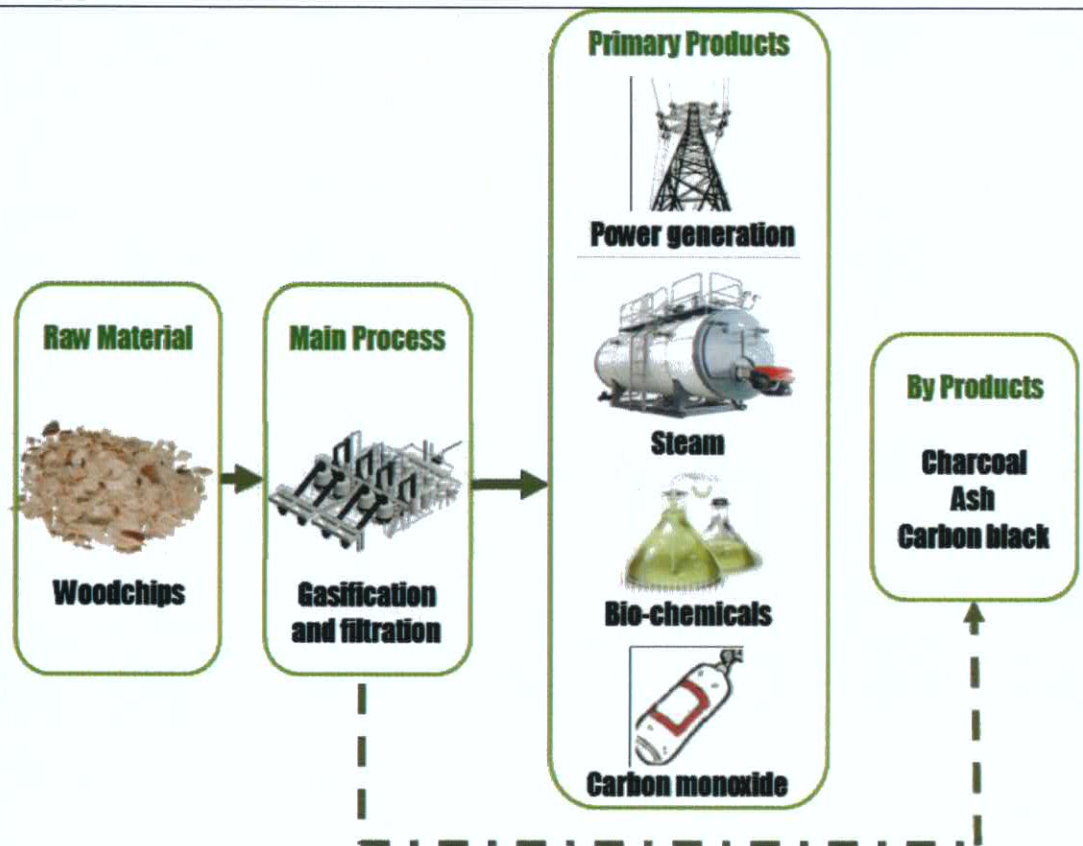


SUMMARY OF BIOMASS PROJECT

Project Name	Kertih Bio-Polymer Park Gasifier Steam Boiler Plant								
Project Overview	<p>The Projects is to be undertaken on a Build, Own, Operate and Maintain basis which will require the NSE to design, construct, own, operate and maintain the biomass plant that supply steam over (10+5) years concession period in return for certain payments as per the Steam Supply Service Agreement (SSSA) with CJ Bio Malaysia Sdn Bhd. The agreement was dated 30th September 2012.</p> <p>The plant will be selling steam on a take-or-pay basis with pricing is set at a base tariff of RM55 / metric tonne.</p> <p>The completion of the project would be on the following stages:</p> <table border="1"> <tr> <td>Gas boiler system – 11 unit of Package gas fired boiler 16 mt/hr 18 barge</td><td>31 December 2013</td></tr> <tr> <td>Multi-Fuel Boiler system – 60 mt/hr 32 barge</td><td>1st unit by 30th Sept 2014</td></tr> <tr> <td>Biomass boiler</td><td>2nd unit by 30th Nov 2014</td></tr> <tr> <td></td><td>3rd unit by 31st Dec 2014.</td></tr> </table> <p>NSEE is also to supply steam and demineralised water to ARKEMA Thiochemicals Sdn Bhd. The Letter of Award was issued on 24th August 2012.</p>	Gas boiler system – 11 unit of Package gas fired boiler 16 mt/hr 18 barge	31 December 2013	Multi-Fuel Boiler system – 60 mt/hr 32 barge	1 st unit by 30 th Sept 2014	Biomass boiler	2 nd unit by 30 th Nov 2014		3 rd unit by 31 st Dec 2014.
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Project location	<p>The Project is located in Kertih Biopolymer Park, Plot 2 part of Lot Q, Mukim of Kertih, Terengganu. The land area is 95,040 m2.</p> <p>Kertih Biopolymer Park has jointly developed/ promoted by East Coast Economic Region Development Corporation Berhad, Biotechcorp and State of Terengganu. The land area is 70 hectares. This is the country's first plastic and polymer-related hub that supports plastics and polymer-related activities and service provider. It is also aimed at promoting further downstream investments in plastics and polymer-related industries by tapping into the potential synergies with the nearby Kertih Integrated Petrochemical Complex (KIPC). The park was transform into a bio polymer park to ride on the global demand of the bio base products. It has drawn immediate commitment totaling RM2 billion investments from CJ Cheildang Corp from Korea for bio-methionine plant and Arkema SA from France for thiochemicals platform. The integrated facility will be the first in the world to use fermentation process in producing L-methionine, an amino acid commonly used in the manufacturing of animal feed. Prime Minister Dato' Sri Mohd Najib Tun Abdul Razak officiated the ground breaking ceremony in August 2011.</p>								
