rated energy fridges now account for around 60% of the market. The increasing concern regarding environmental issues could also increase labeling of products.

A Glimpse in Ethical food and drink market

The Co-operative Bank in U.K. has estimated that in 2006 the market for ethical food and drink was worth £4.8 billion. As shown in the table below, the definition of what is 'ethical' is a wide one, including not only foods considered to be ethical, but also the boycott of foods considered to be unethical.

Spending on ethical foods in the UK, 2005-2006

Ethical Food	Spend (2005)	Spend (2006)	% Growth (2005-2006)
Organic	1,437m	1,737m	18%
Fairtrade	195m	2S5m	46%
Free range eggs	240m	259m	8%
Vegetarian products and meat alternatives	639m	664m	4%
Freedom foods	16m	17m	6%
Sustainable fish	17m	55m	224%
Dolphin friendly tuna	218m	223m	2%
Food boycotts	993m	1,214m	22%
Total	4,102m	4,795m	17%

(Source : The Co-operative Bank)

Overall spending on ethical foods accounts for about 6.8% of the typical shopping basket, according to the Office for National Statistics.

In addition to increased spending on ethical foods there has also been a year-on-year increase in spending on personal products, for example humane cosmetics and 'eco-fashion' products (innovative products, including clothes made from recycled plastic bottles, are becoming more commonplace).

Boycotts on the basis of Ethical Issues

Boycott is a vital weapon in the hand of followers of ethical consumerism. Some consumer protection

forums called for boycott against some corporate houses, countries based on some issues like animal testing, environmental degradation, human rights protections and violation of UN conventions.

Animal Testing

A number of companies were on the list because of a boycott call from BUAV over animal testing. BUAV no longer call for the boycotting of specific companies, but instead encourage people to buy from those companies that are accredited as 'cruelty-free' under the Humane Cosmetics Standard. None of the following companies, which we have formally removed from the list, have signed up to the standard: Colgate Palmolive; Procter and Gamble; Reckitt Benckiser; SC Johnson; and Unilever.

Adidas – for using kangaroo skin to make some types of football boots.

Canada – for the government-subsidised slaughter of nearly one million seals over the last three years. Campaigners are also calling for a boycott of Canadian fish and seafood, as exports to the UK earn five times more for Canada than the landed seal hunt in Newfoundland.

tarins (owned by Procter & Gamble) – for unnecessary animal testing. It is estimated Procter & Gamble is responsible for the deaths of 50,000 animals each year.

Environmental Degradation

A number of companies came into the purview of boycott call on the environmental issues which violated the accepted principles of environmental protection during their activities and corporate practice.

Altria (previously Philip Morris) – Ethical Consumer magazine (issue 108, September/October 2007) called for a boycott of Altria because it has funded groups which claim that global warming is a "myth" or "uneconomic" to address.

Air travel – Aviation is the fastest-growing source of climate change due to greenhouse gas emissions. So air travel should have been avoided for the sake of environment protection.

Coca-Cola – Boycott for its depletion of groundwater resources in India in its plant at Kerala state.

Human Right Protections and Violation of UN Conventions

Some of the countries and corporations practising their business activities which have apparently violated the accepted Human Right Protection law and other UN conventions for political sovereignty of the country are called for boycott by some consumer forums and human rights organisations.

Bacardi – Bacardi is called for boycott due to continuing to use its Cuban origins in its marketing despite being active in anti-Cuba lobby groups in the US.

Israel – It has been called for boycott following 'decades of refusal to abide by UN resolutions, International Humanitarian law and the Fourth Geneva Convention. Film-makers, musicians, performers and academics have also added their voices, and are calling on their colleagues not to visit, exhibit or perform in Israel'.

Coca-Cola – This MNC has been called for boycott for its repression of trade union activity in Colombia.

Ethical Consumerism and Corporate Social Responsibility as per Satyam Case in India

The recent Satyam episode has demonstrated the close interlinkage between good corporate governance, transparency and an unblemished corporate reputation. As the science of influence, public relations plays a central role in building and sustaining corporate reputation through powerful communication of a company's good work. As we look forward into 2009 and beyond, we will see public relations being leveraged far beyond traditional press relations to enable deep stakeholder engagement on a sustained basis, forming a key to protecting and enhancing corporate reputation.

Conclusions

Ethical consumerism is a growing issue, rather a movement of conscious people to protect consumer themselves from every odds that could be harmful for their interest as well as to protect the society from economic and political odds that is ethically incorrect. Now the question is 'How can this be possible?'

The simple and one point answer is 'information exchange'. As more and more brands compete for the consumer's share, the emergence of buying power of the general people – and specially the youth – will form a pivotal change and innovation. Such young people will continue to grow in the coming years such and share information and influence on corporate through use of internet and other types of information media and technology will become a dominant medium for the Generation Next to share information and express them. With the advent of 3G networks and the growing penetration of 'notebooks', one would need to effectively use these new developments to connect and converse with others. Virtual media like online journals and magazines, personal blogs, community radios, and other fast growing social media like Facebook, Orkut, Flickr, etc. thus need to be understood and leveraged effectively by public relations professionals.

In a nutshell, it can be said that growing information technology is helping enormously for constructing conscience in behavioural attitude among the consumers. They are now well aware about the happenings around them. Some organizations worldwide also are creating conscious movements for ethical issues. But

we found that social responsibility adhered by corporate houses are confined in some specified areas and, in most cases, it is attributed with some sort of window dressing. Still the some corporate houses across the world have taken this within their principle guidelines so as to pave towards prosperity of the business.

Thus the aim for both the ideas is almost have same, i.e., to avoid the negative impact of business on the society or, rather say, create fruitful impact on the society and environment as a whole. But both the views start from the two extreme points to a convergence. The CSR starts from business house to the society and the Ethical Consumerism starts from the consumer to the society. The CSR is to be discharged at the cost of a portion of profit earned by the business house voluntarily whereas Ethical consumerism is conscious voluntary movement of the consumers for the society. In the fact, ethical consumerism may be a forceful action to induce business houses to promote CSR. But it can be undoubtedly said that CSR itself is an inducing force for a responsible corporate house which promotes vulnerability. But this responsibility in the capitalist framework is a seldom action. There needs be consumers' action. This action should be ethically guided by the general humanitarian principles. We have found in our discussion that several boycott movements have been launched against very big corporate houses and also against nations – which are also an indication towards a forceful induction towards corporate business houses to behave ethically. In this case, Ethical Consumerism may be treated as the inducing force for business houses to follow CSR.

Corporate Social Responsibility (CSR) has been on the agenda in India for a considerable period. Most big Indian corporations are engaged in some CSR activities. Ethical Consumerism is not so eloquent in the Indian origin but it plays a proactive role in UK, France, Italy, and USA. Following such consumer movements in these countries we should have to emphasize upon the ethical consumerism which will not only protect the consumer itself but also benefit the society and the earth from debacle. The Satyam was considered one of the CSR oriented houses till the real story unveiled. So the proactive role on the part of consumer is once again felt. The consumer movement is, thus, a necessity for the time. Although ethical consumerism is a voluntary action, it impedes upon corporate houses to follow socially responsible business activities.

And, finally, the engagement with government will give impetus towards accountability, transparency, and responsiveness. This will lead to a growing demand for Public Affairs expertise as the government evolves from a player in the arena to a referee and the third umpire in our journey of nation building. □

Value of Credit Default Swaps

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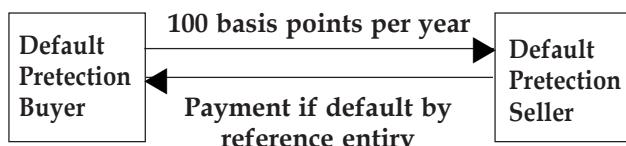
Credit Default Swaps are about to be introduced in India and this paper discusses the product and methods for valuation. A Credit Default Swap is a contract that provides insurance against the risk of a default of a particular company. The company is known as the reference entity and a default by the company is called a credit event. The buyer of the insurance obtains the right to sell a particular bond issued by the company for its par value when a credit event occurs. The bond is known as the reference obligation and the total par value of the bond that can be sold is known as the swap's notional principal. The periodic payment (premium) by the protection buyer is typically expressed in annualised basis points of a transaction's notional amount. Hull Model and No Arbitrage Model are the two methods popularly used to arrive at CDS premium. Hull Model arrives at the spread from probable outflows from the contract and probable inflows from the contract. Estimation of probability of default is crucial in this model. No Arbitrage model replicates CDS cash flows in the cash market through buying/selling a bond, borrowing/lending in Corporate Repo market against the bond and entering into an Interest Rate Swap contract.

Valuation of Credit Default Swaps

RBI's Internal Group on Introduction of Credit Default Swaps for Corporate Bonds have submitted its draft report. The Group, in consultation with the various market participants and taking into account international experience in the working of CDS, has finalised the operational framework for introduction of CDS in India. The report envisages introduction of Plain vanilla Over The Counter single-name CDS for corporate bonds for resident entities subject to appropriate safeguards. In this backdrop, it will be instructive to examine how Credit Default Swaps are valued.

1. What is a Credit Default Swap?

A Credit Default Swap is a contract that provides insurance against the risk of a default of a particular company. The company is known as the reference entity and a default by the company is called a credit event. The buyer of the insurance obtains the right to sell a particular bond issued by the company for its par value when a credit event occurs. The bond is known as the reference obligation and the total par value of the bond that can be sold is known as the swap's notional principal. The periodic payment (premium) by the protection buyer is typically expressed in annualised basis points of a transaction's notional amount. If any one of the credit events occurs during the life of the contract, the protection buyer will receive from the protection seller a credit event payment.



2. Valuation of CDS

CDS premium – also known as fees or default swap spreads – are quoted in basis points per annum of the contract's notional value. The premium on a CDS represents the market's view of the reference entity's credit risk over the duration of the CDS transaction. Obviously, such views are also reflected in the yield spreads of the reference entity's debt. This means that CDS pricing is highly linked to bond spreads.

We discuss below two popular methods for pricing CDS, viz. The Hull Model and No Arbitrage Argument. Both the models assume counter party credit risk as zero and this assumption will not be unrealistic since centralized clearing of CDS through a CCP (Central Counterparty) is envisaged in India.

2.1 The Hull Model

The steps involved in the valuation are:

1. Calculation of the probability adjusted present value of payments : The total periodic premia payments at the CDS spread rate 's' are multiplied by the reference entity's survival probabilities for each year and discounted, for arriving at the present value.

2. Calculation of the probability adjusted present value of the accrual payment in the event of default : Since the payments are made in arrears, an accrual payment is required in the event of default to account for the time between the beginning of the year and the time when the default actually occurs. Since it is assumed

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med here that the default occurs exactly in the middle of the year, the payment will be 0.5s. Such accrual payments are multiplied by the default probabilities and discounted for arriving at the present value.

3. Calculation of the probability adjusted present value of the expected payoff in the event of default : In the event of the default, the protection seller is required to make the credit event payment (pay-off) to the protection buyer. The amount of pay-off is multiplied with the default probability of the reference entity and discounted to arrive at the present value.

4. Calculation of the CDS spread : Since the probability adjusted PV of the payments made by the protection buyer (including accrual payments) should equal the probability adjusted PV of the payoff made by the protection seller, the CDS spread is calculated as per the formula :

CDS spread = Probability adjusted PV of pay-off / Probability adjusted PV of payment.

2.1.1 Estimating Probability of Default

Probability of Default is the single-most important variable affecting CDS spreads in the Hull Model. There are various methodologies for estimating Probability of Default.

Some of the popular methods are :

i) PD imputed from Bond Prices

$$Q(T) = \frac{((1 - 1+RP)^{-T})}{LGD}$$

where $Q(T)$ is probability that the issuer will default between time 0 and time T . RP is the risk premium of the bond for tenor T derived from current market prices. LGD is the loss given default or (1 - Recovery Rate).

ii) Cumulative Default Probabilities published by Rating Agencies

Credit Rating Agencies publish cumulative default probabilities of bonds of different ratings over the years based on the observed transitions over time to default categories. For example, the following table shows the Cumulative Default Rates of long term ratings of CRISIL (Source: Crisil Default Study 2009) :

One, Two, and Three-Year CDRs, between 1988 and 2009				
Rating	Inssure-months	One-year	Two-year	Three-year
AAA	873	00.00%	00.00%	00.00%
AA	1748	00.00%	00.34%	01.11%
A	1661	00.72%	03.84%	08.22%
BBB	907	03.86%	10.21%	18.26%
BB	413	14.77%	26.17%	34.19%
B	073	17.81%	48.63%	65.75%
C	087	28.74%	49.10%	66.07%
Total	5762			

Source : CRISIL Ratings

iii) PD from Equity Prices

Merton's Model where a company's equity is viewed as an option on the assets of the company can be used to derive PD from equity prices.

2.1.2 Impact of Expected Recovery Rate on Pricing

The one parameter necessary for valuing a credit default swap that cannot be observed directly in the market is the expected recovery rate. The same recovery rate is used for estimating the default probability densities and for calculating the payoff. Thus, if we are to increase the recovery rate, keeping the risk premium constant, probability of default will increase. This will decrease probability adjusted payments (Step 1) but increase probability adjusted accrual payments (Step 2). But probability adjusted payoffs will not be affected at all since effect of increase in recovery rate is offset by increase in probability of default. Thus the overall impact of changing Recovery Rate will not be significant on the results of the model.

