

**REPORT ON  
KOMENDA SUGAR  
FACTORY**

## REPORT ON THE KOMENDA SUGAR DEVELOPMENT COMPANY LIMITED

1. The government of Ghana through the Ministry of Trade and Industry contracted Seftech Pvt to construct a 1250 TCD capacity sulphurless sugar plant with incidental co-generation of 1.0 MW surplus power in Komenda in the Central Region of Ghana at a total cost of US \$36.25 million on a Turn Key basis (India EXIM US\$35 million and EDAIF US\$ 1.25 million). In addition to the contract price, US\$750,000 was procured from EDAIF for the engagement of National Federation of Cooperative Sugar Factories Ltd. for consultancy services. EDAIF also disbursed GHS 3.5 million for the construction of access road to the factory. This amounts to a total cost of US \$37.82million.
2. As per the contract, the scope of work the contractor, included Engineering, Procurement and Construction (EPC) of the plant. The EPC was supervised by the National Federation of Cooperative Sugar Factories Ltd. of India. The Ministry, also contracted M/S SEFTECH to develop a 50ha nursery with the view of providing, among other things, a source of raw materials for out growers and the nucleus farm for the factory.
3. The plant was commissioned by His Excellency the President of Ghana on 30<sup>th</sup> May, 2016. A project completion report submitted by the Contractor indicated that the project was completed in March 2016, seven months earlier than the expected date of completion (October, 2016). The report also indicated that the testing of the sugar plant was carried out and sugar was produced successfully. However, full load production, for its installed capacity could not be carried out due to inadequate supplies of Sugarcane (pg.2 Completion Report, May 2017). M/S Seftech Pvt. has also submitted a bill of USD \$ 7.9 million as cost of the partial test run, the development of the nursery and the maintenance of the plant.
4. The National Federation of Cooperatives sugar factories ltd. (Consultants) has also submitted a formal request for the payment of the remaining 60% (USD 450,000) of consultancy fee. This request is based on their assertion that the project has been completed and that they adhered strictly to the terms of the contract.
5. In view of this, the Ministry constituted a team to conduct a technical audit on the entire factory including the Sugarcane Nursery. The objectives of the audit were to:
  - a. Ensure that the factory conforms to the technical specifications in the project document and also operational as required.
  - b. Ensure that the sugar cane nursery has been developed in line with the terms of engagement.
  - c. Determine the current value of the factory and

d. Any other matters

6. The Technical Audit Team proposed the following as matters for consideration in developing the options for making the Komenda Sugar Development Company Ltd. operational.

- Complete installation by SEFTECH
- Conduct trial and test runs
- Water for the Factory
- Land for sugarcane cultivation
- Economics of importing raw sugar for processing.
- 6 months operation (campaign period- 180 days)
- Management training

## 1 Factory

7. The plant is designed with a capacity of 1250TCD to produce 125 metric tons of sulphurless white sugar per day. It is projected to run for 6 months in a year with a total output of 22,500 metric tons. The factory was commissioned about a year ago and has since not been operational. The factory has been impacted negatively by the adverse effects of the weather and related elements. It is the view of the audit team that if the needed interventions are not put in place to get the facility running, there will be further deterioration of the plant and equipment and will be more costly to operate at maximum capacity.

### 1.1 Production Process

8. The factory has only been test-run once during its commissioning. The test-run did not go through the entire process to produce sulphurless white sugar as stipulated in the contract as some systems were bypassed and others were not installed. It took about 17 days to crush the sugarcane to produce the raw sugar. This was due to a number of challenges the operators encountered during the test run. It has to be noted however that, the sugar produced was not white refined sugar (at 50 ICUMSA) as required but semi processed raw sugar having molasses (which is not edible). This raw sugar would have to be refined to produce the white crystalline sugar.
9. The following were by-passed:
  - a. Melt clarification (Complete section)
  - b. Vertical crystallizers (A-H and B-H)
  - c. Dosing System
  - d. Molasses weighing System
  - e. Bagasse Compressor
  - f. Weighing bridge (20 ton and 40 ton)
  - g. Grap (crane) at the cane yard
  - h. other minor parts
10. Effluent Treatment Plant was not constructed at the time of commissioning. It was constructed in January, 2017 and would need to be tested. Modifications were made to some faulty equipment during and after the test-run which also need repairs.
11. The under listed equipment among others have to be re-assessed to make sure they are in good working condition.
  - a. Fiberizer
  - b. Mill motor fans

- c. Solenoid valves
- d. Synchronizing panel

12. It is therefore important to do another complete test-run and trial-run to confirm that the processes and plant machinery are capable to deliver as per the plant specifications.

