Fast-tracking the Energy Transition through Green Hydrogen Production

Kenya's Green Fertilizer Project

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EXECUTIVE OFFICE OF THE PRESIDENT

5th December 2023

Inorganic Fertiliser demand

- Agriculturally is central to all the East Africa region economies, accounting for about 30% of the gross domestic product (GDP) and about 60-70% of the entire workforce reliant on agricultural activities

- **Fertiliser demand**: Sub-Saharan Africa demand is projected to grow by 8% annually to reach 5.5 MT nutrients, or 2.8% of world fertilizer demand, by 2021. Nigeria and Ethiopia are expected to contribute 28% and 18%, respectively, of this growth. For Africa as a whole, will grow by 37% from 2016 to 2021 or by 2.2 MT nutrients to reach 8.1 MT nutrients (International Fertiliser Association).

- The production of fertilizer in Africa is concentrated in Egypt, Tunisia, South Africa, Algeria, Nigeria and Morocco

- Annual Consumption East and Southern African region = 6.29Millon Tonnes; For Kenya is its estimated 750,000MT

- Kenya is leveraging on local deposits of rock lime and rock phosphates as fertiliser feedstock to combine with green Ammonia to produce nitrates and phosphate fertilisers

Kenya's Energy Transition- Green Hydrogen

Mapping out the role of Green hydrogen in the energy transition process

a. Gaps assessment of available critical resources, market, and human capital deficit
b. Developing collaboration models to be used with different partners and neighboring Countries

Phase 1: Create a market for hydrogen through production of Green fertilizer

a. Preparing to increase farm uptake of fertilizer for improved farm yield
b. Developing green agricultural production and market structure
c. Developing standards for the industry
d. The first Green Hydrogen-Ammonia-Fertiliser product is December 25th 2025.

Kenya's Energy Transition- Green Hydrogen …

Phase 2: Scale-up a Green hydrogen economy through local industrial products for export.

a. Set out a Roadmap of Kenya's' vision for the industry that leverages on local green energy resources.
b. Developing the Hydrogen infrastructure at the co-location hubs.
c. Focus is on high-growth and energy-intensive industries such as steel and data centers
d. With the expected huge potential, the development will account for inclusion and be sensitive to local community issues

Project characteristics

a. Technologies with added direct benefits to local communities, SME's and the environment.
b. Green Hydrogen parks with co-location of related industries under long-period land lease
c. Capacity building in all investment, funding and implementation arrangements

Green Hydrogen Production for Green Fertiliser…

1. To have a competitive fertiliser price, the project is structured to;
    a. Utilise excess power from the geothermal plants for higher production during off-peak at a lower tariff
    b. Inject Power into the grid during peaking time
    c. Eliminate fossil fuel for peaking and expensive battery storage
    d. Use local deposits of lime and rock phosphates for blending with locally produced Green Ammonia
    e. Avoid importation of feedstock into the fertilisers production process

2. Reduce foreign exchange requirement for importation through
    a. Elimination of fossil fuel-based power generation modes
    b. Eliminate importation of fossil fuel-based fertiliser

Kenya's positioning to fast-track the development process

1. Geographic location with two(2) deep water ports along busy shipping lines on the Indian Ocean
2. Good quality main Road, Rail, and Air Communication networks
3. Stable economy and leading vibrant democracy.
    a. 4th largest economy in SSA
    b. UN headquarters and former UN Security Council member
4. More than 100GW potential for Geothermal, Wind, and Solar power
5. Highly trained Human resource in Engineering and Science

Kenya's positioning to fast-track the development process…

1. Incentives for safe investments
    a. 100% repatriation of profits or interests in Special Economic Zones
    b. 7,700 hectares of plug-and-play industrial facilities
    c. Dedicated tax credits, VAT/ duty exemptions, and Special Operating Framework Agreements

2. Leading Africa's green transition
    a. 100% renewable energy at 5¢ US/kWh (for large-scale future investments)
    b. Developing Innovative green financing mechanisms, e.g., the world's first 1st mobile retail bond