The aforesaid will be true as long as PD is imputed from Bond prices. But if PD is estimated from historical default experience or equity prices, varying the recovery rate may have a significant impact on the results of the model.

2.1.2 Illustration of Hull Model

XYZ has issued a bond with maturity of 5 years which is rated BBB as on 30.06.2010. Mr. A, who has bought the bond, enters into a CDS contract with Bank B. To arrive at CDS spread, Bank B will proceed as follows :

Tenor (T)	BBB Spread (Risk Premium)	$(1+RP)^{-T}$	$1-(1+RP)^{-T}$	$Q(T) = 1-(1+RP)^{-T} / 70\%$	Survival Probability $(1-Q(T))$
1	3.87%	0.96274	0.03726	05.32%	0.94677
2	3.49%	0.93369	0.06631	09.47%	0.90527
3	3.28%	0.90772	0.09228	13.18%	0.8617
4	3.41%	0.87448	0.12552	17.93%	0.82069
5	3.56%	0.83954	0.16046	22.92%	0.77077

$Q(T)$ or cumulative probability of default has been arrived at in the above table assuming an Loss Given Default of 70% (i.e. Recovery Rate of 30%). BBB Spreads given in the Table are zero coupon bond spreads for BBB bonds published by FIMMDA as on 30.06.2010.

From the cumulative probabilities, marginal probabilities can be easily arrived :

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Tenor (T)	Marginal Probability of Default
1	5.32%
2	9.47% - 5.32% = 4.15%
3	13.18% - 9.47% = 3.71%
4	17.93% - 13.18% = 4.75%
5	22.92% - 17.93% = 4.99%

Step 1: Calculation of the probability adjusted present value of payments

Taking CDS spread as 's',

Tenor (T)	Expected Payments	Discount Factor	PV of Expected Payments
1	0.94677s	0.931358853	0.88179s
2	0.90527s	0.867429312	0.78526s
3	0.86817s	0.807887969	0.70138s
4	0.82069s	0.752433612	0.61751s
5	0.77077s	0.700785705	0.54014s
Prob. Adjusted Present Value of Payments			3.52608s

Discount Factors have been arrived at based on 5-year G Sec yield of 7.37% (risk free rate).

Step 2: Calculation of the probability adjusted present value of the accrual payment in the event of default

Tenor (T)	Marginal Probability of Default	Expected accrual payments	Discount Factor	Present value of expected accrual payments
0.5	5.32%	0.02661s	0.96507	0.02568s
1.5	4.15%	0.02075s	0.89883	0.01865s
2.5	3.71%	0.01855s	0.83713	0.01553s
3.5	4.75%	0.02374s	0.77967	0.01851s
4.5	4.99%	0.02496s	0.72615	0.01812s
Prob. Adjusted Present Value of Accrual Payments				0.09650s

Step 3 : Calculation of probability adjusted present value of the expected payoff in the event of default

T	Marginal PD	Loss Given Default	Expected payoff (Rs.)	Discount factor	Present Value of expectd payoff (Rs.)
0.5	5.32%	70%	3.73	0.96507	03.60
1.5	4.15%	70%	2.91	0.89883	02.61
2.5	3.71%	70%	2.60	0.83713	02.17
3.5	4.75%	70%	3.32	0.77967	02.59
4.5	4.99%	70%	3.49	0.72615	02.54
Prob. Adjusted Present Value of Expected Payoff					13.51

Expected Payoffs have been computed on a Rs 100 face value of bond (For the first year, $Rs 100 \times 5.32\% \times 70\% = Rs 3.73$).

Step 4: Value of CDS Spread

$$\text{CDS Spread} = \frac{13.51}{(3.52608 + 0.09650)} = \text{Rs. } 3.73 \text{ per Rs } 100 \text{ or } 3.73\%$$

2.2 No Arbitrage Argument Model

To replicate a CDS in the cash market, the following is done :

- Buy Reference Bond for Rs 100 and borrow Rs 100 in Corporate Repo market, pledging the bond.
- Enter into a Pay Fixed Receive Floating Interest Rate Swap Contract. The Payoffs from these contracts will be :

Transaction	Pay	Receive
Repo	C	Rs.100
Buy a bond	Rs.100	$Rf + S_{BOND}$
Hedge with IRS	$Rf + S_{IRS}$	$C + x$

where Rf is fixed rate G-Sec yield, C is the Corporate Repo Rate, x is the spread of floating rate leg in Interest Rate Swap over corporate Repo Rate, S_{BOND} is credit risk spread in bond market and S_{IRS} is credit risk spread in IRS market.

The Net receipt in the above table is the fair value of CDS, i.e.

$$\text{Net receive} = S_{BOND} - S_{IRS} + x$$

Thus, this synthetic cash market replication through a risk-less (arbitrage-free) hedge gives the fair value/premium of a Credit Default Swap in spread terms that CDS seller must receive.

If actual CDS premium/price spread is higher than the above theoretical model price, then an arbitrageur will sell a CDS and receive this actual spread and short the reference bond and receive fixed in an IRS and do the opposite arbitrage if the actual CDS spread is lower than the theoretical model spread/price until the arbitrage opportunity disappears and the theoretical model and actual market prices align again.

2.2.1 Illustration

Suppose we have to value a CDS on a corporate bond rated BBB with maturity 5 years as on 30.06.2010. The following data is available :

5 Year BBB Yield	10.85%
5 Year G Sec Yield	07.37%
5 Year MIBOR OIS Swap Rate	06.74%
MIBOR Floating Leg	05.73%
Corporate Repo	08.00%

(Note: All the rates given above except Corporate Repo are actual market rates)

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Legal Updates

Securities and Exchange Board of India(SEBI)

1. CIR/CFD/DIL/10/2010 Dated: December 16, 2010
Subject: Amendments to the Equity Listing Agreement
2. CIR/MRD/DP/ 37 /2010 Dated: December 14, 2010
Subject: Acceptance of third party address as correspondence address
3. CIR/MRD/DP/ 36 /2010 Dated: December 09, 2010
Subject: Smart Order Routing (SOR) - Clarification
4. Cir/ IMD/ DF/20/2010 Dated: December 06, 2010
Subject: Half yearly report by Trustees
5. CIR/MRD/DP/ 35 /2010 Dated : December 01, 2010
Subject: Establishment of Connectivity with both depositories NSDL and CDSL –
Companies eligible for shifting from Trade for Trade Settlement (TFTS) to normal Rolling Settlement
6. CIR/IMD/FIIC/18/2010 Dated: November 26, 2010
Subject: Allocation of Government debt & corporate debt investment limits to FIIs
All this circulars can be viewed on the website: www.sebi.gov.in

CBEC (Service Tax)

1. Circular No.131/2010 Dated: December 07, 2010
Subject: Regarding electricity meter installed in consumers' premises and hire charges collected – whether covered under exemption for transmission and distribution of electricity.

CBEC (Central Excise)

1. Circular No.939/29/2010 Dated: December 22,2010
Subject: Scope of Notification Nos.49/2003-CE and 50/2003-CE both dated 10.06.2003
2. Circular No.938/28/2010 Dated: November 29,2010
Subject: Clarification regarding Quantity discounts, bonus quantities, etc. cleared without payment of duty under MRP based assessment
3. Circular No.937/27/2010 Dated: November 26,2010
Subject: Application of provisions of section 5A (1A) of the Central Excise Act
All this circulars can be viewed on the website: www.cbec.gov.in

Reserve Bank Of India(RBI)

1. RBI/2010-2011/325 UBD.BPD.(PCB) Cir. No 30/09.11.200/ 2010-11 Dated: December 23,2010

Subject : Credit Information Companies (Regulation) Act, 2005 - Grant of 'Certificate of Registration' – for commencing business of Credit Information – High Mark Credit Information Services Private Limited

2. RBI 2010-2011/324 DBOD.No.BP.BC. 69/08.12.001/2010-11 Dated: December 23,2010
Subject: Housing Loans by Commercial Banks - LTV Ratio, Risk Weight and Provisioning
3. RBI/2010-2011/323 A.P. (DIR Series)Circular No. 29 Dated: December 22,2010
Subject: Use of International Debit Cards/ Store Value Cards/Charge Cards/Smart Cards by resident Indians while on a visit outside India
4. RBI/2010-2011/315 DPSS (CO) EPPD No. 1309 / 04.03.01/ 2010-11 Dated:December 15,2010
Subject: Credit to NRE account through RTGS / NEFT / NECS / ECS - Issuance of Foreign

Inward Remittance Certificate (FIRC)

5. RBI/2010-2011/314 RPCD.GSSD .BC.No.30 /09.01.01/ 2010 -11 Dated: December 15,2010
Subject: Swarnajayanti Gram Swarojgar Yojana (SGSY) – Group Life Insurance Scheme
6. RBI/2010-2011/311 A.P. (DIR Series) Circular No. 24 Dated: December 14,2010
Subject: Prevention of Money-laundering (Maintenance of Records of the Nature and Value of Transactions, the Procedure and Manner of Maintaining and Time for Furnishing Information and Verification and Maintenance of Records of the Identity of the Clients of the Banking Companies, Financial Institutions and Intermediaries) Second Amendment Rules, 2010-Obligation of Authorised Persons
7. RBI/2010-2011/305 RPCD.SME & NFS.BC.No. 35 /06.02.31 (P)/2010-11 Dated: December 8,2010
Subject: Ownership of units – Two or more undertakings under the same ownership – Status of the unit
8. RBI/2010-2011/304 RPCD.CO RRB.BC. No. 36 /03.05.33/ 2010-11 Dated: December 8,2010
Subject: Grant of 'Certificate of Registration' – For commencing business of Credit Information – High Mark Credit Information Services Private Limited
9. RBI/2010-2011/301 RPCD.CO.RCB.BC.No.33/07.40.06/ 2010-11 Dated: December 7,2010
Subject: Submission of data to Credit Information Companies

LEGAL UPDATES

10. RBI/2010-2011/299 IDMD.PCD.No. 24/14.03.03/2010-11
Dated: December 6,2010
Subject: Issuance of Non-Convertible Debentures (NCDs)

11. RBI/2010-2011/296 DBOD.FID.FIC.No 9/01.02.00/2010-11
Dated: December 1,2010
Subject: Prudential Guidelines-Investment in Venture Capital Funds (VCFs)

12. RBI/2010-2011/295 DNBS.PD/ CC.No. 204/03.05.002/2010-11
Dated: December 1,2010
Subject: Submission of Balance sheet and Profit and Loss Account

13. RBI/2010-2011/294 DBOD No. CID. BC.64/20.16.042/2010-11
Dated: December 1,2010
Subject: Grant of Certificate of Registration – For

commencing business of Credit Information – High Mark Credit Information Services Private Limited

14. RBI/2010-2011/291 FMD.MOAG. No. 55/01.01.01/2010-11
Dated: November 30,2010
Subject: Liquidity Adjustment Facility – Liquidity Easing Measure

15. RBI/2010-2011/289 DPSS. CO. AD. No. /780/02.27.004/2010-11
Dated: November 29,2010
Subject: Issuance and Operation of Prepaid Payment Instruments

16. RBI/2010-2011/286 DNBS(PD-SC/RC).CC. No. 23 / 26.03.001/2010-11 November 25,2010
Subject: Submission of information to Credit Information Companies
All this circulars can be viewed on the website: www.rbi.org.in

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CDS can be replicated in the cash market by :

- (a) Buy the bond for Rs 100 at yield of 10.85%
- (b) Borrow Rs 100 by pledging the bond in Corporate Repo market at an interest rate of 8%.
- (c) Enter into Interest Rate Swap where 6.74% is paid and M1BOR is received (presently 5.73%). Spread on bonds is 3.48% while spread on IRS is (-) 0.63 over 5 Year G Sec yield. Spread of floating leg over Corporate Repo is (-) 2.27%. CDS Spread will be $3.48\% - (-0.63\%) + (-2.27\%) = 1.84\%$.

3. What factors influence CDS Spreads?

Following table shows the effect of various macro and micro variables on CDS Spreads :

Variable	Impact on CDS Spreads	Explanation
Equity Return	Negative	Higher growth in firm value reduces the Probability of Default (PD)
Equity Volatility	Positive	Higher equity volatility means higher asset volatility and hence higher default probability
Expected Recovery Rates	Negative	Higher recovery rates reduce the present value of protection payments in the CDS contract
Firm Leverage	Positive	A firm defaults when its leverage ratio approaches 1. Hence credit spreads increase with leverage
Short term interest rates	Ambiguous	A higher spot rate increases the risk neutral drift of the firm value process and reduces PD. Nevertheless, it may reflect a tightened monetary policy stance and therefore PD increases

(contd.)

(contd.)

