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Serial No.....

## Society of Certified Management Accountants of Sri Lanka

### Professional II Stage September 2008 Examination

**Examination Date :** 5<sup>th</sup> October 2008  
**Examination Time:** 9.30 a. m.- 12.30 p.m.

**Number of Pages :** 13  
**Number of Questions:** 01

#### Instructions to candidates:

1. Time allowed is **three (3) hours**.
2. Attached to the question are **Scenario I** given in advance and **Scenario II**
3. Answers should be entirely in **English language**.

<u>Subject</u>	<u>Subject Code</u>
<b>Case Study</b>	<b>(CaS / 804)</b>

#### Question (100 Marks)

### **Greenergy**

You have been appointed as the Management Consultant to Greenergy PLC to provide advice to the board.

Prepare a report which prioritises, analyses and evaluates the key issues facing Greenergy and make appropriate recommendations.

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### **Greenergy**

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# Scenario I

## Wind Power

Wind power is conversion of wind energy into power. Although wind power currently produces just over 1% of worldwide electricity requirement, it accounts for approximately 19% of electricity production in Denmark, 9% in Spain and Portugal, and 6% in Germany. Globally, wind power generation increased more than five fold between 2000 and 2007.

With prices of oil exceeding USD 100 per barrel and the price of coal and diesel being at historically high levels, the demand for wind power is increasing. Wind power plays a critical role in the economic development of rural areas in less developed countries, where governments have limitations in providing electricity to these regions.

Countries are under pressure to shift to 'green' power because the power sector is the single largest culprit of gas emissions producing 38% of Carbon Dioxide. Wind energy is now increasing more than any other power technology in Europe, making up 40% of total new power installations in 2007.

World Wind Energy Association expects the worldwide wind power capacity to increase by 21% per annum during the next three years, 2008 to 2010. A comprehensive study on wind power has found that the potential of wind power is over five times the world's current energy use, in all forms.

Wind power is produced using wind turbines in wind farms. Wind farms are connected to electricity grids and in some instances to isolated locations. Wind energy is plentiful, widely distributed, clean, and reduces greenhouse gas emissions as it displaces fossil-fuel-derived electricity.

Wind speed is not constant and a wind farm produces 20% to 40% of its theoretical ratings. For example, a 1 megawatt turbine with a capacity of 30% can produce  $30\% \times 24 \text{ hours} \times 365 \text{ days} = 2,628 \text{ MWh}$  per annum.

Peak wind speeds may not coincide with peak demand for electrical power. For example, in summer, wind speed may be low. However the demand for electricity would be high, due to air conditioning. 'Pumped-storage' hydroelectricity or other forms of grid energy storage can store energy, developed during high-wind periods and release it when needed. Stored energy, increases the economic value of wind energy since it can be shifted to displace higher cost generation during peak demand periods. The potential revenue from this arbitrage can offset the cost and losses of storage. The cost of storage may add 25% to the cost of wind energy.

Good selection of a wind turbine site is critical to economic development of wind power. Aside from the availability of wind itself, other significant factors include the availability of transmission lines, cost of land acquisition, land use considerations, and environmental impact of construction and operations. Clearing of wooded areas is often unnecessary. Farmers may usually lease land to companies building wind farms as the land can still be used for farming and cattle grazing. Less than 1% of the land would be used for foundations and access roads and the other 99% could still be used for farming.

Small wind generation systems with capacities of 100 KW or less are usually used to power homes, farms and small businesses. Wind turbines have been used for household electricity generation in conjunction with battery storage over many decades, in remote areas of many countries. The World Wind Energy Conference in India in November 2006 has given additional support to the South Asian wind energy industry.

Electricity prices are highly regulated worldwide and as such in many locations may not reflect the full cost of production, let alone indirect subsidies or negative externalities. Installation costs of wind power have increased by approximately 9% during the last two years. Customers may enter into long-term pricing contracts for wind power to reduce the risk of future pricing changes, thereby ensuring more stable returns for projects at the development stage. These may take the form of standard offer contracts, whereby the system operator undertakes to purchase power from wind at a fixed price for a certain period, perhaps up to a limited period. These prices may be different than purchase prices from other sources, and even incorporate an implicit subsidy. Once external costs and subsidies to other forms of electrical production are accounted for, wind energy is amongst the least costly forms of electricity production. Wind energy costs have generally decreased due to technology development and scale enlargement.

## **Greenergy**

Greenergy PLC was incorporated in 2005 in Newland, as the first and only wind power company in the country. It's a joint venture between the Government of Newland and a few local businesses. Central Electricity Board of the Government (CEB) and Caves Group holds 30% and 40% of the shares respectively. The rest of the shares are owned by the directors and a few other investors.