Project cost	Totaling RM130 million (cashflow as per attachment)								
Off - Takers	<p><u>Info on CJ Chieldang</u></p> <ul style="list-style-type: none"> ▪ CJ is one of South Korea's conglomerates (listed on Korea Stock Exchange) or 'Chaebol' and was originally part of the Samsung Group and became independent from the latter in late 1993. ▪ The company is the global leading producer of MSG and essential amino acids. ▪ CJ's headquarters is located in Seoul. 								

	<ul style="list-style-type: none"> ▪ Total number of employees in CJ = 4514 qualified personnel ▪ The company has 4 essential amino acids manufacturing plants located in Brazil (1), China (1), Indonesia (2) and 75 offices in the USA, Europe, China, Japan and South East Asia. ▪ Revenue (2012): USD9.2 billion Profit: USD579 million <p><u>Info on Arkema</u></p> <ul style="list-style-type: none"> ▪ Arkema was established in 2004 as a result of the restructuring of Total's chemical branch. ▪ Primarily engaged in the manufacturing and marketing of chemical products. ▪ Arkema's headquarters is in Cedex, France. ▪ Arkema employs about 14,000 people. ▪ The company operates 120 facilities and over 90 production plants throughout Europe, North America and Asia ▪ Revenue: EURO 6.4 billion (2012) Profit: EURO 996 million
Feedstock	The feedstock (woodchip) of the biomass will be supplied by Terengganu State owned company at a guaranteed price of not more than RM110/ mt tonne.
Project owner	<p>NSE Energy Sdn Bhd (NSEE)</p> <p>NSEE is 100% owned by NSE Resources Corporation Sdn Bhd ("NSREC"). The holding company is supported by three (3) subsidiaries:-</p> <div data-bbox="395 1196 1420 1514" data-label="Diagram"> <pre> graph TD NSREC[NSREC] --- NSEenergy[NSE energy] NSREC --- NSEPOLYMER[NSE POLYMER] NSREC --- GNT[Global Network Technology] </pre> </div> <ul style="list-style-type: none"> i. NSE Energy Sdn Bhd (100% owned) is a technology base company which focuses on the development of renewable energy in particular, production of synthesis gas through gasification which would be used as a fuel to run generator sets to produce electricity and further development into bio methanol; ii. NSE Polymer Sdn Bhd (86.4% owned) involves in production of amino resin; and iii. Global Network Technology Sdn Bhd (100% owned) manufacture water soluble polymer for production chemicals, drilling fluid, cementing additives and water