Variable	Impact on CDS Spreads	Explanation
Slope of Yield curve	Ambiguous	A steeper slope of the term structure is an indicator of improving economic activity in the future, but it can also forecast an economic environment with rising inflation rate and monetary tightening of credit

4. Conclusion

We have presented two models for pricing CDS and wish to conclude with a note of caution. The models require inputs from the financial markets and efficacy of models to accurately capture the underlying economic phenomena depending on the efficiency of markets. Corporate debt market in India is very shallow and repo on corporate debt, though now permitted, is non-existent. Short selling is not permitted in corporate bonds. Results of the models need to be calibrated keeping in mind these imperfections. □

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Lean Production : A Technique to attain Competitive Advantage

D. Muthamizh Vendan Murugavel*

Lean is about doing more with less: time, inventory, space, labor, and money. "Lean manufacturing"—shorthand for a commitment to eliminating waste—simplifying procedures and speeding up production. The idea is to pull inventory through based on customer demand. Lean Manufacturing (also known as the Toyota Production System) is, in its most basic form, the systematic elimination of waste—overproduction, waiting, transportation, inventory, motion, over-processing, defective units—and the implementation of the concepts of continuous flow and customer pull.

Lean production is a Japanese approach to management that focuses on cutting out waste, whilst ensuring quality. This approach can be applied to all aspects of a business from design, through production to distribution. Lean production aims to cut costs by making the business more efficient and responsive to market needs. This approach sets out to cut out all activities that do not add value to the production process, such as holding of stock, repairing faulty product and unnecessary movement of people and product around the plant. The idea of lean manufacturing is not new, but it has received a lot of attention in recent years. Basically, lean manufacturing seeks to look for waste and inefficiencies and eliminate them. Anything that does not add value, functionality, or quality that can be stripped out is removed from the production process. Continuous improvement by the shortest, fastest route possible is the ultimate goal.

Lean Production—why?

There is much evidence to suggest that the traditional mass production methods, used widely for much of 20th century, can create problems, which leads to inefficiency. The main problems are :

- **Employee boredom and low morale**—particularly where employees undertake repetitive jobs

- **Equipment failure**—regular breakdowns of equipment that can cause hold-ups elsewhere in the production process

- **Equipment obsolescence**—where a machine quickly becomes outdated, although there is little incentive to replace it if the machine had cost a lot of money

As a result of these problems, businesses have

increasingly looked to see if they can make their production more efficient by becoming more "flexible" and "lean". The main objective of lean production is to eliminate all forms of waste in the production process and so produce more by using fewer inputs. There are several forms of waste that lean production aims to eliminate :

- Waste from materials
- Waste of worker's time and effort
- Waste of floor space
- Waste from defective products (poor quality)

By reducing these wastes the costs of firms will decrease and they will become more efficient and competitive.

Roots of Lean Production

At a high level, **lean** involves continuously wringing waste out of every production process. As such, lean strategies help manufacturers and other companies become as efficient as possible, to save money and boost productivity. However, lean concepts can apply to just about any process (such as operating a cafeteria or hiring an employee), not just manufacturing. Most agree that Toyota Motor Corp. perfected the lean discipline in the latter half of the 20th century. Even today, the Toyota Production System (TPS) is lean's gold standard and has driven the automaker to great success while its competitors struggle. Because of its heritage, most key lean concepts are expressed in Japanese, such as "kaizen" principles (a concentrated effort to remove waste from a single process) and "muda" (one form of waste). Significantly reducing waste, increasing flexibility and minimising variability are crucial in today's competitive landscape not only in manufacturing but also in many other sectors. It is, therefore, necessary for any excellent manager and engineer to understand the key principles of lean production in order to benefit from these well-established and successfully tested ideas. Lean production is a very complex construct of innovative changes in any kind of production process. Many of these elements can be found at Toyota.

Significance of Lean Production

The relentless pressure on prices as a result of

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heightened competition that several sectors of the Indian economy face and the positive results that some Indian firms have achieved in facing the crisis through "lean manufacturing" show that it is high time Indian firms adopted the Toyota Production System. This system has already been introduced and practised in manufacturing sector of many developing countries especially in South-East Asian economies in the sectors such as steel, textiles and even in some services. Hence, it is vital for Indian firms to shed the obsession with economies of scale and learns to make the most out of existing capacities and machinery and in this respect the role of lean manufacturing is of strategic importance. Lean manufacturing, that forms a triad along with total quality maintenance and total productive maintenance, is the only option left for Indian firms to meet two vital ends i.e., improvement in quality and at the same time cut costs of production and operations. With the elimination of waste, lean manufacturing techniques would help Indian firms become suppliers or partners of Multi National Corporations (MNCs) with their exacting demands instead of either being taken over by MNCs or being driven out of the market by them. Lean manufacturing would also lead to higher volumes through lower costs and is the only option left for Indian firms to attain **competitiveness** and to earn profit.

Lean manufacturing means flexibility and small-batch production that makes goods suited to customer needs and meet delivery schedules with the least cost in terms of inventory of raw material and finished goods. Increasing size of the internal market through lower costs and taking to exports, as a cushion against recession at home would be the right strategy for Indian firms. Adoption of lean manufacturing by Indian firms will not lead to redundancy because the surplus manpower arising from effective and efficient deployment of resources will be absorbed in meeting the growing demand. Information technology is not used by Indian firms as a central part of manufacturing planning or production planning and IT techniques or tools are meant just for automation. It is the need of the hour to realise the benefits arising out of cross-functional utilisation of technology in the manufacturing process.

Advantages of Lean Production

- Offers much higher customer satisfaction and lower customer prices and therefore more success for the company involved
- Creates high levels of productivity, because all processes involved have been and should be continuously analysed, inventory has been reduced to the extreme and results can be achieved quicker

- Offers much better quality through simplification of all processes
- Requires less stock, because the products are designed with as few materials as possible
- Fewer defects which improves quality, because they have more time with fewer materials so the employees can pay more attention to detail
- Half engineering hours to develop, because there are less products to use to develop and because it is a simple design faults are less likely to appear.

Application Areas of Lean Techniques

Lean techniques are applicable not only in manufacturing, but also in service-oriented industry and service environment. Every system contains waste, i.e. something that does not provide value to the customer. While producing a product, processing a material, or providing a service, there are elements which are considered 'waste'. The techniques for analysing systems, identifying and reducing waste and focusing on the customer are applicable in any system, and in any industry.

Components of Lean Production

Lean Design

The first of the lean techniques involves assessing and improving upon product development, or product modifications, so that the firm can quickly and efficiently adapt to the changing business environment. Computer Aided Design (CAD software) is one of the most flexible and quickest methods for firms to design new products quickly, and transfer new product ideas from the conception stage to the market; this can lead to first mover advantage. First mover advantages include such things as: a high, if not 100% market share in the product, brand loyal customers (since they can see the firm as the first, therefore the best) and allows the business to establish a foot-in-the-door effect, which is needed to focus customers on their specific product when the copy firms move in.

Lean Quality

Quality is an expensive area for business organisations, but there are greater costs when ignoring quality. Bad quality can lead to bad publicity, a poor brand image and a great loss of customer loyalty. On the human resource side of things, one of the best ways to increase quality is by training the employees in all aspects of the production, making them multi-skilled and making them feel more empowered giving greater motivation. The importance of quality will also be reflected throughout a firm's culture.

Lean People Management

People management is, simply, a way in which people involved in and outside the business are treated and used. Lean producers will aim to fully utilize all the skills and ideas of their workers. They will attempt to ensure that all their workers are fully trained and multi-skilled in the businesses production methods. Empowerment and delegation are key to lean people management and they therefore create participation schemes to enable staff to contribute their ideas and experiences. This not only makes them feel valued, but also benefits the firm by getting ideas from experienced workers. This delegation of decision-making power makes workers feel more involved and, therefore, more committed to the business objectives of the firm. Motivation is a key to productivity and therefore lower costs.

Lean Component supply

Just-in-time (JIT) is a system of stock management that involves only requesting a new supply of materials once there is a definite need. But, in addition to understanding the benefits of JIT such as: saving money on space and insurance and removing the risk of holding stocks that may become damaged or obsolete (as with food), the opportunity costs also need to be considered. The firm will no longer be able to benefit from bulk-buying discounts (economies of scale) or be able to respond immediately to a customer order. The conditions necessary for JIT to work also have to be recognised. The firm must have reliable suppliers who are able to supply on demand with a short delivery time. Proximity is always good and accessibility is also important for a quick supply and delivery.

Activities	Traditional Manufacturing	Lean Manufacturing
Scheduling	Forecast-push	Customer Order-pull
Production	Stock	Customer Order
Lead Time	Long	Short
Batch Size	Large-Batch & Queue	Small-Continuous Flow
Inspection	Sampling- by inspectors	100%-at source by workers
Layout	Functional	Product Flow
Empowerment	Low	High
Inventory Turns	Low - < 7 turns	High - 10+
Flexibility	Low	High
Cost of Goods sold	High and Rising	Lower and Decreasing

Popular Management Techniques to achieve "Lean Production"

Lean Production is the application of lean principles in production environments. However, lean principles should not be limited to production

operations. All areas of the company can benefit from the application of lean principles, ensuring lower costs, higher quality, and better service and delivery. There are several popular management techniques that have been developed to help achieve "lean production". The most popular are:

- Just in time production (JIT)
- Cell production
- Kaizen (Continuous improvement)
- Total Quality Management (TQM) and zero defect production
- Quality Circle
- Time based management
- Simultaneous engineering.

Cell Production

In traditional production, products were manufactured in separate areas (each with a responsibility for a different part of the manufacturing process) and many workers would work on their own, as on a production line. In cell production, workers are organised into multi-skilled teams. Each team is responsible for a particular part of the production process including quality control and health and safety. Each cell is made up of several teams who deliver finished items on to the next cell in the production process. Cell production can lead to efficiency improvements due to increased motivation (team spirit and added responsibility given to cells) and workers sharing their skills and expertise.

Kaizen/Continuous Improvement

Kaizen is a Japanese word for an approach to work where workers are told they have two jobs to do: Firstly, to carry out their existing task, and Secondly, to come up with ways of improving the task. The concept known as "continuous improvement" therefore implies a process where the overall progress and gains in productivity within a firm, come from small improvements by workers being made all the time. For example, an employee may simply re-organise the lay out of his work area, which saves 2 minutes looking for and filing paperwork each day. When added up the course of a week, 10 minutes extra productive time is gained, which over a year equates to an extra day's work. If other workers also adopt this, then a firm can benefit from a significant increase in output per worker (productivity) over a year.

Just in Time Approach

JIT means that stock arrives on the production line just as it is needed. This minimises the amount of stock that has to be stored (reducing storage costs). JIT has many benefits and may appear an obvious way to

organizes production but it is a complicated process which requires efficient handling. For example, JIT relies on sophisticated computer systems to ensure that the quantities of stock ordered and delivered are correct. This process needs to be carried out very accurately or production could come to a standstill.

Advantages of JIT Approach

- Reduces costs of holding stock e.g. warehousing rent
- No money tied up in stock, can be used better elsewhere.

Risks in JIT Approach

- Needs suppliers and employees to be reliable
- May find it difficult to meet sudden increase in demand.

Total Quality Management

TQM is a management approach for an organization, centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction, and benefits to all members of the organization and to society :

- Reduction of defects because TQM promotes quality awareness and participation of all members of the organization, not just the QA or QC department. It means quality at the source.
- Total quality management system leads to ease of problem solving. Through measurements such as SPC and other techniques such as failure analysis, defects and failures (even potential failures) can be identified and addressed.
- TQM also leads to continuous improvement of processes and products. TQM system should also improve the efficiency of people and machine.
- TQM leads to quality products which lead to customer satisfaction. And finally, by reducing defects and improving machine and personnel efficiency, TQM should lead to cost savings and profitability improvement (bottom line).

Quality Circle

Quality Circle is a volunteer group composed of workers, usually under the leadership of their supervisor (but they can elect a team leader), who are trained to identify, analyse and solve work-related problems and present their solutions to management in order to improve the performance of the organization, and motivate and enrich the work of employees. Quality circles have the advantage of continuity; the circle remains intact from project to

project. A variety of benefits have been attributed to Quality Circles, including higher quality, improved productivity, greater upward flow of information, broader improved worker attitudes, job enrichment, and greater teamwork.

Time Based Management

Time-based Management is an aspect of Lean Production. It is a general approach that recognises the importance of time and seeks to reduce the level of unproductive time in an organisation. As with other aspects of Lean Production, Time-based management also calls for flexible, multi-skilled staff, and a culture of mutual trust between workers and managers.

Benefits of Time Based Management

- Quicker response times (reduced lead times) to meet changing market and customer needs
- Faster new product development
- Reduction in waste, therefore greater efficiency
- For a firm to operate time-based management effectively, it needs to have flexible production facilities that enable it to make changes easily. For example, it may need to be able to switch production quickly between different products and to alter the length of production runs as needed.

Simultaneous Engineering

Simultaneous Engineering is a part of the Time-based Management approach. It is a project management approach that helps firms develop and launch new products more quickly. All of the areas involved in a project are planned together. Everything is considered simultaneously (together, in parallel) rather than separately (in series). Product teams are set up to include people in all areas that are relevant to the new product – design, development, production, marketing etc. Suppliers are involved in the new product development so that potential delays in resourcing of raw materials, components and services can be anticipated and avoided. A teamwork approach is used, with all areas involved in the project working on the project at the same time.