## 1.2 Engineering Works

13. The audit team assessed the various units of operations, capacities, equipment and their functionality with the view to ascertain the conformity to the agreed specifications. The team found out that, most of the units were in place, however, their functionality cannot be confirmed until test and trial runs are conducted. Also, certain key elements of the plant and some parts were not installed. These are listed in *Table 1* under 6.0 below.

### 1.2.1 Mechanical System

14. As required by international standards, the final painting of equipment after installation has not been carried out by SEFTECH and this has contributed to the early rusting of the plant and equipment.

15. It was observed that, the plant and equipment have been gathering dust with certain parts rusting due to exposure to the weather and related elements. Negative effects like rusting, peeling of paints, leakages, growth of algae etc. can be observed all over the plant.

### 1.2.2 Electrical Systems

16. After a critical assessment of the installation, reviewing the soundness of the pipes, lagging and insulation, cabling through trays and trenches, termination of cables in panels, it was observed that all the electrical systems were duly fitted.

17. Energy conservation and saving systems including; condensate recovery and re-use systems; bagasse usage; transportation and storage system; pre-heating of boiler air and feed water systems were all in place.

18. However, the longer these equipment stay idle, the more costly it will be to put it into good working condition. Anti-rust painting need to be done periodically to prevent rusting of the plant and equipment.

### 1.2.3 Civil Works

19. The main structure of the cane preparation yard has not been roofed as indicated in the contract. This exposes the yard to rain and speeds up the rusting of the installed equipment. Some parts of the floor surface are defaced and breaking. Pools of water were observed on some parts of the floor and drainage system. The roads within the factory are surfaced with bitumen instead of asphalt as specified in the contract.
20. The quantity of water required to run the factory, is estimated at 150m<sup>3</sup>/h. Therefore, a total of 0. 645 Mm<sup>3</sup> is required in the dry season for 180 campaign days. Ghana Water Company will have difficulty supplying the volumes considering the period and the pressure on their system. An Independent water supply is proposed in the construction of dam near the factory. Two streams have been identified; the Adwoa and Ante at north - east and west of the factory with catchment yields of 3.45 - 5 M m<sup>3</sup> and 0.5M - m<sup>3</sup> respectively.

### 1.3 Quality Systems

21. A quality, food safety, environmental, occupational health and safety management systems have not been developed and implemented as required.
22. The following data and documentation were not available at the time of the visit:
  - a. Quality and food safety manual
  - b. Test-run report
  - c. Verification and Validation reports
  - d. Laboratory test plans and sampling charts
  - e. Electrical/mechanical test reports after the installation
  - f. General report on the installation of plant equipment
  - g. SGS inspection report
23. A detailed assessment by relevant authorities (such as FDA, GSA and EPA) will be helpful to further identify gaps pertaining to the areas of quality, food safety, environmental, occupational health and safety management systems in order to meet the ISO standards. We can align the operations to this standard by designing and implementing a quality management system.