The mission of the company is *"To provide Newland and its economy with the opportunity to embrace sustainable energy sources by harnessing the inexhaustible resources of wind energy"*

## **Directors**

There are three executive directors and three non-executive directors in the company. Dr. Ranil Perera is the non-executive Chairman of the company and he is a government nominee in the Board. Dr. Perera has a doctorate in Power generation and is a Director at the CEB, which manages the hydro and coal power based electricity operations in the country. He has over 20 years of experience in management of electricity projects locally and overseas.

Kanishka Sumanaratne is a non-executive director of the company and he is also the Managing Director of Caves Group. Caves Group manages a wide range of businesses in the country: soft drinks, retailing, hotels, insurance and Airlines.

Dharshani Ragavan is a non-executive director in the company representing Capital One PLC, which is the third largest shareholder in the company.

Vinay Chabra, aged 42, is the CEO/ Director of the company. He was earlier working as the Chief Operating Officer in a leading wind power company in India and has 12 years of experience in wind power. There are two Senior Operations Managers and they manage the technical operations of the company. They report directly to the CEO.

Edmond De Alwis, aged 52, is the Finance Director of the company and has worked in similar positions in many other leading commercial establishments in the country. He is a very close friend of the Chairman.

Albertine Algama, aged 35, is the Commercial Director and handles the business development and sales. Prior to joining Greenergy, he was the head of sales at a solar power company.

## **Past operations**

Greenergy has successfully completed wind farms in six locations in its three years of operation. Lands have been acquired on a 30 year lease and the average extent of a wind farm is 0.2 square kilometers. Five of the wind farms are integrated to the central electricity grid and the CEB pays Newland Dollars, NL \$ 8 per KWh. The other wind farm is located in an industrial zone and provides power to the companies in the zone.

## **Credit problems with CEB**

As per the Agreement with the CEB, all electricity supplied to CEB by Greenergy is invoiced on a monthly basis, CEB should settle it within 60 days, as their customers are supposed to settle their bills within a month. However, CEB delays the payments beyond 90 days and this has affected the cashflow of Greenergy. Although Greenergy has the right to charge a penalty of 1% for delayed payments, they haven't claimed it before. Lawyers of the company have recommended making immediate claim on the penalty. Ranil Perera has requested not to charge the penalty and agreed to discuss the issue with CEB.

CEB is faced with a major financial crisis due to non-payment of electricity bills by few Government Institutions, for several months. Further CEB's revenues are seriously affected due to illegal access of electricity lines. It was estimated that 20% of the electricity usage is not captured in the electricity meters and is not invoiced. CEB's proposal to increase the electricity rates by 40% has been turned down by their board, due to rising inflation in the country and scheduled elections this year.

## **Power crisis**

The demand for energy in the country has increased exponentially over the years. As per a recent study done by the Ministry of Energy, the capacity of current hydro power projects is inadequate to meet the electricity demand and by year 2010, there will be a shortfall of 20%. If this issue is not addressed immediately, it will lead to a power cut of at least 2 to 4 hours a day, in the future.

Further, the demand estimates are without the need for electricity for new investment projects. Unless NL has adequate sources of energy, they will not be able to permit new investment projects, seriously affecting the economic activities of the country. The study has made recommendations such as purchase of electricity from another country for which an expensive underwater cabling has to be done, promote solar power, encourage businesses to invest in projects to reduce energy utilization, and establishment of wind, coal & atomic power projects. The study has recommended that the government gives tax concessions for investments in the energy sector. Ministry officials are in the process of preparing a 'Bill' for approval by the parliament.

## **New wind farms**

Albertine is aggressively looking for new locations and has short listed three new sites for expansion. Negotiations with landlords have been completed and their consent to lease has also been obtained.

He is awaiting approval from the Environmental Authority.

These expansions would increase the capacity by 50%. Albertine has also made a proposal to the board to start an addition operation in another neighbouring country. There could be synergies in the investments and the operational costs in these expansions.

### **Human Resources Management**

The employee turnover in the company is at high levels. Many skilled employees handling the maintenance of wind farms have left due to the lack of transport, security, medical and education facilities in the remote areas. This has affected the maintenance of the windmills. Greenergy is finding difficulties in recruiting employees from the regions where the wind farms are located. The Human Resources Manager has proposed to immediately increase the salary of all maintenance executives by 40%.

Further, supervision of these employees is also at a low level. In view of the poor infrastructure facilities in these regions and lack of accommodation facilities, the regional managers visit the sites only once a month.