Benefits of Lean Production

Reduced inventory	Greater flexibility
Improved quality	Better relations with suppliers
Lower costs	Simplified scheduling and control activities
Reduced space requirements	Increased capacity
Shorter lead time	Better use of human resources
Increased productivity	More product variety

Critical Success Factors for Lean Production

- Support from all tiers of the company
- Far-reaching change of attitude
- Extensive preparation : analysis, standardisation, continuous flow etc.
- Efficient workers and management
- Good quality stock and suppliers
- Exact delivery
- Simple designs

Lean Production – Challenges Ahead

- Demands a far-reaching change of attitude—a process of normally years—in all tiers of a company to be sustainable.
- Demands extensive analysis and preparation.
- Demands a very high degree of standardisation of processes and materials.
- Relies on high quality stock, because quality is more likely to be noticed because as ideally the process involves much more extensive quality control and just-in-time production, which means that the process can be easily blocked by just one item that is of unsatisfying quality.
- Relies on exact delivery times and frequencies ("takt") from suppliers, who are therefore generally also required to start producing lean.
- Lean production is expensive, there are high starts up costs and it cannot be applied to every business, most economies of scale advantages are lost and it can take a long time for the

workforce to adapt to such a change and some employees may reject the changes.

Summing Up ...

In accompany with globalisation, competitions witnessed in the business environment have become more and more fierce. To cope with the challenges on global competitiveness, in recent times, manufacturers identified a new production technique called "Lean Production". This is universally regarded as a management technique rather than a production technique. Lean production is an intellectual approach which can bring about a lean and competitive state in company. Lean production has been implemented successfully all over the world, and the adopters achieved improved performance. Lean manufacturing holds great potential for India to enter in global markets as a competitive player. The area of lean production has been vastly explored and practiced by successful organizations of developed nations. India can learn from an array of such practices and understand the implied thinking that forms a lean strategy. In these times of ever-tighter resources, more midsized manufacturers are turning to lean manufacturing as a way to survive. If the lean production is carried out through efficient planning and effective management, the manufacturers would surely get higher quality products to market quicker, control their costs, reduce waste, partner with other supply chain members to achieve the most efficient work flow, and offer better value to the consumer while still making profit. □

INFORMATION REGARDING MEMBERS ARRESTED BY LAW ENFORCEMENT AGENCIES.

Name of Member	Membership No.	Gist of information received by available with Institute	Action initiated by the Institute
Shri Vadlamani Srinivasu	M/14306	Disciplinary Directorate received information from the Council of the Institute vide its decision taken at 253rd meeting of the Council held on 17th and 18th April, 2009, wherein it was mentioned that Shri Vadlamani Srinivasu (M/14306), Chief Financial Officer of Satyam Computer Services Limited has committed serious fraud for his activities connected therein and thereby brought disrepute to the profession or the Institute as a result of his action whether or not related to his professional work. The activities of Shri Srinivasu have also been reported in all the leading newspapers of the country.	Disciplinary proceedings are going on against the member in accordance with the provisions of the Cost and Works Accountants Act, 1959 and the Cost and Works Accountants (Procedure of Investigations of Professional and other Misconduct and Conduct of Cases) Rules, 2007.

Corporate Audit Committee Disclosure Practices and Pattern in Banking Sector — An Overview

Dr. L. N. Koli*

The Audit Committee is an independent body answerable directly to the Board of Governors and responsible for verifying that the operations of the company have been conducted and its books kept in a proper manner. This paper highlights the role, power, management structure and purpose and an audit committee as well as Corporate Audit Committee Disclosure Practices and Pattern in Insurance Sector.

Introduction

A vital part of auditing is that the auditor must be INDEPENDENT of the management who are responsible for the accounts, and, also the owners who receive them. In the case of companies, he must not be connected with either the directors or the shareholders. He must also be independent of government agencies or other groups who have contact with the business. For these reasons auditors form themselves into independent firms willing to perform audits for a fee for whoever is able and willing to employ them. Some of these firms are very large with worldwide connections and employing thousands of people. Others are very small with sometimes only one or two principals and a very small staff.

The Audit Committee is an independent body answerable directly to the Board of Governors and responsible for verifying that the operations of the company have been conducted and its books kept in a proper manner. At the time of approval of the financial statements by the Board of Directors, the Audit Committee issues its statements thereon. The reports of the Audit Committee on the results of its work during the preceding year are sent to the Board of Governors together with the annual report of the Board of Directors

Requirements of the Audit Committee

Audit Committee has a critical role to play in ensuring the integrity of financial management of the company. This Committee adds assurance to the shareholders that the auditors, who act on their behalf, are in a position to safeguard their interests. Besides the requirements of Clause 49, Section 292A of the Act requires every public having paid up capital of Rs 5 crores or more shall constitute a committee of the board to be known as Audit Committee. As per the Act, the committee shall consist of at least three directors, two-thirds of the total strength shall be directors other than managing or wholetime directors. The Annual Report of the company shall disclose the composition of the Audit Committee. The

recommendations of the committee on any matter relating to financial management, including Audit Report, shall be binding on the board. In case the board does not accept the recommendations so made, the committee shall record the reasons thereof, which should be communicated to the shareholders, probably through the Corporate Governance Report. The committee shall act in accordance with the terms of reference to be specified in writing by the board. The committee should have periodic discussions with the auditors about the Internal Control Systems and the scope of audit including the observations of the auditors. If the default is made in complying with the said provision of the Act, then the company and every officer in default shall be punishable with imprisonment for a term extending to a year or with fine up to Rs 50,000, or both.

Qualified and independent audit committee

A qualified and independent committee shall be set up and shall comply with the following :

1. The audit committee shall have minimum three members. All the members of audit committee shall be non-executive directive directors, with the majority of them being independent.
2. All members of the audit committee shall be financially literate and at least one member shall have accounting or related financial management expertise.

Explanation (i) The term "financially literate" means the ability to read and understand basic financial statements, i.e. balance sheet, profit and loss account, and statement of cash flows.

Explanation (ii) A member will be considered to have accounting or related financial management expertise if he or she possesses experience in finance or accounting, or requisite professional certification in accounting, or any other comparable experience background which results in the individual's financial

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officer, or senior officer with financial oversight responsibilities.

3. The chairman of the Committee shall be an independent director.
4. The chairman shall be present at the annual general meeting to answer shareholder queries.
5. The audit committee should invite such of the executives, as it considers appropriate (and particularly the head of the finance function) to be present at the meetings of the committee, but on occasions it may also meet without the presence of any executives of the company. The finance director, head of internal audit and when required, a representative of the external auditor shall be present as invitees for the meetings of the audit committee;
6. The company secretary shall act as the secretary to the committee.

Objective : The Audit Committee assists the Board in its responsibility for overseeing the quality and integrity of the accounting, auditing and reporting practices of the company and its compliance with the legal and regulatory requirements. The Committee's purpose is to oversee the accounting and financial reporting process of the company, the audits of the company's financial statements, the appointment, independence and performance of the statutory auditors, the performance of internal auditors and the company's risk management policies.

Meetings

a) The audit committee should meet at least four times in a year and not more than four months shall elapse between two meetings. The quorum shall be either two members or one-third of the members of the Audit Committee, whichever is greater, but there should be a minimum of two independent members present.

b) Formal notice of the Committee's meetings shall not be necessary but the Chairman will ensure that all members and invitees authorized by the Committee or the Board are advised of the date/time and venue of the meetings in advance.

c) The Auditors, internal auditor, if any, and the Director responsible for Finance shall attend and participate at the meetings of the Audit Committee but shall not have right to vote.

Role and powers

Powers of the Audit Committee

1. To investigate any activity within its terms of reference.
2. To seek information from any employees

3. To obtain outside legal or other professional
4. To secure attendance of outsiders with relevant expertise, if it considers necessary.

The role of the Audit Committee Includes

1. Oversight of the company's financial reporting process and the disclosure of its financial information to ensure that the financial information to ensure that the financial statements are correct, sufficient and credible.

2. Recommending to the board the appointment, reappointment and, if required, the replacement or removal of statutory auditors, and also fixation of audit fees.

3. Approval of payment to statutory Auditors for any other services rendered by the statutory Auditors.

4. Reviewing with the management, the annual financial statements before submission to the Board for approval, with particular reference to :

- Matters required to be included in the Directors' Responsibility Statement to be
- Included in the Directors' Report in terms of sub-section (2AA) of Section 217 of the Companies Act, 1956.
- Changes, if any, in accounting policies and practices and reasons for the same.
- Major accounting entries involving estimates based on the exercise of judgement by the management.
- Significant adjustments made in the financial statements arising out of audit findings.
- Compliance with listing and other legal metter.
- Requirements relating to financial statements.
- Disclosure of related party transactions.
- Qualifications in draft audit report.

5. Reviewing with the management the quarterly financial statements before submission to the board for approval.

6. Reviewing with the management the performance of statutory and internal auditors, adequacy of internal control systems.

7. Reviewing the adequacy of internal audit function, if any, including the structure of the internal audit department, staffing and seniority of the official heading the department, reporting structure, coverage, and frequency of internal audit.

8. Discussion with Internal Auditors any significant findings and follow up thereon.

9. Reviewing the findings of any internal investigations by the Internal Auditors into matters where there is suspected fraud or irregularity or a

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failure of internal control systems of a material nature and reporting the matter to the board.

10. Discussion with statutory auditors, before the audit commences, about the nature and scope of audit as well as post audit discussion to ascertain any area of concern.

11. To look into the reasons for substantial defaults, if any, in the payment to the depositors, debenture-holders, shareholders (in case of non-payment of declared dividends) and creditors.

12. To review the functioning of the Whistle Blower Mechanism.

13. Carrying out such other function as may be specifically referred to the committee by the board of directors and/or other committees of directors of the company.

14. To review the following information :

- The management discussion and analysis of financial condition and results of operations;
- Statement of significant related party transactions (as defined by the audit committee), submitted by management;
- Management letters/letters of internal control weakness issued by the statutory auditors;
- Internal audit reports relating to internal control weakness; and
- The appointment, removal and terms of remuneration of Internal Auditors.

15. Reviewing the financial statements and, in particular, the investments made by the unlisted subsidiaries of the company.

16. Review of uses/application of funds raised through an issue (public issue, rights issue, preferential issue etc.).

Auditor's Duty in respect of Audit Committee

The auditor should ascertain whether the company has :

- Set up a qualified and independent audit committee and its composition and functioning is as per Clause 49 of the Listing Agreement.
- The audit committee comprises of at least 3 members, all being non-executive directors, and at least one director possessing financial and accounting knowledge.

He should further ascertain that :

- The chairman of the committee is an independent director and was present at the annual general meeting to answer shareholder queries.
- There is practice of inviting the executives (particularly finance executive) in the audit committee meetings.

- The company secretary was authorized to act as a secretary of the audit committee and, in fact, has acted as secretary.
- The audit committee met as least three times during the year and one of the meetings was held before finalization of the annual accounts.
- The quorum (minimum 2 members or 1/3rd members) was present in every meeting.

Audit Committee in ICICI Bank

ICICI Bank has established a tradition of best practices in corporate governance as well as audit committee. The corporate governance and audit committee framework in ICICI Bank is based on an effective independent Board, the separation of the Board's supervisory role from the executive management and the constitution of Board Committees, generally comprising a majority of independent Directors and chaired by an independent Director, to oversee critical areas.

Audit Committee Terms of Reference

The Audit Committee provides direction to the audit function and monitors the quality of internal and statutory audit. The responsibilities of the Audit Committee include overseeing the financial reporting process to ensure fairness, sufficiency and credibility of financial statements, recommendation of appointment and removal of central and branch statutory auditors and chief internal auditor and fixation of their remuneration, approval of payment to statutory auditors for other permitted services rendered by them, review of functioning of Whistle Blower Policy, review of the quarterly and annual financial statements before submission to the Board, review of the adequacy of internal control systems and the internal audit function, review of compliance with inspection and audit reports and reports of statutory auditors, review of the findings of internal investigations, review of statements of significant related party transactions, review of management letter/letters on internal control weaknesses issued by statutory auditors, reviewing with the management, the statement of uses/application of funds raised through an issue (public issue, rights issue, preferential issue, etc.), the statement of funds utilized for the purposes other than those stated in the offer document/prospectus/notice and the report submitted by the monitoring agency, monitoring the utilisation of proceeds of a public or rights issue and making appropriate recommendations to the Board to take steps in this matter, discussion on the scope of audit with external auditors and examination of reasons for substantial defaults, if any, in payment to

stakeholders. The Audit Committee is also empowered to appoint/oversee the work of any registered public accounting firm, establish procedures for receipt and treatment of complaints received regarding accounting and auditing matters and engage independent counsel as also provide for appropriate funding for compensation to be paid to any firm/advisors. In addition, the Audit Committee also exercises oversight on the regulatory compliance function of the Bank.