## 2 Nursery Development

24. The total fenced area earmarked for the nursery development is 63.4 Ha (158 acres). The Cropped area is 49.94Ha and out of this, 0.5ha is saline. The remaining land area is covered by the roads in the nursery. Some of the plants showed stunted growth and empty patches. There was a wide variation in the height of sugarcane on the same plot. The empty spaces were not filled thus reducing the expected plant population per hectare. However, other parts of the nursery showed strong and vigorous growth. It should be noted that none of the sugarcanes in the plots can be planted as plant cane this year since the planting date (May-June-July) is already past.
25. About 97% (48.8ha) of the cropped area is composed of the B41227 variety which is prevalent in the Komenda area. Investigations show that no variety selection was conducted since a period of 7-8 months was given as the duration for the nursery operation which was not enough for proper crop selection. Brix levels which were taken at the time of the study, the B41227 variety was 17.5% whiles, CO2014-001, CO86032, KI, K2 had brix levels of 22.5%, 19.1%, 21.8%, 21.6%, respectively.



Fig. 1: Total area of Cane Nursery

26. The main fertilizers being applied in the nursery are compound fertilizer NPK 15-15-15 and Urea (42% N). Generally, the soil fertility status of the land is not good so both organic and inorganic fertilizer application would be needed to improve yields.
27. There was no out grower scheme in place and hence no training of farmers have taken place as stipulated in the contract. Also the local Ghanaian staff attached to the nursery have not been trained as stated in the contract.

28. All farm equipment have been provided, however, there was no irrigation system in place as required by the contract document. (*See Table 1 in 6.0 below*).
29. There is a hot water cane treatment plant provided by SEFTECH but electricity supply as stated in the contract, was yet to be provided. No farm shed has been provided as per the contract. There is the urgent need to erect a shed to cover the equipment and to stop them from deteriorating. Barbed wire fencing has been provided as stated in the contract.



### 3 Factory Valuation Report

#### Section 1 Valuation Report by PWC

##### A. 2016 Report

In accordance with the Ministry's instructions, PWC provided a valuation report on 17<sup>th</sup> October, 2016 with the details as follows:

Asset Description	Market Value (US\$)
Land and Building	19,019,000.00
Plant and Machinery	34,678,400.00
<b>Total</b>	<b>53,698,400.00</b>

##### B. 2017 Report

On 15<sup>th</sup> September, 2017, PWC again submitted another valuation report with the details as below:

Asset Description	Open Market Value (USD)	Forced Sale (USD)
Land and Buildings	22,826,031	20,543,427
Farm Lands	2,000,000	1,800,000
Road and Civil Works	3,000,000	2,700,000
Plant and Machinery	12,029,715	10,826,743
Others	1,000,000	900,000
<b>Total</b>	<b>40,855,746</b>	<b>36,770172</b>

There is a clear variation of about 22 million USD between the 2016 and 2017 values with respect to plant and machinery. At even a legal depreciating rate of 5-10% per annum, the variation between 2016 and 2017 is not justifiable.

#### Section 2 Valuation by Consultant

Yet to be completed- it is expected by Sunday 12<sup>th</sup> November, 2017 and will be added subsequently.

#### 4 Internal Audit Report

30. It was reported that a total of 5,000 MT of sugarcane was purchased for the test-run. However, receipts and waybills for the purchase of the 5000MT of sugarcane have not been sighted. It was expected that 9000 bags of sulphurless white sugar (50kg each) (based on 9% recovery) would have been produced from crushing 5,000MT. However, 328 bags (50kg each) of semi-processed sugar was handed over to the Ghanaian management team. Further investigations needs to be conducted to ascertain the veracity of the claims by SEFTECH.
31. As per the Company's records, the provisional indebtedness of the Company in salary arrears of staff from November 2016 to August 2017 was GHS 591,882.00. In calculating the salary arrears, the gross salary was used in the computation even though it ought to have been the basic salary of staff. The actual salary arrears of staff would have to be determined accurately.
32. Outstanding liabilities of the Company to suppliers as at 30/08/2017 stands at GHS 484,616.78. The liability is made up of amounts owed ECG, Ghana Water Company and office equipment suppliers of which GHC 402,480.42 (83%) is owed to ECG and Ghana Water Company. There is also an amount of GHS 137,475.00 owed to G7 Security Systems Limited for providing security services to the Company. Funding has to be sourced to defray these outstanding debts.