	treatment chemicals.					
Shareholding structure	No.	Company	Authorised capital	Paid up capital	Shareholders	Directors
	1.	NSERC	RM5.0 mill		<ul style="list-style-type: none"> ▪ Azhar Anuar (67.5%); ▪ MAVCAP (25%)and ▪ Shahrul Sazali b Ahmad Sofian (7.5%) 	<ul style="list-style-type: none"> ▪ Azhar Anuar; ▪ Dr Norsayani bt Mohamad Yaakob; ▪ Shahrul Sazali b Ahmad Sofian; ▪ Shaik Taufik Shaik Yusoff; ▪ Jesrina Ashikin Abdul Jalal (alternate to Shaik aufik)
	3.	GNT	RM2.0 mill			
	4.	NSEE	RM1.0 mill		NSER (100%)	<ul style="list-style-type: none"> ▪ Azhar Anuar; and ▪ Dr Norsayani bt Mohamad Yaakob.
Technology Overview	<p>NSEE has a core technology to produce synthesis gas ("syngas") namely hydrogen (H₂), methane (CH₄) and carbon monoxide (CO) through the gasification of biomass with the focus of woodchips. The process would be able to gasify rice husks and other types of biomass.</p> <p>Gasification is an advanced conversion process that offers power generation with higher efficiencies by 25% compared to combustion-based steam cycles. These gasses are purified to allow it to be used as a dual fuel in diesel engine which then produces electricity. In addition, the syngas can be further process through catalytic converter to produce bio methanol and through bio reaction fermentation to produce bio ethanol. Below is the diagram of the syngass process:</p>					



NSEE's 50kW/hr gasification plant which has been in operation since 2009 as an initiative to reduce/control the energy cost of the other subsidiary of the Group namely NSE as there is no natural gas supplier nearby Bentong area.

Following the success of its own plant. NSEE then been appointed by Sabah Softwood Bhd ("SSB") to be the project contractor for its 1MW/hr biomass plant with empty fruit bunch as the feedstock. The cost was fully financed by SSB and successfully delivered by NSEE in 2010. The said plant has been in operation since Nov 2010 and has experienced a tremendous saving from RM1.10kW/hr to RM.30kW/hr.

The success of SSB project has attracted Malaysian Biotechnology Corporation Sdn Bhd (Biotechcorp), CJ Cheiljedang Corp and Arkema S.A. which plan to set up L-methionine manufacturing plant that adopts biotechnology in its production at Kerteh, Terengganu.

Merit of the Project

Economy impact

- Supporting **national agenda** as its business focus is within EPP5 (Unlocking premium gas demand in Peninsular Malaysia), EPP15 (securing FDI in agriculture biotechnology) of the 12 **National Key Economic Areas** and as an anchor to the 8th pillar **Government Transformation Programme Bio Economy**.
- Bringing **foreign direct investment coupling with domestic direct investment** to the country ie. 1. CJ Arkema alone is about RM2.0 bill along with domestic direct investment of about RM133.0 mill. Another hot prospect of GEVO Virdia of about RM1.8bill along with domestic direct investment of about RM280.0mill.
- An initiative to **realise potential lost worth billions** in form of natural gas subsidies by the government ie. RM1.76bill over 10 years compared to natural gas based

steam for CJ Arkema's and GEVO Virdia's project.

- Recovery of **low calorific value gas** which is currently being flared off.
- Introduction of **energy crop as new economic** sector.
- Able to participate in **carbon credit** scheme.

Social impact

- Providing a **value chain of job creation** ie. 474 workers for CJ Arkema's project, 57 workers for NSEE's steam plant, NSERC's energy plantation of 25 direct hire while 1200 contract workers.
- Will create a **significant leap** in transforming Malaysia's agricultural landscape.
- The local biomass gasifier steam plant will become a **new flagship of a successful integrated value chain** from agriculture activity into renewable energy production.
- Development of the **Asia Largest 2nd Generation Bio Refinery Complex**.
- Turning Terengganu as Malaysia's back bone biomass producer.

Environmental impact

- One of the most **versatile, efficient and cleanest ways** to convert low cost wood residuals into thermal energy or electricity.
- Net **reduction in CO2 emissions** - biomass is carbon neutral (there is no net increase in CO2, the main greenhouse gas, in the atmosphere) and can save millions of tonnes of CO2 emissions per annum, thus improve the quality of life.

Strong support

- The **Economic Council has approved** incentives for CJ Arkema project at the EC meeting no. 19/2011 dated 27 June 2011.
- Received **strong support** from **East Coast Economic Region** Development Council and Ministry of Agriculture.
- **Recipient of Green Certificate** from Malaysia Green Technology Corporation for NSEE's renewable energy equipments.
- **Recipient of 4 star from SME** Competitiveness Rating for Enhancement.
- Inline with the country's initiative towards **green technology**.
- **Supports the Feed-in Tariff scheme** introduced by the Sustainable Energy Development Authority of Malaysia ("SEDA").