Composition

The Audit Committee comprises three independent Directors and is chaired by Sridar Iyengar. There were six meetings of the Committee during the year. The details of the composition of the Committee

and attendance at its Meetings are set out in the following table :

Name of Member	Number of meetings attended
Sridar Iyengar, Chairman	6
M. K. Sharma, Alternate Chairman	5
Narendra Murkumbi	5

Conclusion – Audit Committee plays a significant role in tracing fraud errors and mistakes in the form of reviewing with the management, the performance of statutory and internal auditors, adequacy of internal control systems, the adequacy of internal audit function, if any, including the structure of the internal audit department, staffing and seniority of the officials heading the department, reporting structure, coverage and frequency of internal audit. □

Ref. No. G/82 (106)/12/2010/140

December 30, 2010

Notification

Pursuant to the provisions of Regulation 146 of the Cost and Works Regulations, 1959, the Council of ICWAI in its 266th Council meeting held on December 30, 2010 by virtue of power conferred there in has constituted the following Chapter of Cost Accountants :

Hazaribag Chapter of Cost Accountants
 Prabhu Niwas Market
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 Hazaribag - 825301, Jharkhand
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 Email : hcca@rediffmail.com

(S. M. Galande)
 Chief Executive Officer

ANNOUNCEMENT

The Management Accountant – February, 2011 will be a special issue on '**EDUCATION BOOM**'. Articles, views and opinions on the topic are solicited from readers to make it a special issue to read and preserve. Those interested may send in their write-ups by e-mail to rnj.sumita @icwai.org, followed by hard copy to the Research & Journal Department, 12 Sudder Street, Kolkata-700016 to reach by 15th January, 2011.

ANNOUNCEMENT

The Management Accountant – March, 2011 will be a special issue on '**PUBLIC PRIVATE PARTNERSHIP : CONCEPTS AND TECHNIQUES**'. Articles, views and opinions on the topic are solicited from readers to make it a special issue to read and preserve. Those interested may send in their write-ups by e-mail to rnj.sumita @icwai.org, followed by hard copy to the Research & Journal Department, 12 Sudder Street, Kolkata-700016 to reach by 15th February, 2011.

Admission to Membership

**The Institute of Cost and Works Accountants of India
Advancement to Fellowship**

**Date of Advancement :
8th September 2010**

M/5828
Shri Shyamal Kumar Bhattacharjee
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M/7630
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M/12184
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Sankara Sarma
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Secretary, Finance Depart-
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Plate & Vessels Ltd.
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Shri Dinesh Prasad Dilip
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MCOM, FICWA
Commercial Manager-HPC
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M/20661 Dr. Sumita Chakraborty BSC, MBA(FIN), PHD, FICWA Deputy Director (Studies) The I.C.W.A. of India 12 Sudder Street Kolkata 700 016	M/23093 Shri Vaithilingam Palani MCOM, MPHIL, FICWA Deputy Director (Finance), Indian Maritime University —Mumbai Campus, Karave, Nerul, Navi Mumbai 400 706	M/24514 Shri V. Thayalan MCOM, BED, BGL, FCS, FICWA Manager – Finance & Company Secretary, Inzi Controls India Limited, S 72, Bangalore Highway, Irrungattukkotta, Sripurum- budur, Kanchipuram 602 105	Admission to Associateship on the Basis of MOU with IMA, USA : Date of Admission : 23rd August 2010
M/20951 Shri Nitin Krushna Surve MCOM, FICWA Manager – Finance & Accounts, ASB International Pvt. Ltd., E 9 Anand Nagar, MIDC Industrial Area Ambernath (East) 421 506	M/23207 Shri Sanjay Kulpati BCOM(HONS), MBA(FIN), FICWA Financial Controller, Jeewan Mala Hospital Pvt. Ltd. 67/1 New Rohtak Road New Delhi 110005	M/24517 Shri Rajesh Viswanathan BCOM, MMS, FICWA Finance & Operations Controller, Group M Media India Pvt. Ltd., 201 Peninsula Chambers, Ganpatrao Kadam Marg, Lower Parel Mumbai 400 013	C/29577 Mr. Ajit & Nair, BCOM, CMA (USA), AICWA Financial & Admn. Manager, LabPlus Labroatory Ras Al Khaimah (UAE)
M/21777 Shri Beni Madhab Das MSC, FICWA Inspector, O/o The Asst. Commissioner of Central Excise, Sethi Trust Building (6th Floor), Bhangagarh, G.S. Road, Guwahati 781009	M/23576 Shri Ajay Garg BCOM(HONS), FICWA Sr. Finance Officer, NTPC Limited, Corporate Budget Section, Core 7, 3rd Floor, SCOPE Complex, Institutional Area, Lodi Road New Delhi 110 003	M/24807 Shri Shriniwas Satyanarayan Diddi, MCOM, FICWA Shriniwas Diddi & Co., Shop No. 31, Nath Pride Complex, Near Civil Hospital Solapur 413 003	C/29578 Mr. Venkatesh Narayanan BCOM, CMA (USA), AICWA Finance Manager, Dorma Gulf Door Controls FZE, Dubai U.A.E.
M/22641 Shri Pawan Kumar Agrawal BCOM(HONS), FICWA Sr. Vice President, Gujarat NRE Coke Ltd., 22 Camac Street, Block 'C', 5th Floor Kolkata 700016	M/23613 Shri Subrata Debnath BCOM, FICWA Manager-Business Finance, Lupin Ltd., 4th Floor, 'C' Wing, Laxmi Tower, Bandra Kurla Complex, Bandra (E) Mumbai 400 051	M/25050 Shri Venkateswaran Ramakrishnan MA, FICWA Assistant Director, Securities & Exchange Board of India (SEBI), SEBI Bhavan, Plot C4-A, 'G' Block, Bandra Kurla Complex, Bandra East, Mumbai 400 051	Admission to Associateship Date of Admission : 8th September 2010
M/22762 Shri A. Ganesha BCOM, FICWA Head Costing, T D Power Systems Pvt. Ltd., Plot. 27, 28 & 29, KIADB Indl. Area, Dabaspet, Nelamangala Taluk, Bangalore 562 111	M/23713 Shri G. P. Srivatsan BSC, FCA, FICWA Flat GD, Abirami Coral View, #30, City Link Road, Maduvankarai, Guindy Chennai 600 032	M/25098 Shri Sunil Kumar BSC(HONS), FICWA Financial Controller, India, AECOM India Pvt. Ltd., 9th Floor, Infinity Tower C, DLF Cybercity, DLF Phase II Gurgaon 122 002	M/29579 Shri Adnani Rakesh Bhagwandas MBA, FCA, AICWA Director M/s Condor Footwear (India) Ltd., A 1, 3503-04, Road 3, Sub Road 35 B/H. Dev Rekha, Sachin GIDC, Surat 394 230
M/22884 Shri Uday Bhanu Pratap BCOM(HONS), FICWA Sr. Finance Officer (Fin. Concurrence), N.T.P.C. Limited, E O C, A 8 A, Sector 24, Noida 201 301	M/23933 Shri A. Sankar BCOM, FICWA Assistant Manager, City Union Bank, 94 Court Street, Tiruppur 641 601	M/25098 Shri Sunil Kumar BSC(HONS), FICWA Financial Controller, India, AECOM India Pvt. Ltd., 9th Floor, Infinity Tower C, DLF Cybercity, DLF Phase II Gurgaon 122 002	M/29580 Shri Krishna Nand Chaubey BCOM, MBA, AICWA Country Manager (Fin. & Accts.) India Resources Limited, Concentrator Plant, Mosabani, East Singhbhum, Mosabani 832 104
M/23040 Shri Santhosh Boas BCOM, FICWA Sr. Manager (Planning Dept.), The Catholic Syrian Bank Ltd., Head Office, College Road, Trichur 680 020	M/24122 Shri Sanjay Kumar BSC(HONS), FICWA Accounts Officer, N.H.P.C. Ltd., 2nd Floor, Vidyut Bhawan II, Bailey Road Patna 800 021	M/25272 Shri Kundan Kumar Sinha BCOM(HONS), FICWA Shree Niwas Shree Vishnupuri Colony Moh : Karsilli Road Near Bengali Ashram Gaya 823 001	M/29581 Shri S. Satya Narayana BCOM(HONS), AICWA C/o S. N. Naik, Prem Nagar- 7th Lane (4th Extension) Berhampur 760 002
M/23040 Shri Santhosh Boas BCOM, FICWA Sr. Manager (Planning Dept.), The Catholic Syrian Bank Ltd., Head Office, College Road, Trichur 680 020	M/24122 Shri Sanjay Kumar BSC(HONS), FICWA Accounts Officer, N.H.P.C. Ltd., 2nd Floor, Vidyut Bhawan II, Bailey Road Patna 800 021	M/25272 Shri Kundan Kumar Sinha BCOM(HONS), FICWA Shree Niwas Shree Vishnupuri Colony Moh : Karsilli Road Near Bengali Ashram Gaya 823 001	M/29582 Shri Prathi Mohan Kumar BCOM, AICWA S/o P. Tarini Rao Prem Nagar 7th Lane Nr. Sriganesh Castle Berhampur Berhampur 760 002

M/29583 Ms Atasi Sahu MCOM, AICWA C/o. Deba Prasad Sahu Ramhari Nagar (2nd Lane), Berhampur, Dist. Ganjam Berhampur 760 001	M/29590 Shri Pravin Singh BCOM, LLB, AICWA Team Leader, ITS Middle East, PO Box 32585 Dubai, U A E., Dubai	M/29597 Shri Liza Jose BSC, AICWA Asst. Manager (Finance & Accounts), Exodus Communications (P) Ltd., G 170, Panampilly Nagar Cochin 682 036	M/29604 Miss Tripta Arya BCOM, AICWA Senior Executive (Costing) C4E 135, Janakpuri New Delhi 110 058
M/29584 Shri Tumula Srikant BCOM, AICWA C/o. T Venkata Ramana, 2nd Canal Lane, Gand- hinagar, Berhampur 760 001	M/29591 Shri Padmanabhan Nageswaran BBA, AICWA 36, SBI Sea - View, Four Bungalows, Andheri - West, Mumbai 400 053	M/29598 Shri Rajesh Kumar Pal BCOM, AICWA Associate Consultant, Atos Origin India Ltd., Plant 5, Godrej Complex, Pirojsha- nagar, LBS Marg, Vikhroli Mumbai 400 079	M/29605 Ms Aparna R BCOM, AICWA Supervisor (Accounts) Karnataka Soaps & Deter- gents Ltd., P.B. No. 5531, Bangalore - Pune Highway, Bangalore 560 055
M/29585 Shri Kakinada Rakesh Kumar BCOM, AICWA C/o. K. Rajeswar Acharya, Indira Nagar, Behind Hous- ing Board, Nr. Nilakantha Nagar Telephone Exchange, Berhampur Berhampur 760 002	M/29592 Ms Binni Kumari BCOM(HONS), AICWA Kamal & Associates, 6/1 Kashidih, 1st Floor, Deo Palace, Sakchi Jamshedpur 831 001	M/29599 Shri Sunil Kumar Singh BCOM, AICWA 76 Prabhu Nagar, Anna- purna Road, Indore 452 009	M/29606 Shri Shashi Kant Ranjan BCOM(HONS), AICWA Sr. Executive (F & A) Lanco Amarkantak Power Ltd., Plot 397, Udyog Vihar, Phase III, Gurgaon 122016
M/29586 Shri Sunil Kumar Bansal BCOM(HONS), MBA, AICWA Jr. Finance Executive, American Power Conver- sion India Pvt Ltd., Lavelle Road Bangalore 560 001	M/29593 Shri Satyendra Tripathi BCOM, AICWA Accounts Officer, BHEL - CSU Centralised Stamping Unit, I. A. Jagdishpur Sultanpur 227 817	M/29600 Miss Jayashree Subhash Virkar BCOM, AICWA 5/9 Goregaonkar Lane Near Central Cinema, Girgaum, Mumbai 400 004	M/29607 Shri Hari Narayan Rai BSC, AICWA Executive – Costing, Intas Biopharmaceuticals Ltd., Plot No. 423/P/A/GIDC, Sarkhej-Bavla highway, Moraiya, Tal - Sanand, Ahmedabad 382 210
M/29587 Shri Girish Srikrishna Paranjpe BCOM, ACA, AICWA Jt. CEO, Wipro Ltd., No. 72, EC4 Electronics City Bangalore 560 100	M/29594 Shri Pramod Kumar Singh BSC, AICWA Works Accountant, Areva T & D India Ltd., At/PO. Naini, Allahabad 211 008	M/29601 Ms Revathi Balaji MCOM, AICWA Team Leader, Royal RBS Business Services, Olympia Techpark, 9th Floor, 1 SIDCO Industrial Estate, Guindy, Chennai 600 032	M/29608 Shri Rajiv Gopal Krishna Pillai MCOM, AICWA Bidco(U) Ltd., P. B. 1136 Masse Industrial Estate Jinja (Uganda), Jinja
M/29588 Shri Rahul Gemini BCOM(HONS), AICWA C. S. C. India Pvt. Ltd., C 29, Sector 58, Noida Noida 201 301	M/29595 Shri Saumya Ranjan Mahapatra MCOM, AICWA Accounts Officer, NTPC - SAIL Power Co. Pvt. Ltd., 4th Floor, 15th NBCC Tower, Bhikaji Cama Place New Delhi 110 066	M/29602 Shri Bonthala Palle Ravi Kumar MCOM, MBA, AICWA Asst. Accounts Officer, National Seeds Corporation Ltd., Vas Campus, Near Railway Gate, Hebbal Bangalore 560 024	M/29609 Shri G. R. Narayanan MCOM, AICWA Regional Accounts Head, Mahindra & Mahindra Financial Services Ltd., 15 Arcot Street, T. Nagar Chennai 600 017
M/29589 Shri Ashish Anantrao Devdhe MCOM, AICWA Joint Manager (Accounts) Mahindra Finance 101, "Sne- haganga", Near Income Tax Office Shankarshet Road, Swargate, Pune 411 009	M/29596 Shri M.G. Guruvayurappan BCOM, MBA, AICWA Tax Analyst, NCR Corpora- tion India Private Ltd., G 1, Ground Floor, Winchis- ter Building, Hiranandani Business Park, Powai Mumbai 400 076	M/29603 Shri Rajesh Kumar Sinha BCOM(HONS), AICWA Bayer Material Science Pvt. Ltd., Plot 1A, Udyog Kendra, Sector Ecotech III, Greater Noida 201 306	M/29610 Ms Roopa Sachin Joshirao MCOM, AICWA B/5 Mangaldeep C H S., Gandhinagar, P & T Colony, Dombivali East, Dombivli (East) 421 201

