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**A BRIEF FROM KIAMOKAMA TEA
FACTORY CO LTD DURING THE
REGIONAL WORKSHOP FOR**

**“LOW CARBON AND CLIMATE
RESILIENT INDUSTRIAL
DEVELOPMENT”**

**AT CROWNE PLAZA HOTEL,
NAIROBI; MARCH 19-21, 2018.**

1.1 Introduction.

- Kiamokama tea factory was commissioned in 1976 with an annual installed capacity of 5,500,000 kg; this has since been enhanced to 18,000,000 kg of green leaf annually.**
- The factory has a total of 90 withering troughs with a capacity of 28,810 sq.ft which can hold a crop of 81,628 kg of leaf per day at 2.5kg leaf/sq.ft.**

1.1 Introduction. *Continued*

- Serves 22,430 small scale growers owning between 0.1 to 1.5 acres on average per farmer. Total area under tea is 5844.40 hectares with a total of 22,405,557 tea bushes.**
- In the last five years from 2012 to 2017; the factory received a total of 64,421,209 kg of green leaf giving an average of 12,884,241 kgs per year.**
- This year we expect to receive 14,000,000 kg of leaf.**

1.2 Mission statement:-

- “To provide efficient and effective services to the small holder tea farmers in production, leaf collection and processing of high quality teas for the benefit of stakeholders”.**

1.3 Vision statement:-

- ‘To be the leading producer of high quality and safe tea in the world’.**

1.4 Core values:-

- Customer focused.**
- Upholding high standards of ethical practices.**
- Socially responsible.**
- Equal opportunity employer and; working together as a team.**

1.5 Core business:-

- Production of black CTC teas for export and local consumption. The table below shows production for last 8 years.**

The table below shows production for last 8 years.

<i>year</i>	<i>Green leaf</i>	<i>CTC tea</i>
<i>2010/11</i>	<i>16,776,711</i>	<i>3,974,634</i>
<i>2011/12</i>	<i>11,148,969</i>	<i>2,606,883</i>
<i>2012/13</i>	<i>14,680,855</i>	<i>3,303,451</i>
<i>2013/14</i>	<i>13,651,672</i>	<i>3,153,390</i>
<i>2014/15</i>	<i>11,800,138</i>	<i>2,735,142</i>
<i>2015/16</i>	<i>14,418,952</i>	<i>3,363,636</i>
<i>2016/17</i>	<i>9,869,592</i>	<i>2,376,077</i>
<i>2017 to Feb 2018</i>	<i>7,995,985</i>	<i>1,825,696</i>

1.6 Challenges posed by climate change:-

- Tea production relies on stable temperatures and consistent rainfall patterns; any excess would negatively affect production. During the year, we have low production season (Jan, Feb, March and July, August, Sep) and high production season (April May, June and Oct, Nov, Dec).**

1.6 Challenges posed by climate change:- *Continued*

- Tea requires temperatures of 16-29 degree Celsius (60-84 degrees F) along with stable rainfall. Lately, the high/low production seasons have become unpredictable owing to variability in climate change.**

1.6 Challenges posed by climate change:- *Continued*

- According to Ethical Tea Partnership, ETP, climate change is expected to reduce land suitable for tea production in tea growing areas by 40% by 2050. A research by TEGEMEO institute, a think tank of Egerton University, reckons that tea production will be affected by increased rainfall and temperatures as a result of global warming. Production of tea is projected to drop by 9% in 2020.**

1.6 Challenges posed by climate change:- *Continued*

- Tea producers are facing reduced and erratic rainfall, a higher rate of hail or frost and rising temperatures that heavily affect yields and productivity levels. There is increased uncertainty about farmers' livelihoods in the future.**

1.7 Adoption and mitigation measures:-

- The factory is certified under ISO 9001:2008 (Quality management system), ISO 22000:2005 (food safety management system) and Rainforest Alliance (Sustainable Agriculture Network standard). The factory has developed programs and policies which are being implemented under the RA principles of “Effective planning & management system, Biodiversity conservation, Natural resource conservation and, Improved livelihoods and human well being”.**

1.7.1 Objectives being implemented include:-

- Protecting high conservation value chain areas.**
- Protecting natural ecosystems, including forests, towards a zero deforestation commitment.**
- Increasing the population and coverage of native tree species on the farm through carefully planned plantings and ecosystem restoration.**

1.7.1 Objectives being implemented include:- *Continued*

- Planning to achieve the conservation of all riparian areas on the farms.**

- Usage of fire wood for steam generation has contributed to regional deforestation. The factory purposes to switch to other alternative sources of energy such as briquettes. Farmers are being trained on conservation and management of water; they use biogas instead of wood thus reducing carbon emissions.**

1.8 Intervention from the project:-

- The technology transfer initiative has targeted the factory withering section which accounts for over 32% of daily energy requirements. The energy requirements are both electrical and thermal. The technology shall be an improved air blower, high energy efficient motor and an inverter (variable speed drive). This intervention shall reduce running hours and result in much reduced consumption of fire wood and electricity giving rise to reduced carbon emissions.**

1.8 Intervention from the project:- *Continued*

- 1,904,399 kWh or 6,855,836.4MJ of electricity.**
- 19,264 litres of generator diesel or 836,057.60MJ.**
- In the year 2015/16 when KNCPC/UNIDO/KIAMOKAMA relationship was initiated; data from utility bills for 12 months was as follows:-**
- 9,890 M³ of firewood for boiler steam generation or 4,638,410 kg wood or 73,750,719 MJ of wood.**

1.8 Intervention from the project:- *Continued*

- The total annual energy was 81,442,613 MJ at a cost of Kshs 52,630,975 or 510,981 USD. The green leaf received was 14,418,952 kg which gave a total of 3,363,636 kg MT.**
- This gives an annual energy intensity of 24.20MJ/kgMT or 6.72Kwh/kgMT. The key electricity energy using processes were withering (32%), drying (31%) and CTC (30%).**

1.8 Intervention from the project:- *Continued*

- In the year 2016/17 when the crop received was 9,869,592 kg; the cost of firewood used stood at 258,992 USD while that of electricity stood at 389,104 USD.**

1.9 Current carbon emissions at Kiamokama:-

- Based on baseline data of the year 2016/17 the details regarding carbon emissions for kiamokama were as follows:-**

1.9 Current carbon emissions at Kiamokama:-

ITEM	VALUE
Made tea	2,376,077kg
Fertilizer consumption	800,335kg
Fuel consumption	48,504L
Total foot print, kg CO₂/kg MT	1.70
Total carbon emission, CO₂	4,046,436kg

Thank you.

- *Keraita JM,*
- *Factory unit Manager,*
- *Kiamokama tea factory co. ltd.*