Company's merit

- Foster an indigenous home-grown technology which can be **adopted by the international market**.
- Able to **embark into other opportunities** through a spin off business based on the available technology ie. selling off bio products such as methanol and ethanol.
- **Acknowledged by MNC** ie Cheiljedang Corp (a conglomerates from South Korea), Arkema S.A., Gevo (US-based company), HCL Cleantech (US-based company), Evonik Degussa (a German-based company) and LanzaTech (a New Zealand-based company).

Kerteh Biomass Plant												
All in RM ('000)	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
Revenue		11.20	67.04	68.38	69.74	71.14	72.56	74.01	75.49	77.00	78.54	665.10
Project Cost												
1- Boiler & Infra	88.13	23.74										111.87
2- Gasifier	6.16	4.10										10.26
3- Land	0.20	-										0.20
4- Transformer	2.00	-										2.00
6- Contingency	3.55	2.95										6.50
Total Project Cost	100.03	30.80	-	-	-	-	-	-	-	-	-	130.83
Operation Cost												
1- Staffs	0.39	2.69	4.13	4.20	4.28	4.37	4.45	4.54	4.63	4.73	4.82	43.23
2- Production cost (Biomass)	-	5.34	32.66	33.31	33.98	34.66	35.35	36.06	36.78	37.51	38.26	323.91
3- Production cost (Gas)	-	0.35	2.15	2.20	2.24	2.29	2.33	2.38	2.43	2.48	2.52	21.37
4- Maintenance Spares	-	0.20	1.22	1.24	1.27	1.29	1.32	1.35	1.37	1.40	1.43	12.08
5- Misc	0.08	0.18	0.06	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.44
Total Operation Cost	0.47	8.76	40.22	40.96	41.78	42.62	43.47	44.34	45.23	46.13	47.05	401.03
Grand Total Cost	100.49	39.56	40.22	40.96	41.78	42.62	43.47	44.34	45.23	46.13	47.05	531.86
Surplus / (Deficit) from Project	(100.49)	(28.36)	26.82	27.41	27.96	28.52	29.09	29.67	30.27	30.87	31.49	133.25
Working Cap injection												
1- Receive from CJ Bio Malaysia	4.06	6.08										10.14
2- Parent co	0.00	0.00										0.00
Total Working Capital received	4.06	6.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.14
Working Cap payment												
1- Payment to CJ Bio Malaysia		1.11	6.65	2.38								10.14
2- Parent co												0.00
Total Working Cap payment	0.00	1.11	6.65	2.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.14
Net Surplus / (Deficit) after Working Cap	(96.44)	(23.38)	20.17	25.03	27.96	28.52	29.09	29.67	30.27	30.87	31.49	133.25
Project Funding												
1- Equity Injection	60.30											60.30
2- MIDA bridger loan (Bank Islam) - OD line	20.40											20.40
3- Loan drawdown (Bank B)	79.35	20.77										100.12
Total Project Funding	160.05	20.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	180.82
Net Surplus / (Deficit)	63.61	(2.61)	20.17	25.03	27.96	28.52	29.09	29.67	30.27	30.87	31.49	313.97
Project Financing Costs												
MIDA bridger loan (Bank Islam) - OD line												
1- Interest	0.29	0.00										0.29
2- Principal	20.40	0.00										20.40
Project Loan (Bank B)												
1- Interest		7.03	6.50	5.93	5.31	4.65	3.94	3.18	2.36	1.48	0.54	40.93
2- Principal		7.08	7.61	8.18	8.79	9.45	10.16	10.92	11.74	12.62	13.57	100.12
Total Loan Repayment	20.69	14.11	14.11	14.11	14.11	14.11	14.11	14.11	14.11	14.11	14.11	161.74
Equity												
1- Dividend			5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	45.00
2- Capital re-payment	14.80		5.00	5.00	5.00							29.80
Surplus / (Deficit) after loan re-payment	28.12	(16.72)	(3.94)	0.93	3.86	9.41	9.99	10.57	11.16	11.77	12.38	77.43
Corporate Tax												0.00
Net Surplus / (Deficit) after tax	28.12	(16.72)	(3.94)	0.93	3.86	9.41	9.99	10.57	11.16	11.77	12.38	
Opening Balance	28.12	28.12	11.30	7.37	8.30	12.15	21.57	31.55	42.12	53.28	65.05	
Closing Balance	28.12	11.30	7.37	8.30	12.15	21.57	31.55	42.12	53.28	65.05	77.43	