Required Resources to fast track the development process…

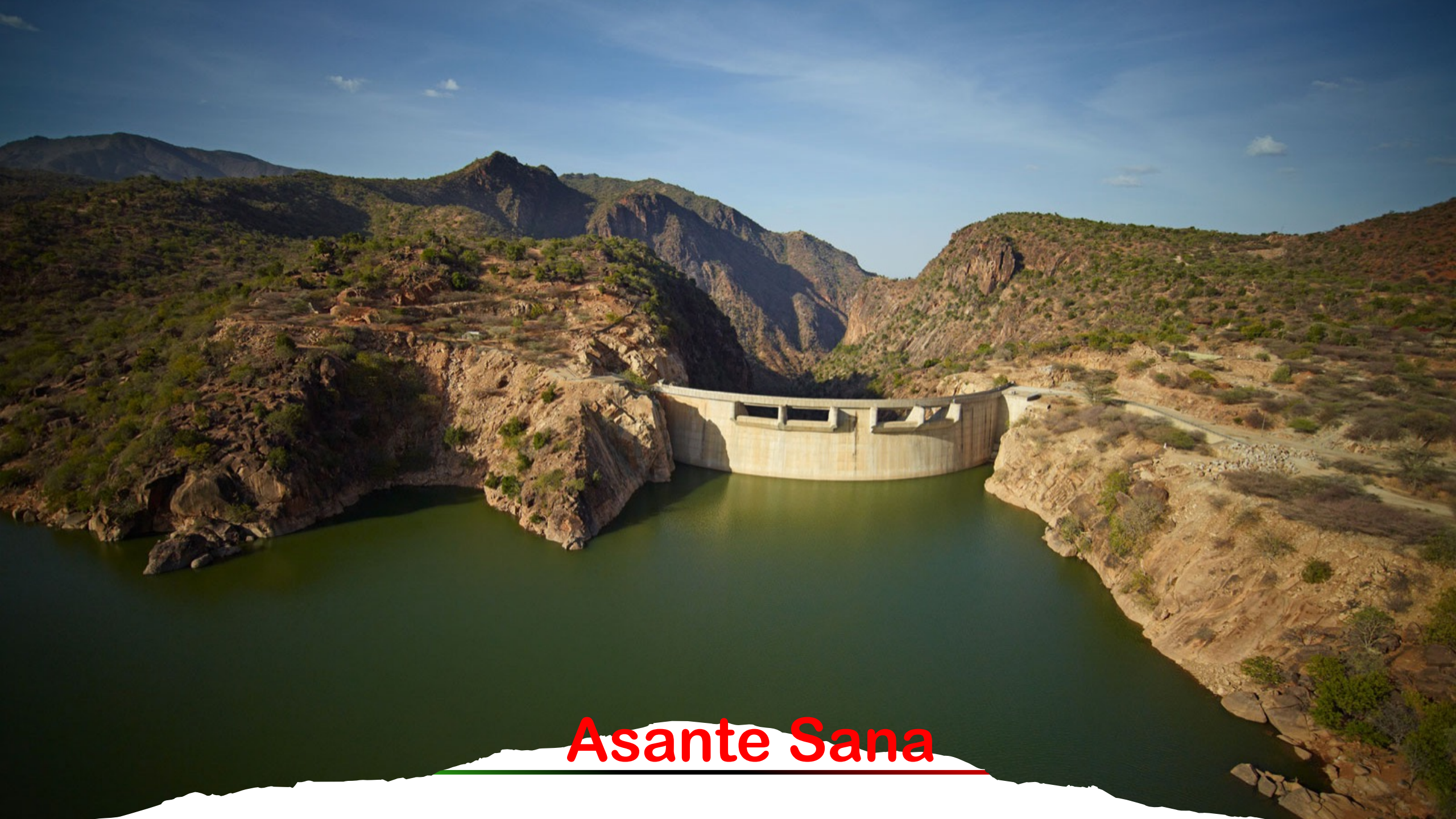
1. Setup a One-Stop shop for investment in Green Hydrogen projects and related products
   a. Independent department to manage Green-hydrogen-related projects
   b. Develop and manage data on Green Hydrogen Investment
   c. The initial focus is Green Hydrogen for Green Fertiliser and other derivatives for local use
   d. Develop market structure for Green Fertiliser and other Green-hydrogen derivatives
   e. Develop structural models for leveraging on off-peak power and Energy storage thro' Green-Hydrogen

2. Develop Infrastructure for green Energy development
   a. Road network to remote areas with Geothermal, Solar and Wind Energy Sources
   b. Developing a Stable and Robust Power Transmission system
   c. Developing feeder roads system for off-take of green fertilizer & agricultural products

Policy and Regulatory framework

1. Policies, Legal and regulatory Framework for Green Hydrogen that are;
    a. Specific to Green Hydrogen industry development and Green Energy resources (Geothermal, Solar and Wind)
    b. Unique to Kenya's business environment
    c. Unique Land Lease policies
    d. Emphasize co-development of resources– combining Energy, mining , and processing

2. Develop upfront Financing Policy arrangement that supports projects with guarantees that includes;
    a. Partnering with DFI's to develop PRG and PIG tools for upfront investments in GH2
    b. Leveraging on the green industry offtake guarantees
    c. Provide a framework for offtake guarantees for specific GH2-related products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