## 5 ITEMS NOT INSTALLED OR NEEDING FURTHER WORK BY THE CONTRACTOR

No.	Equipment as per contract	Status
1	Cane Weighing Bridges	The load cells are currently rusting. One of the platforms has a plate bent and yet to be worked on
2	Evaporation & Boiling Plant	The melt extraction pump and column are not installed.
3	Mechanical Workshop	<p>The following equipment are not installed:</p> <ul style="list-style-type: none"> <li>Double ended pedestal grinder,</li> <li>Universal tool and cutter grinder,</li> <li>Electrical furnace for brass,</li> <li>Bronze &amp; gun metal castings,</li> <li>Electrical furnace for cast iron castings,</li> <li>Sand riddle,</li> <li>Moulding box sets,</li> <li>Black smith's furnace,</li> <li>Swedge block - 100kg,</li> <li>Wood working lathe,</li> <li>Tools and tackles,</li> <li>Portable pneumatic and electrical tools,</li> <li>Fitting tools,</li> <li>Storage equipment for tools store,</li> <li>Hoisting tools,</li> <li>Black smith equipment,</li> <li>Portable and small tools,</li> <li>Air compressor</li> <li>Fabrication &amp; carpentry tools.</li> </ul>
4	Laboratory	<p>Equipment not installed include:</p> <ul style="list-style-type: none"> <li>Eet disintegrators,</li> <li>Moisture tellers,</li> <li>Saccharimeters,</li> <li>Water still &amp; accessory,</li> <li>Gas analyzers,</li> <li>Messing sedimentation filter with accessories,</li> <li>Centrifuge,</li> <li>Grinding mill,</li> <li>Filter pump, bomb calorimeter,</li> <li>Magnetic stirrer,</li> </ul>

		Electric heaters, Bunsen burner, Stop watch, Platinum basins & wires, Aspirator bottles, Carboy pumps & siphons, Incubators.
5	Cane preparation yard (SIPL 2014/001)	Main Structure Not Roofed Gear Box and Motor trolley not roofed Operator's cabin not roofed Guard is broken Additional ladder to be provided ( 2 have been stated in the drawing)
6	Fiberizer	Guard rails is expected to be mounted between the fiberizer and basement.
7	Mill House SO-3817	Non return valves (4) have not been installed 1 non return valve and a reducer on each of the juice delivery pipes have not been installed
8	Bagasse elevator SO-3782	Length of staircase is shorter and there are no guard rails
9	Bagasse compressor	Not installed
10	Evaporation Section SIPL/SUG/EXP/027 SIPL/SUG/EXP/031	The melt and syrup receiver should have 2 pair separate pumps but have only one receiver mounted.
11	Clarification Section UHEC/SIL/GC-24/14	No work platform provided around the flash tank. Bypass valve does not have an 80NB pipe to convey feed to the sump.
12	Vacuum Filtration section SIPL/SUG/EXP/001 VIEW 'E-E'	No staircase connecting ground to top floor. No staircase connecting the vacuum filtration section and lime station
13	Lime Station SIPL/SUG/EXP/024	Section not complete
14	Pan Station	No access to the tanks. Work platform has no guard rails
15	Sugar house BW-2707-2-BE8040-GA-01 BW-2707-2-BE7030-GA-02	Bucket elevators do not have inspection doors. Bucket elevator around the grasshopper conveyor do not have most of the assembling bolts.
16	Condensate Pump Station	The 900NB pipe has to be provided with a permanent support so that it does not collapse
17	Generating Sets	Exhaust pipes open directly into the factory

		It should be extended outside the factory
18	Toilet Facilities SIPL/SUG/EXP/018	Only one toilet facility has been provided. The toilet block (legend number SR N0.12) is not constructed and not indicated on the drawing.
19	Pump House	Two spray pumps have been provided instead of three Spray platform has collapsed and has to be repaired
20	Amenities	No changing room facility. Canteen is not completed Dispensary not completed
21	Administration Block 2443-E03	Four (4) AC units not provided
22	Cane Office	Lightening system incomplete (7 have been provided instead of 14) Partitioning into various offices not done
23	Roads	Bitumen instead of asphalt
24	25 HP electric pump	Not on site
25	40KV Diesel Generator	Not provided
26	Construction of Water outlets	Not provided
27	Drip Irrigation Systems/Rain Gun System	Not provided
28	Construction of pump house- 36sqm	Not provided
29	Water control Valves	Not provided
30	Electric motor panels	Not provided
31	HDPE Pipes network panels 1. 160mm 2. 125mm	Not provided