Recently, there was a breakdown of the vehicle driven by a Manager at one of the remote sites and it took almost 10 hours for him to send a message to the head office, to send a rescue vehicle. There are neither businesses nor public transport facilities in this location. Hence there is limited movement of vehicles in this area. After this incident other Managers are reluctant to travel to this site. This is one of the best locations where there is a very high level of wind speed. In most of the sites where the company has wind farms, there is no or limited mobile and telephones coverage.

### **Purchasing Management**

It was observed that the Purchasing Manager has purchased substandard blades for use in the wind turbines which has resulted in cracks in the blades. The regional managers have estimated that 25% of blades have slight cracks and need immediate replacement.

The Purchasing Manager complained to the board that he was not allocated adequate funds to purchase high quality items. According to the Purchasing Manager, this is the only type he could purchase within the allotted funds. But Edmond was not convinced by the Purchasing Manager's explanation and suggested terminating him immediately, as he doubts the Purchasing Manager's integrity.

### ***WeathCast and Windware***

Vinay has proposed to purchase *WeathCast*, an information technology package for wind power forecasting, at a cost of NL\$ 10 million. Wind power generation is directly linked to weather conditions and thus the first aspect of wind power forecasting is the prediction of future values of the weather variables at the wind farms. This software allows estimating the evolution of state

variables, e.g. temperature, wind velocity, humidity and air pressure. This system provides a link to the Meteorological department of the country imports data from the meteorological department, and develops the forecasted supply of wind power.

Green Technologies PLC is a leading software company based in Singapore and they have approached Greenergy for integrated software, *Windware*. This software performs a wide range of functions including designing of wind turbines and data analysis. This software assists the user in removing measurement errors from wind data, performs specialized statistical analysis and simulates the behavior of a proposed or existing wind farm, most importantly to calculate its energy production. The user can usually input wind data, height and roughness contour lines, wind turbine specifications, background maps, and define objects that represent environmental restrictions.

### **Offshore projects**

Vinay is very keen on developing offshore projects and appointed an independent consultant to submit a report on this project. Offshore wind development zones are generally considered to be ten kilometers or more from the shore. Offshore wind turbines are less obtrusive than turbines on land, as their apparent size and noise can be mitigated by their distance. Because water has less surface roughness than land, especially deeper water, the average wind speed is usually considerably higher over open water. Capacity factors, utilisation rates, are considerably higher than for onshore and near-shore locations. Offshore installation is more expensive than onshore. However this depends on the attributes of the site. Offshore towers are generally taller than onshore towers when the submerged height is included. Offshore foundations may be more expensive to build. Power transmission from offshore turbines is through undersea cables. Offshore installations may use high voltage direct current operation, if significant distance is to be covered.

### **Environmental Authority**

Villagers in the Northlane region have lodged a complaint with the Environmental Authority on the noise pollution generated by the wind turbines operated by Greenergy. They have complained that the noise generated from these wind mills disturbs their sleep in the night.

### **Financial Data**

The appendices carry the sales revenue, profit and loss account and the Balance Sheet of Greenergy PLC in NL \$ millions, are in appendices 1, 2 and 3.

### **Marking Grid**

The Marking grid is in appendix 4, in Page 13.

## Appendix 1

### Sales Revenue by Region (in Newland \$ – Millions)

	2006/2007 NL \$ Millions	2007/2008 NL \$ Millions
Whiteland	300	350
Eastcoast	250	280
Westland	50	150
Northlane	100	200
Southwood	270	350
Farmland	500	450
<b>Total</b>	<b>1,470</b>	<b>1,780</b>

## Appendix 2:

### Profit and Loss Account for the financial year ended 31<sup>st</sup> March 2008

(In Newland \$ – Millions)

	2006/2007	2007/2008
Sales	1,470	1,780
Cost of production (including depreciation)	(882)	(997)
<b>Gross Contribution</b>	<b>588</b>	<b>783</b>
Personnel cost	150	200
Administration cost	25	35
Research & Development cost	10	20
Fixed cost	(185)	(255)
Profit before interest & tax	403	528
Interest	(250)	(400)
<b>Profit Before Tax</b>	<b>153</b>	<b>128</b>
Tax	(38)	(32)
<b>Profit After Tax</b>	<b>115</b>	<b>96</b>

### Statement of Changes in Reserves (In Newland \$ – Millions)

	Share Premium	Retained Earnings	Total
Balance at 31 <sup>st</sup> March 2007	400	(50)	350
Profit for the period		115	115
Dividends paid		(50)	(50)
<b>Balance at 31 March 2008</b>	<b>400</b>	<b>15</b>	<b>415</b>