M/29611 Shri Sanjay Kumar Bayen BCOM(HONS), MBA, AICWA Asst. Manager Finance & Accounts, 22 New Tangra Road Kolkata 700 046	M/29618 Shri Abdul Majeed Akbar B. TECH, AICWA Cost And Management Accountant, Alumco. L.L.C., Dubai Investment Park, Dubai, UAE 49668 Dubai 49668	M/29625 Shri Mahesh Kumar L BCOM, AICWA 31-1/117 Near Ramrao Layout, Kathriguppe Main Road, Bangalore 560 085	M/29632 Shri K. R. Vasudevan BCOM(HONS), LLB, AICWA Dy. General Manager (F & A), Paradeep Phosphates Ltd., At/Po. Paradeep, PPL Township, Dist. Jagatsinghpur, Paradeep 754145
M/29612 Shri Sudip Das BCOM(HONS), AICWA 7/1 Park Avenue, Modern Park, Santoshpur Kolkata 700 075	M/29619 Shri Shyam Nandlal Agrawal MCOM, AICWA Manager Accounts Mahindra & Mahindra Ltd., Automotive Sector, Akurli Road, Kandivli (E), Mumbai 400 101	M/29626 Shri Rakesh Kumar Pandey BCOM(HONS), AICWA Corporate Manager, Management Accounting Fresh And Honest Cafe Ltd., TVH Beliciaa Towers, Tower 2 4th Floor MRC Nagar, Chennai 600 028	M/29633 Shri J. Vijay Babu BCOM, AICWA Accounts officer, Finance Department, 24 Bldg. B H E L, Tiruverumbur TRICHY 620014
M/29613 Ms Uppugunduri Padmavathi MCOM, MBA, MPHIL, AICWA Vishwavidhwani Instt. of Systems & Management, Boston House, Thumkunta Hyderabad 500 017	M/29620 Shri Ramesh Kumar Dhar BSC, AICWA Officer State Bank of India, Jalahalli Main Branch, Bangalore 560 013	M/29627 Shri R Rajasekaran BSC, AICWA Plot No. 74, Dr. Radha- krishnan Street, NGGO Colony, Nagamalai, Madurai 625 019	M/29634 Ms Mina Pali BCOM, MHRM, MPHIL, AICWA Accounts Officer, Finance Department, 24 Building B H E L (HPBP) Tiruverumbur, TRICHY 620014
M/29614 Shri Dilip Kumar M. MCOM, AICWA Senior Accounts Executive, TVS MOTORS COMPANY LTD., Post Box 4, Harith, Hosur 635 109	M/29621 Shri Ashutosh Ashok Deshpande BCOM, MBA, AICWA Assistant Manager Indo Rama Synthetics (I) Ltd., A 31 MIDC, Butibori, Nagpur 440 011	M/29628 Ms Rasiya P. K. MCOM, AICWA Nambiar Valappil (H), Alankode (PO), Kalachal, Malappuram (Dist) Malappuram 679 585	M/29635 Shri M. Srinivasa Rao BCOM, AICWA Sr. Accounts Officer B H E L Tiruchirapalli 620014
M/29615 Shri Ramakrushna Aich BCOM, AICWA Jr. Manager (F & A) MESCO Steel Ltd., Panchavati, Barbil, Keonjhar 758 035	M/29622 Shri Akash Jain MCOM, AICWA C/o. Sajawat Main Road PO - Barpeta Road, Barpeta Road 781 315	M/29629 Shri M. Shanmuga Sundaram MCOM, AICWA Accounts Officer, 24, Bldg., Accounts & Finance Depart- ment, B H E L Tiruchirapalli 620 014	M/29636 Ms Aarti Agarwal BCOM(HONS), AICWA C 48, Adarsh Appartments A 2 Block, Paschim Vihar New Delhi
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M/29617 Shri Rizwan Ahmad MCOM, AICWA Accounts Manager, Eastern Textile Co., P.O. Box 859, Riyadh - 11421 Kingdom of Saudi Arabia, Riyadh 11421	M/29624 Shri P. M. Murali BCOM, AICWA Manager – Monnet Ispat & Energy Ltd., Monnet House, 11 Masjid Moth, Greater Kailash II, New Delhi	M/29631 Shri Vivek Parmeshwar Sharma MCOM, AICWA 15 "Lily", NECO Gardens, Viman Nagar, Pune 411 014	M/29638 Shri S. Kumar BCOM, MBA, AICWA 92, 5th "B" Main, 5th Cross, R.P.C. Layout, Bangalore 560 104

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M/29640 Shri Ankur Mittal MCOM, AICWA Krishna Colony, Behind Jai Cinema, Muradnagar Ghaziabad 201 206	M/29647 Shri Shiva Prasada A BBM, AICWA Assistant Manager – Accounts, Delmia Solutions Pvt. Ltd., # 680, 8th Main, J P Nagar 2nd Phase Bangalore 560 078	M/29654 Shri Partha Dey BCOM(HONS), AICWA Cashier, Siliguri Municipal Corporation, PO Siliguri, Dist Darjeeling, Siliguri 734 001	M/29661 Shri Tanoj Kumar Panigrahy MCOM, LLB, AICWA Financial Consultant, S S A., Gajapati, Parlakhemundi, Dist. Gajapati Paralakhemundi 761 200
M/29641 Shri Athulya Mohan BCOM, AICWA K. A. Felix & Co., Cost Accountants, 34/2262 E, Vaikundam Bldgs. Mamangalam 682 025	M/29648 Shri Sandip Kumar Bansal BCOM(HONS), AICWA A/62-63, Vidhya Vihar, Hastsal, Uttam Nagar New Delhi 110 059	M/29655 Shri Aniruddh Gupta BCOM, LLB, MBA, AICWA C 24A, Pankaj Singhvi Marg, Near Vidhan Sabha, Lal Kuthi, Jaipur	M/29662 Shri Godabari Padhy BCOM, MBA, AICWA At : Chandapur, PO : Jaga-mohanpur Via : Chikiti, Dist. Ganjam Ganjam 761 010
M/29642 Shri Ravi Shankar Mishra BCOM(HONS), AICWA Room 2B, Ground Floor, Ispat Bhawan, Bhilai Steel Plant, Bhilai Bhilai 490 001	M/29649 Shri Manikandan B BCOM, MFC, AICWA Accounts Officer, Finance, B H E L, TRICHY 620 014	M/29656 Shri Pankaj Kumar BCOM, AICWA Dy. Manager – Accounts, G K N Driveline India Ltd., 270, Sector 24 Faridabad 121 005	M/29663 Shri Krishnendu Paul BCOM, MBA, AICWA Asistant Accounts Officer NHPC Ltd., Block DP, Sector V, Salt Lake City Kolkata 700 091
M/29643 Shri Ajay Kumar Pandey BE, AICWA Dy. Manager (Finance & Accounts), Room 110 C, Ispat Bhavan, Finance Department, Bhilai Steel Plant, Bhilai 490 006	M/29650 Shri Santa Prasad Bhuiya BCOM(HONS), AICWA Teesta Low Dam Project III, Sector C, N H P C Ltd., Mungpoo Road, Rambi, PO - Reang, Dist. Darjeeling, Darjeeling 734 321	M/29657 Shri Prakash Rajagopal Malathi BCOM, AICWA 2/3365 A, "RAMA", Sada- nam Road, PO : Civil Station, Eranhipalam, Kozhikode 673 020	M/29664 Shri Srinivasa Rao Pusarla BCOM, AICWA Manager – Finance, APPLABS Technologies Private Ltd., Plot 83 & 84, Road 2, Banjara Hills Hyderabad 500 034
M/29644 Ms Deepa Raghavan Nair MCOM, AICWA Sr. Lecturer, Indira Institute of Management 85/5 A Tathawade, Wakad Pune 412 133	M/29651 Shri Susanta Kumar Choudhury BCOM, AICWA At - Sastri Nagar - 2, PO - Gosaninuagam, Berhampur, Dist - Ganjam, Berhampur 760 003	M/29658 Ms Meena Kumari Maheshwari MCOM, AICWA 8C - 23, Pratap Nagar I, Tonk Phatak, Jaipur 302 015	M/29665 Shri Lalitkumar Amrutbhai Patel MCOM, AICWA 701-702, Regency Plaza Opp : Rahul Tower, Anand- nagar Cross Road, Satellite Ahmedabad 380 015
M/29645 Shri Dharmendra Kumar Sahu AMIE, AICWA Qrt. 9B, Street 02, Sector 02, Bhilai, Dist. Durg, Bhilai 490 001	M/29652 Shri Seby Cherian BSC, MFM, AICWA Head – Accounts, Muthoot Business Loans, 5th Floor, Muthoot Towers, M G Road, Ernakulam 682 035	M/29659 Shri V Murali MCOM, LLB, ACS, AICWA Deputy Company Secretary, Hindustan Petroleum Cor- poration Ltd., 17 Jamshedji Tata Road, Church Gate, Mumbai 400 020	M/29666 Ms Aparna S BCOM, ACA, AICWA Analyst, Mphasis Ltd., 4th Floor, Bagmane Laurel C V Raman Nagar Bangalore

M/29667 Shri Surendra Prakash Shukla MCOM, AICWA Compilation Section Food Corporation of India, Regional Office (U.P.), TC-3V, Vibhuti Khand Gomti Nagar, Lucknow 226 010	M/29674 Shri Tarun Kumar BCOM, AICWA Costing Executive, Surya Rashmi Limited, 7 Km. Stone, Moradabad Road, Kashipur, U. S. Nagar Kashipur 244 713	M/29681 Shri Vijay Gopal Gupta BCOM, AICWA Asstt. General Manager – Fin. & Accounts, Surya Roshni Ltd., Padma Tower 1 Rajendra Place New Delhi 110 008	M/29688 Shri Ravi Monga BCOM, AICWA I 138, Mahavir Enclave (Near Happy English School), Palam New Delhi 110 045
M/29668 Shri Binaya Satapathy BCOM, AICWA At : Park Street (Satapathy Colony), PO Jeypore, Dist Koraput, Jeypore 764 001	M/29675 Shri Partha Sarathi Basu BCOM(HONS), AICWA CFO – India Operations, C/o Whirlpool of India Limited, Whirlpool House, Plot 40, Sector 44 Gurgaon 122 001	M/29682 Shri Amit Nalinkumar Joshi BCOM, AICWA Siemens Limited, Energy Saleswar, R & D Centre, Kalwa Works, Thane-Belapur Road Thane 400 601	M/29689 Shri S. Muthukrishnan BCOM, MBA, AICWA Sr. Functional Consultant APPS Business I.T. Solu- tions, 8 Rosy Tower, IV Floor, Uttamar Gandhi Salai, Nungambakkam Chennai 600034
M/29669 Ms Lucy Marina S MCOM, AICWA Jr. Officer, HLL Lifecare Limited, Registered And Corporate Office, Pooja- ppura, Trivandrum 695 012	M/29676 Ms. Neha Barara BCOM(HONS), AICWA A 2130, Green Fields Colony, Faridabad 121 010	M/29683 Shri Amit Jain BCOM, AICWA A 2, Suraj Mal Vihar New Delhi 110 092	M/29690 Shri Guruprasad Dayanand Pai MCOM, AICWA Software Testing Analyst – AVP, State Street Bank, 600 College Road, Princeton, New Jersey, U S A 08742 New Jersey 8742
M/29670 Shri Jagdish Prasad Sarda BCOM, AICWA C/o M/s Plasto Profiles F-170 (I), Road No.4 I.P.I.A. Kota 324005	M/29677 Shri Sadhan Biswas BCOM(HONS), AICWA Divisional Accountant, Kandla Port Trust, A.O. Building, Off-Shore Oil Terminal, Vadinar Jamnagar 361 010	M/29684 Ms Asha Kohli BCOM, AICWA Assistant Manager BSES Rajdhani Power Ltd., G 18, Mana Enclave, Hari Nagar New Delhi 110 018	M/29691 Ms Deepalaxmi Palkar BCOM, AICWA Sr. Manager – Finance, Vodafone Essar Limited, Peninsula Croporate Park, Ganpatrao Kadam Marg, Lower Parel Mumbai 400 013
M/29671 Shri Birupakhya Tripathy BCOM(HONS), AICWA C/o. N C Kar Ashok Nagar 3rd Lane, Berhampur 760004	M/29678 Shri Sanjib Kumar Dutta BCOM(HONS), AICWA Asst. Manager – Finance, Hindustan Motors Limited, Hind Motor, Dist. Hooghly Hind Motor 712 233	M/29685 Shri Debendra Nath Karan BE, AICWA Assistant General Manager (Fin. & Accounts) S A I L, Room 140, Ispat Bhavan, Bhilai 490 001	M/29692 Shri Krishna Kumar Rathi BCOM(HONS), AICWA Jindal Steel & Power Ltd., NH 06, Mandir Hasaud Raipur 492 101
M/29672 Shri R Venkateswaran BCOM, AICWA Administrative Officer (Accounts), United India Inssurance Co. Ltd., Divisional Office 010400, III Floor, Lakshmi Bhavan, 609 Anna Salai Chennai 600 006	M/29679 Shri Pankaj Gupta BCOM, AICWA Manager – Costing, Donald- son India Filter Sys. Pvt. Ltd., Vill : Naharpur Kasan, PO : Nakhrola, Gurgaon 122 001	M/29686 Shri Anurag Kalra BCOM, AICWA S/o Shril Darshan Lal Kalra, Vill & Post : Garhi-negi, Tehsil : Jaspur, Udhampur Singh Nagar 244 712	M/29693 Shri G. Sundar Rajan BCOM, AICWA Sr. Manager Accounts, Meridian Shipping Agency Pvt. Ltd., 2nd Floor, Geetmala Complex, Nr. Shah Industrial Estate, Govandi (E), Mumbai 400 088
M/29673 Shri G Chandrasekar BCOM, AICWA Dy. Manager (Financial Accounts) ONGC Ltd., 1 Gandhi Irwin Road, CMDA Building, 9th Floor, Egmore, Chennai 600 041	M/29680 Shri Bharat Chandra Ghosh BCOM(HONS), AICWA Sr. Technician, TXR & Re- Railment Office, Durgapur Steel Plant, (DSP) Durgapur 713 203	M/29687 Shri Subal Chandra Mondal MCOM, AICWA Ispat Bhavan, Administra- tion Building, Durgapur Steel Plant, (DSP) Durgapur 713 203	