Table 1: List of equipment and parts not installed

## 6 The Way Forward

### 6.1 Complete contract with Seftech

- Ensure remaining parts of the plant that were identified through the technical audit are installed
- Ensure that a test and trial runs are executed thoroughly from crushing of cane to the production of sulpherless white sugar at 50 INCUMSA
- Negotiate and pay outstanding debts based on the recommendations from the technical audit and advise from the AG's office

### 6.2 Activities for 0-12 months

- Institute a Board of Directors
- Harvest and dispose ratoon canes on the 14.80 ha
- Maintain 34ha of plant cane
- Harvest and plant 48.80 ha of sugarcane
- Identification of land:
  - Out grower scheme
    - a. 1475ha (3500acres -outgrowers -KEEA)
    - b. 2200ha (5500acres outgrowers Mankessim site)

#### Land under Factory ownership

- a. 1244ha (3110 acres, KEEA, factory lands)
- b. 800ha (2000acres, mankessim site)

This is to ensure that the factory controls a minimum of a third (4700acres) of the sugar cane needs of the factory

- Develop criteria for the selection, registration, contracting and training of farmers for both the nucleus farm and outgrowers
- Select variety using samples from Kpong and Komenda. It is prudent for UCC to do the trials.
- Cultivate 48.80ha of sugarcane from the nursery. This would be distributed to farmers in the out grower scheme.
- Determine how to operationalize the factory
  - Cost benefit analysis of importing raw sugar and processing it
  - Level of adjustment of the plant that is needed to refine the sugar
  - Solution for the mill: mill will produce raw sugar on batch basis (provide cost to be determined)
- Develop and implement a Maintenance plan
- Engage and train relevant staff

### 6.3 Activities from 12 months

- Run plant with imported raw sugar.
- Run the plant with suarcane from nucleus farm, organised outgrowers and contract farmers.
- Ensure routine maintenance of the plant
- Continue refining raw sugar based on results of cost benefit analysis.

## 7 RECOMMENDATIONS

1. A Board of Directors for the company should be constituted as a matter of urgency to oversee the operations of the Company.

NAME	PROPOSED POSITION	PROFESSION	EXPERIENCE	REMARKS
HON.ROBERT AHOMKA-LESEY		MINISTER		
Private Sector				MOTI
DOUGLAS MENSAH		ENGINEER/FINANCE		KSDCL
RENOWNED CHARTERED ACCOUNTANT				RENOWNED CHARTERED ACCOUNTANT
MOFA REPRESENTATIVE				MOFA
MINISTRY OF FINANCE REPRESENTATIVE		MOF		MOFA
NANA KODWO KRU II	MEMBER	TRADITIONAL RULER		
AG REP/LAWYER	SECRETARY			AG
CEDECOM REPRESENTATIVE	MEMBER	ENTERPRISE DEVELOPMENT AGENCY		INDUSTRILIST

Table 2: Proposed Board members

2. The Ministry should ensure that SEFTCH complies with the terms of the contract by completing all outstanding activities which include the following:
  - Providing and complete installation of all plant equipment facility that are not installed as detailed in Table 1.
  - A full test and trial run of the factory
  - Training for staff for a year as stated in the contract
  - Developing and putting in place a quality, food safety, environmental and occupational health and safety management system.
  - Supervision and inspection reports
  - Additional data and documentation on plant modifications and operations
  
3. The Ministry should ensure that the supervisor, National Federation of Cooperative Sugar Factories Ltd. Pvt. submits the following:
  - Inspection, approval and supervision reports
  - Final project completion report



4. The Ministry should consider implementing activities in 7.0 titled **THE WAY FORWARD** as part of efforts to operationalize the company.