### Appendix 3:

Balance sheet as at 31<sup>st</sup> March 2008 (in Newland \$ - Millions)

	31 <sup>st</sup> March 2007 NL \$ Millions		31 <sup>st</sup> March 2008 NL \$ Millions	
Fixed Assets		4,000		5,000
<b>Current Assets</b>				
Inventory	300		450	
Trade receivables	380		536	
Cash	20	700	29	1,015
<b>Total Assets</b>		<b>4,700</b>		<b>6,015</b>
<b>Current Liabilities</b>				
Trade payables & accruals	50		100	
Bank Overdraft	400	450	600	700
<b>Share capital &amp; Reserves</b>				
Share capital	2,000		2,000	
Share premium	400		400	
Retained earnings	(50)	2,350	15	2,415
<b>Long term liabilities</b>				
Bank Loans		1,900		2,900
<b>Total equity &amp; Liabilities</b>		<b>4,700</b>		<b>6,015</b>

End of Scenario I

## Scenario II – Continuation of Scenario I

### Bank loans

Greenergy has obtained three loans totaling to NL \$ 2.9 Billion. The breakdown of the loans are given below

	<b>Bank</b>	<b>Loan Amount (NL \$ Million)</b>	<b>Period</b>	<b>Interest rate</b>
Term Loan 1	Newland	1,000	10 years	15%
Term Loan 2	Development Bank (NDB)	900	8 years	18%
Term Loan 3	Industrial Bank	1,000	8 years	22%

Loans are repayable as bullet repayment on the due dates and the interest is payable monthly. NDB is a state owned Development bank and they have approved a loan of NL\$ 2 Billion to Greenergy and disbursed NL \$ 1.9 Billion to date. Industrial Bank is a Multinational bank operating in 53 countries and has approved a loan limit of NL \$ 1.5 Billion.

Bank Overdraft at NDB has exceeded the approved limit by NL\$ 100 Million. Edmond cited delayed payments from CEB as the main reason for the increase in the Overdraft. Overdraft upto the limit is charged at 20% and any amounts exceeding the limit are charged at a penal rate of 26%. NDB has sent a letter requesting Greenergy to immediately settle the temporary overdraft.

All existing fixed assets have been totally mortgaged to the two banks.

Greenergy is in need of NL\$ 2 Billion for its proposed expansion. Existing bank facilities are inadequate to support its expansion. Vinay suggested exploring new sources of financing rather than relying on the banks.

### Change of Chairman

Dr. Perera is a dynamic and charismatic leader and he motivated and inspired the management team. Although Dr Perera is a nominee director of the Government, he is very critical of certain

actions of the Government. Due to a recent press interview against the Government, Dr. Perera was requested by the Minister of Energy to resign from his posts in all Government institutions and Dr. Perera has forwarded his resignation.

### **Pressure group**

*Save the Birds*, is a leading pressure group operating in ten countries. They have lodged a complaint against Greenergy with the Environmental Authority, stating that the blades of the wind turbines have killed over 500 birds during the last three years and they have claimed NL\$ 3 Million from Greenergy. Copy of their complaint was also sent to the bankers and major shareholders of the company.

### **Julian Silva**

Julian owns 50 acres of land in the North western region of the country. He was approached by the staff of Greenergy to lease part of his land for construction of wind farms. However he quoted a price which is almost double the price paid in other regions. Hence the company has decided not to lease his land. He has called the CEO this week and stated that if they don't lease his land, he will take all possible actions to disrupt the operations in the North Western region.

Julian is connected to a powerful political family and his brother is a Minister in the present government. He has also threatened to assault the supervisory staff. He had purchased this land a few years back when there were rumors that the government was planning to build a domestic airport in the area and he had an intention of selling it to the government. However, subsequently the government decided to have the domestic airport in a different location in the Southern region. He has no other alternative use of this land, due to poor infrastructure facilities in the region.

### **Kortkai**

Kortkai Power PLC is a leading wind power company in India and has submitted an application to the Board of Investment of Newland and Ministry of Energy seeking permission to start wind farms in Newland. Kortkai has over fifteen years of experience in managing wind power and maintains a good track record. They are also involved in manufacturing blades used in wind turbines and exporting the blades to many European countries.

### **New Wind farms**

Environmental Authority has given the approval for the expansion plan submitted by Greenergy. Central Electricity Board (CEB) has agreed in principle to purchase the total capacity at the

current rates. Greenergy has requested a price increase of 10% due to rising fixed costs, currency depreciation which has affected the import of capital items and rising interest rates. The proposal for an increase in Price by Greenergy on CEB rates was declined by the Government and hence, the decision for a price increase may get delayed.