M/29694 Shri Siddhartha Sankar Seth MCOM, AICWA Manager – Finance & Accounts Finance Deptt., Ispat Bhawan, SAIL, Bhilai Steel Plant Bhilai 490 001	M/29701 Shri C. Sivalingam MCOM, AICWA Ganesh Chawll, 90 Feet Road, Near Police Station, Dharavi, Mumbai 400 017	M/29708 Shri Ajit Kumar BCOM, AICWA C/o Sarbani Basu, Belana- gar, PO Abhoynagar, Dist. Howrah, Howrah 711 205	M/29714 Shri Gopal Kumar Agrawalla BCOM(HONS), AICWA Junior Accountant, National Aluminium Com- pany Ltd., Finance Department, Smelter Plant Nalco Nagar 759 145
M/29695 Shri Akshaya Kumar Sahoo BCOM, AICWA D 11A, Maroda Sector Bhilai 490 006	M/29702 Ms Swati Shirish Samudra MCOM, AICWA 1301, Aditya, B Wing, Cosmos Heritage, Gladys Alwares Marg, Chitalsar Manpada Thane (West) 400 610	M/29709 Shri Rajib Nandy BCOM(HONS), ACA, AICWA Sr. Financial Analyst, Seagate Technology, Mailstop SV02P5, 920 Disc Drive, Scotts Valley, California, U S A 95066 California 95066	M/29715 Shri Rahul Choudhary BCOM(HONS), AICWA Inchcape Shipping Services, Inchcape House, Off Moi Avenue, Mombasa, Kenya, P.O. Box 90194 Mombasa 90194
M/29696 Shri Vishnukant Sahu MA, AICWA Dy. Manager - Fin. & Accts. Qrt. 17/A, Street 23, Sector 4, Bhilai 490 001	M/29703 Shri Trinesha T.R. MCOM, MBA, AICWA Asstt. Professor in-Com- merce Govt. First Grade College, Periyapatna Dist Mysore Mysore 571 107	M/29710 Shri Narasimha Rao K BCOM, ACA, AICWA Finance Manager IBM India Pvt. Ltd., "Embassy Golf Links", Business Park, Block C, Off Indiranagar- koramangala Inner Ring Road, Bangalore 560 071	M/29716 Shri Rajesh Kumar Gupta BCOM, AICWA E-1/28, Sector 11, Rohini, Delhi 110085
M/29697 Ms T. A. Seethalakshmi BCOM, AICWA Credit & Risk Analyst, Barclays Bank PLC. 20/21 Kamarajar Salai, Kanchipuram 631 501	M/29704 Shri Venkatesh Babu M.S., BCOM, MCA, AICWA Executive – Operation, Jenner Biotech Limited, 55 VVC Layout, R. S. Puram Coimbatore 641 002	M/29711 Shri Jayaprakash R MCOM, AICWA Assistant, Tamil Nadu Transmission Corporation Ltd., 144 Anna Salai, 6th Floor, NPKRR Maaligai Chennai 600 002	M/29717 Ms Rajni R Kapoor BCOM, AICWA Manager – Costing Jhaveri Securities Limited 301/302 – Payal Towers, Sayajigunj Vadodara 390 005
M/29698 Shri Chinmay Kumar Sahu BCOM(HONS), AICWA Cost Accountant S. B. & Associates, 6 Kiran Sankar Roy Road, 1st Floor Kolkata 700 001	M/29705 Ms Seeta Venkatraman MCOM, AICWA B 206, Komaria Brigade Residency, Uttarahalli Main Road, Chikkalasandra Bangalore 560 061	M/29712 Shri Santosh Babulal Jaware MCOM, AICWA C/o Prakash Toke, Flat 11, Bansankari Society, Shaniwar Peth Pune 411030	M/29718 Shri Jyoti Khabani BCOM, AICWA W 110, 2nd Floor, Uppals Southend Sohna Road Gurgaon 122 001
M/29699 Shri M. Bhakthavathsala Shetty BCOM, AICWA Chief Manager – Accounts & Costing, Essel Propack Ltd., 10th Floor, Times Tower, Kamla City, Senapati Bapat Marg, Lower Parel Mumbai 400 013	M/29706 Shri Shivkumar Iranna Yavagal MCOM, AICWA Management Staff, CIPLA Ltd., Opp: Sahil Hotel, Mumbai Central Mumbai 400 008	M/29713 Shri Devi Prasad Ayyanna- mahanty BCOM, ACS, AICWA Company Secretary & Accountant – Costing, Midfield Industries Ltd., Plot 6, Phase IV Extn., IDA Jeedimetla Hyderabad 500 055	M/29719 Shri K. Narasimhan BCOM, AICWA Standard Chartered Bank, 19 Rajaji Salai, Chennai 600 001
M/29700 Shri Kunal Bhagwandas Shah, BCOM, AICWA Sr. Associate, Globeop Financial Services (I) Pvt. Ltd., 501/502, 5th Floor, Interface 16, Link Road, Malad (West) Mumbai 400 064	M/29707 Shri Ramesh Chandra Bhoi BSC, AICWA Room 136, Ispat Bhawan, Bhilai Steel Plant Bhilai 490 001	M/29720 Shri Vishnukumar Mukesh- bhai Patel BE, MBA, AICWA B 36 Meera Park Society, Dahej Bypass Road Bharuch 392 001	

M/29721 Shri Pawan Kumar Pandey BSC, AICWA Dept. Manager – (Accounts & Finance) New Holland Fiat (India) Pvt. Ltd., Plot 3, Udyog Kendra Greater Noida 201 306	M/29728 Shri Goutam Chatterjee BCOM(HONS), AICWA Sr. Manager (F & A), Durgapur Steel Plant, Administrative Building, Ispat Bhawan Durgapur 713 203	M/29734 Mrs Bhanumathy R, BSC, MBA, AICWA Manager, Khazana Jewellery (P) Ltd., 252-A, TTK Road, Alwarpet, Chennai 600018	M/29741 Shri Sachin Chintaman Joag MCOM, AICWA A 1/302 & 303, Dhawalgiri Co-op. Hsg. Society, Sneh Paradise Complex, Nr. MIT College, Rambag Colony, Off Paud Road Pune 411 038
M/29722 Ms Rashmy Ravindra K BCOM, AICWA "KAARTHIKA", Mannam-petta, PO Varakkara, Thrissur 680 325	M/29729 Shri Bejoy Krishna Das BSC, AICWA Manager – F & A, Durgapur Steel Plant, Ispat Bhawan, Finance & Accounts Department, Durgapur 713 203	M/29735 Shri B. A. Shankar MCOM, AICWA 22/16 B, Gandhi Road Salem 636 007	M/29742 Shri Vikas Kumar BCOM, AICWA 302 Shivlok Apartment, Road 3D, New Patliputra Colony, Patna 800 013
M/29723 Shri Rajat Kumar Rout BCOM, AICWA Accounts Consultant, OPTCL, Janpath, Bhoi Nagar Bhubaneswar 751 022	M/29730 Shri Nandakumar M. BCOM, AICWA Deputy Manager, Barry-Wehmiller International Resources Pvt. Ltd., MPL Silicon Towers, 23/1, B3, Velachery Tambaram Main Road Chennai 600 100	M/29736 Miss Nalini S, BCOM, MFM, AICWA Sr. Executive, Khazana Jewellery (P) Ltd., 252-A, TTK Road, Alwarpet, Chennai 600 018	M/29743 Shri Josen Mathew BSC, AICWA Nampimadom, Cheeram-chira PO, Changanassery, Kottayam 686 106
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M/29749 Shri Rakesh Kumar BCOM, AICWA Dy. Manager, Nectar Lifesciences Limited, Vill. Saidpura Teh : Derabassi Mohali 140 507	M/29755 Shri Sujit Kumar Mishra, BSC(HONS), AICWA L-F-10, Kustia Housing Estate, Kolkata 700 039	M/29762 Ms Mamta Agarwal MCOM, AICWA C/o Raj Kumar Agarwal, DDA-JSEB, C-7 Kusai Colony, Doranda, Ranchi 834 002	M/29770 Shri Pratik Jain BCOM, AICWA Deputy Manager – Costing, Ashok Leyland Ltd., 175 SIPCOT Industrial Complex Hosur 635 126
M/29750 Shri Vikas Mathur BCOM(HONS), AICWA Assistant Accounts Officer, Institute of Govt. Accounts & Finance, Ministry of Finance, Block IV, Old JNU Campus New Delhi 110 067	M/29756 Shri Pradeep Kumar Nagaraja AICWA Consultant, Hitachi Consulting 2001 Bryan Street, Suite 3600, Dallas, Texas, USA Texas 75201	M/29763 Ms. Jayashree Banerjee MCOM, AICWA 11/3 Hari Bhusan Moitra Road, Kolkata 700 090	M/29771 Shri Dipak Kumar Biswas MCOM, AICWA 26 S. N. Chatterjee Road, Behala, Kolkata 700 034
M/29751 Shri Eldho Aniyan BCOM, AICWA Asst. Manager – Finance & Accounts, Lanmark Shops India Pvt. Ltd., D 31/670, Parvathi Nilayam Opp : Welfare Hospital, Vytila Kochi 682 019	M/29757 Shri S Natarajan BBA, AICWA Manager – Finance & Accounts, Odyssey India Ltd., Corporate Office, 45 & 47, 3rd Floor, First Main Road, Gandhi Nagar, Adyar, Chennai 600 020	M/29764 Shri Ranjan Chatterjee BCOM(HONS), AICWA 12/13 Uttam Ghose Lane, P.O. Salkia, Howrah 711 106	M/29772 Shri Sumanta Chakraborty MCOM, AICWA 6 Avenue Second Road Santoshpur Kolkata 700 075
M/29752 Shri Devi Sudha Gaddam BCOM, ACA, CPA, AICWA 2775 Sanders Road, Allstate Insurance Corporation, Northbrook, Illinois, USA, Pin 60062, Illinois 60062	M/29758 Shri R Prabhu BCOM, AICWA Finance - Team Leader Scope International No. 1, Haddons Road, Nungambakkam Chennai 600 006	M/29765 Shri Manoj Kumar Jha MCOM, AICWA Vasundhara Niwas, Flat 3F, P - 27, Motijheel Avenue Kolkata 700 074	M/29773 Shri Bhombe Mahindra Tulshiram MCOM, AICWA Sr. Executive Finance M/s Thermax Ltd (Boiler & Heater Division), Energy House D II, R. D. Aga Road, Chinchwad Pune 411 019
M/29753 Shri Rajesh Yashwant Joshi BCOM, AICWA Finance Manager NFTIPL., C/o Airport Authority of India, Birsi Airport Paraswada, Gondia 441 614	M/29759 Shri Sumit Kumar Sarawgi AICWA C/o J. M. Ghosh, S 58, Kam dahari, Purba Para, Garia, Kolkata 700 084	M/29766 Ms. Piali Sampson MCOM, AICWA Chief Accountant, Pratt Memorial School, 168 A.J.C. Bose Road Kolkata 700 014	M/29774 Shri Atul Gajanan Bakre BCOM, AICWA Sr. Manager - Finance VA Tech WABAG Ltd Bhakti Plaza, 2nd Floor Near Aundh Police Chowki, Aundh, Pune 411 007
M/29760 Shri Prabir Kumar Samanta BCOM, AICWA 61 Jagetberh, Kalachand Tala, PO Sripally, Dist. Burdwan Burdwan 713 103	M/29767 Shri Sounak Bhattacharjee AICWA Accounts & Finance Co- Ordinator Beldanga Municipality, P.O. Beldanga, Murshidabad 742 133	M/29768 Shri Rathijit Dutta BCOM(HONS), AICWA Kankurgachi C.I.T. Building, Block 1, Flat No. 3, Kolkata 700 054	M/29775 Shri Damle Kedar Gopal BCOM, AICWA A 101, Vanaraji Apartment M.I.T. College Road, Ram Baug Colony, Kothrud Pune 411 038

M/29776 Shri Saket Shriniwas Jade MCOM, AICWA Finance Head Nanjing Tata Auto Comp Systems Ltd Ging Shuiting East Road 986, JND2 Jungen, Nunjing (China), Nanjang 211 102	M/29782 Shri Kumar Tukaram Borkar MCOM, AICWA Assistant Manager (Finance) Dana India Technical Centre Pvt. Ltd, 503 Pride Silicon Plaza, Senapati Bapat Road Pune 411 016	M/29789 Shri Khare Aniruddha Ramchandra BCOM, AICWA Asst. Manager – Costing M/s. Thermax Ltd. (Boiler & Heater Division), Energy House, D II, MIDC, R.D. Aga Road, Chinchwad Pune 411 019	M/29796 Shri Shrigini Suchit Naidu BCOM, AICWA Head – Finance & Commer- cial, Hindalco Almex Aero- space Ltd., AL1, SEZ Shendra, MIDC Shendra Aurangabad 431 007
M/29777 Shri Girish Bhalchandra Naikwadi BCOM, AICWA C/o Wadgaonkar Plot 49, Chirmangal Niwara Society, Shridhar Nagar Dhanakwadi, Pune	M/29783 Shri Govande Anant Mohan BCOM, ACA, ACS, AICWA A 101, Pinnac Sadichha, Near Mit College, Paud Road, Pune 411 038	M/29790 Ms. Trupti Subhash Sethiya MCOM, AICWA Deepak Nitrite Ltd., Deepak Complex, National Games Road, Yerawade Pune 411 006	M/29797 Ms. Priya Choudhary BCOM, AICWA Priya Choudhary & Associ- ates, 10/54 Amar Bhawan, Punjabi Gali, Bhopalgunj Bhilwara 311 001
M/29778 Shri Aphale Rohit Ramesh MCOM, AICWA 1305 Kasba Peth Alok Nagari, E Wing Flat 41, 4th Floor, Pune 411 011	M/29784 Shri Vikas Suresh Mulgundkar BCOM, AICWA Flat A 201, Kamala City, Sunder Baug, Near Raias Society, Katrai Pune 411 046	M/29791 Mrs. Surajmukhi Sunil Sharma BCOM, AICWA Assistant Manager – Finance, Tata Motors, Car Plant Chikhli, Pune	M/29798 Shri Anand Shankar Narayan BCOM, AICWA Flat 107, A4 BLG, Atul Nagar, Warje Pune 411 052
M/29779 Shri Bharat Singh BCOM, AICWA 465 Panorama Housing Society H 2, HIG Building Laxmi Nagar, Pune	M/29785 Shri Shrirang Prabhakar Nazare AICWA Flat 4, Building 30 Purana Nagar, Behind RTO Office, Chikhali Road, Chinchwad, Pune 411019	M/29792 Shri Manoj Prakash Toshniwal BCOM, LLB, AICWA Bharat Forge Ltd., Mundhawa, Pune 411036	M/29799 Shri Anoop Singhal BOCM (HONS), AICWA Plot 10, Master Piece, Sector 54, Gulf Gourse Road, Gurgaon 122 002
M/29780 Ms. Sukhada S. Soudikar MCOM, AICWA 49/423 Sant Tukaram Nagar, Pimpri Pune 411 018	M/29786 Shri Mylipilli Srinivasa Rao BCOM, MBA, AICWA Sr. Manager (Foreign Exchange), Thomas Cook (India) Ltd. 47-14-7 Eswar Plaza Dwaraka Nagar, Visakhapatnam	M/29793 Miss Wankar Bhagyashri Shrikant MCOM, AICWA Plot 8, Tapobhumi Housing Society, Dwatta-wadi, Pune 411 030	M/29800 Shri Ravi Kumar Agarwal BCOM, AICWA 313-315, Vikas Deep Build- ing, District Centre, Laxmi Nagar, Delhi 110 092
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M/29788 Shri Nana Tukaram Khandekar MCOM, AICWA At. & P.O. Charotinaka Tal —Dahanu, Thane 401 607	M/29789 Shri Ananda Harakchand Bhutada MCOM, AICWA Jr. Executive—Commercial, Siemens Ltd., E 76, MIDC Area, Aurangabad 431 136	M/29795 Shri Praveen Agrawal BCOM, AICWA Accounts Manager, BCH Electric Limited 20/4 Mothura Road Faridabad 121 006	M/29803 Shri Praveen Agrawal BCOM, AICWA Accounts Manager, BCH Electric Limited 20/4 Mothura Road Faridabad 121 006

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- Members of the ICWAI are requested to provide their specimen signature in the following format and send the same so as to reach The Secretary, The Institute of Cost and Works Accountants of India, 12, Sudder Street, Kolkata - 700 016 **on or before 1st March, 2011** positively :

THE INSTITUTE OF COST AND WORKS ACCOUNTANTS OF INDIA



12, Sudder Street, Kolkata - 700 016

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Current Specimen Signature			
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3.	4.		
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DATE OF BIRTH (DD/MM/YYYY) :			
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- This intimation along with Specimen Signature Card is being sent to all the members individually by post. Members sending the Specimen Signature Card duly filled in and signed as per instruction given therein need not send their specimen signature in the above format again.
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- Please use thicker variety white sheets only.

EASTERN REGIONAL COST CONFERENCE - 2011

26th - 27th March, 2011

Hotel Capitol Hill, Ranchi

Theme : "Emerging Economic Developments"

Host : EIRC & Ranchi Chapter of ICWAI

EIRC of ICWAI 84, Harish Mukherjee RoadKolkata-700025 Ph. : 033-2455-3418/5957,6533-1075/6456-3600-03	Ranchi Chapter of Cost Accountants 303, Giridhar Plaza, Harmu Road, Ranchi-834001 Ph. : 0651-3200069
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Programme

Date	Time	Topic
26 March, 2011 (Saturday)	09.00-10.00 A.M.	Registration
	10.00-11.30 A.M.	Inaugural Session
	11.30-12.00 Noon	Tea Break
	12.00-02.00 P.M.	Direct Tax Code
	02.00-03.00 P.M.	Lunch
	03.00-04.30 P.M.	GST
	04.30-05.00 P.M.	Tea Break
	05.00-06.30 P.M.	Proposed Companies Bill
	07.00 P.M. onwards	Cultural Programme & Conference Dinner
27 March, 2011 (Sunday)	10.00-11.30 A.M.	IFRS
	11.30-12.00 Noon	Tea Break
	12.00-01.30 P.M.	Risk Management
	01.30-02.00 P.M.	Valedictory Session
	02.00 P.M.	Lunch

Organizing Committee

Patrons in Chief

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Shri M. Gopalakrishnan, Vice-President
Shri Kunal Banerjee, Past President.

Patrons

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Shri Somnath Mukherjee, Central Council Member
Shri S.C. Mohanty, Central Council Member
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Shri AjayDeepWadhwa
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Tea	— Rs. 1,00,000
Conference Kit	— Rs. 75,000
Memento	— Rs. 5,000
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 Chairman
 Regional Cost Conference
 Eastern India Regional Council / Ranchi Chapter
 The Institute of Cost and Works Accountants of India

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- (c) To enroll the following person(s) as delegates for the Regional Cost Conference - 2011.

Delegate Details :

1. Name : Designation : Veg Non-Veg
2. Name : Designation : Veg Non-Veg
3. Name : Designation : Veg Non-Veg

[Attach more pages if no. of persons is more than three(3)]

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ICWAI Elections, 2011



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12, Sudder Street, Kolkata - 700 016.

Kolkata

Dated the 30th December, 2010

NOTICE

In pursuance of Clause (3) of Schedule 2 of the Cost and Works Accountants (Election to the Council) Rules, 2006, the addresses of different polling booths at place where there are more than one polling booth for the ensuing Election to the Council and four Regional Councils for the term 2011-2015 are notified as follows :—

WESTERN REGION

Mumbai	WIRC Office, Rohit Chambers, Janmabhoomi Marg, Fort, Mumbai - 400 001.
Mumbai	D G Ruparel College of Arts, Science and Commerce, Opp. Matunga Road Station, (W. Rly) Senapati Bapat Marg, Mahim, Mumbai - 400 016.
Mumbai	Ramniranjan Jhunjhunwala College of Commerce & Economics Ghatkopar (West), Mumbai - 400 086.
Mumbai	SIES College of Arts, Science & Commerce, Sion (West), Mumbai - 400 022.
Mumbai	ICLES' Motilal Jhunjhunwala College of Arts, Science & Commerce, Plot No. 53, Sector 9A, Amlendu Roye Marg, Vashi, Navi Mumbai - 400 703.
Mumbai	Parle Tilak Vidyalaya Association's M. L. Dhanukar College of Commerce, Dixit Road, Vile Parle (East), Mumbai - 400 057.
Pune	Modern College of Arts, Science and Commerce, Shivaji Nagar, Pune - 411 005.
Pune	S. S. Ajmera Junior College, Pimpri, Pune - 411 018.

SOUTHERN REGION

Bangalore	Bangalore Chapter of Cost Accountants, 81, Mallikarjuna Temple Street, Basavanagudi, Bangalore - 560 004.
Bangalore	Institution of Agricultural Technologists (IAT), No. 15, Queen's Road, Bangalore - 560 052.
Chennai	SIRC of ICWAI, New No. 4, Montieth Lane, Egmore, Chennai - 600 008.
Chennai	Southern India Chamber of Commerce & Industry, Indian Chamber Buildings, Esplanade, Chennai - 600 108.
Chennai	South Indian National Association, Sastri Hall, No. 40, Luz Church Road, Mylapore, Chennai - 600 004.
Chennai	C. Kandaswamy Naidu College for Men, Anna Nagar (East), Near Round Tana, Anna Nagar, Chennai - 600 040.
Chennai	The Stenographers' Guild, 1, Guild Street, T. Nagar, Chennai - 600 017.
Hyderabad	Hyderabad Chapter of Cost Accountants, ICWAI Bhawan, Gr. Flr., 1-2-56/44A, Gagan Mahal Road, 5th Street, Himayatnagar, Hyderabad - 500 026.
Hyderabad	YMCA of Greater Hyderabad, Secunderabad Branch, S. P. Road, Secunderabad - 500 003.

EASTERN REGION

Kolkata	The Institute of Cost and Works Accountants of India, Cost Accountants' Hall, 12, Sudder Street, Kolkata - 700 016.
Kolkata	EIRC of ICWAI, 84, Harish Mukherjee Road, Kolkata - 700 025.
Kolkata	Dhakuria Sriramroy Institution, 10 & 11, Gariahat Road, (South), Kolkata - 700 031.
Kolkata	All India Manufacturer's Organization, West Bengal State Board, ILACO House, Gr. Fl., 1 & 3, Brabourne Road, Kolkata - 700 001.
Kolkata	Park Institution, 12, Mohan Lal Street, Kolkata - 700 004.
Kolkata	Labony Abasik Samity (LAS), Local Centre, Salt Lake City, Kolkata - 700 064.
Kolkata	Behala High School, Behala, Kolkata - 700 060.
Kolkata	Sodepur Club, Kolkata - 700 110.
Kolkata	Mahatma Gandhi Memorial High School, Nabapalli, Barasat, Kolkata - 700 126.

NORTHERN REGION

New Delhi	NIRC of ICWAI, ICWAI Bhawan, 3 Institutional Area, Lodi Road, New Delhi - 110 003.
New Delhi	NIRC of ICWAI, C/o. Hindu Mahashava Bhawan, Mandir Marg, New Delhi - 110 001.
New Delhi	Red Roses Public School, D-Block, Saket, New Delhi - 110 017.
New Delhi	Laxmi Public School, X-20, Institutional Area, Karkardooma, Delhi - 110 092.

Any voter in such a place wishing to vote may send a request in writing giving his name, membership number and the address of the polling booth in which he would like to be attached. Such request should reach the Returning Officer at the Institute's Headquarters at 12, Sudder Street, Kolkata - 700 016 within one month from the date of this notice.

Brijmohan M. Sharma
President