Fixed costs are expected to increase by 15% per annum. Variable costs of the project are at 15% of its price. 50% of the capital expenditure is related to imported items. Based on the current debt equate structure, the cost of capital of the company is at 18%. Currency is expected to depreciate at 10% p.a.

### **Labour problems**

Labour problems have worsened during the last few months with the resignation of five maintenance executives. The employee motivation is at low levels and they don't have a sense of ownership in the business. It costs NL\$ 50,000 per employee to be trained them on the maintenance of these wind farms.

### **Plastec**

Plastec is a leading plastics manufacturing company in the country, which exports 70% of its products to many European and Asian countries. They have five factories in Newland and use generators during the power cuts. As the power cuts are frequent and fuel is expensive, they are interested in purchasing electricity directly from Greenergy. They have agreed to buy at a price 15% higher than the prices paid by CEB to Greenergy and sign a contract for five years. They have also been approached by Kortkai

### **Consultant**

Board has agreed to appoint an independent consultant to provide advice to the board on the key issues faced by Greenergy. This report may be forwarded to the Ministry of Energy, CEB and the bankers, if needed.

**End of Scenario II**  
**End of Question Paper**

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	Marks	A	B	C	D	E
<b>1. Management Accounting</b> Sound technical knowledge in Management Accounting	<b>20</b>	High level of Management Accounting awareness relating to world examples <b>17-20</b>	Good Management Accounting awareness relating to case study examples <b>11-16</b>	Some level of Management Accounting awareness relating to few case study examples <b>10-14</b>	Low level Management Accounting awareness <b>5-9</b>	Lack of Management Accounting awareness <b>0-4</b>
<b>2. Application of theories</b> Diverse knowledge clearly applied in an analytical and practical manner in solving the problems in the case study.	<b>20</b>	High level of application of theory in an analytical manner in solving problems in the case study <b>17-20</b>	Good level of application of theory in an analytical manner solving problems in the case study. <b>11-16</b>	Some level of application of theory in an analytical manner solving problems in the case study. <b>10-14</b>	Low level of application of theory in solving problems in the case study <b>5-9</b>	Lack of application of theory in solving problems <b>0-4</b>
<b>3. Identifying key issues</b> Issues to be identified and prioritized in a logical manner with a clear rationale.	<b>10</b>	High level of recognition of key issues and these being prioritized logically with a clear rationale. <b>8-10</b>	Good level of recognition of issues and these being prioritized logically <b>5-7</b>	Some level of recognition of issues and these being prioritized <b>3-4</b>	Low level of recognition of issues <b>1-2</b>	Lack of recognition of issues <b>0</b>
<b>4. Decision making skills</b> Ability to recognize and present appropriate alternate solutions and make effective judgement in a logical & rational manner.	<b>20</b>	High level of ability to recognize and present appropriate alternate solutions and make effective judgement in a logical and rational manner <b>17-20</b>	Good level of ability to recognize and present alternate solutions and make effective judgement in a logical and rational manner. <b>11-16</b>	Some level of ability to recognize and present alternate solutions in a logical and rational manner <b>10-14</b>	Low level of ability to recognize alternate solutions <b>5-9</b>	Lack of ability to recognize alternate solutions <b>0-4</b>
<b>5. Logical arguments</b> Ability to communicate effectively with realistic recommendations in a concise and logical manner.	<b>20</b>	High level of ability to communicate effectively with realistic recommendations in a concise and logical manner <b>17-20</b>	Good level of ability to communicate effectively with realistic recommendations in a concise manner <b>11-16</b>	Some level of ability to communicate effectively with realistic recommendations in a concise manner <b>10-14</b>	Low level of ability to communicate effectively <b>5-9</b>	Lack of ability to communicate effectively <b>0-4</b>
<b>6. Communication skills</b> Style and synthesis in evaluation of a good report to higher management.	<b>10</b>	High level of combining ideas and experiences in a professional manner using relevant appendixes <b>8-10</b> <b>8-10</b>	Good style in writing a Management Report encompassing ideas and recommendations with some appendixes <b>5-7</b>	Some style in writing a Management Report encompassing ideas and recommendations <b>3-4</b>	Poor style in writing a Management Report <b>1-2</b>	Lack of knowledge in writing a Management Report <b>0</b>
<b>TOTAL</b>	<b>100</b>					

**Appendix 4:**

**SCMA PROFESSIONAL II            CASE STUDY – CaS (804)  
SEPTEMBER 2008- Marking Grid**