



Bio-Silica Production and Energy Recovery from Rice Husk Waste

Group P2 - Aidan Kiel, Adib Zakwan Zakaria, Bashirah Salami, Clive Indrawan, Fortune Komolafe, Joya Yamagishi, Sam Oladoyinbo

Department of Chemical & Biological Engineering

Introduction

Objective: Commercialize the process of silica sand (bio-silica) extraction from rice husk food waste. 50 GWh/year of energy will be recovered from this process via its gasifier hot flue gas and used to achieve plant self-sufficiency.



Plant Capacity:
15,460 tonnes/yr
of Silica

Novelty

1. Fluidized bed Gasifier Reactor: Large throughput compared to industry average
2. Silica Extraction process: Developed from a lab-scale paper
3. Multi-Effect Evaporator: Used for intermediate product recovery and re-use

Social Need

Respond to Silica Sand deposit shortage, and slow the global rise in Illegal Sand Mining.



Re-purpose Agricultural Biowaste in high rice-producing countries.

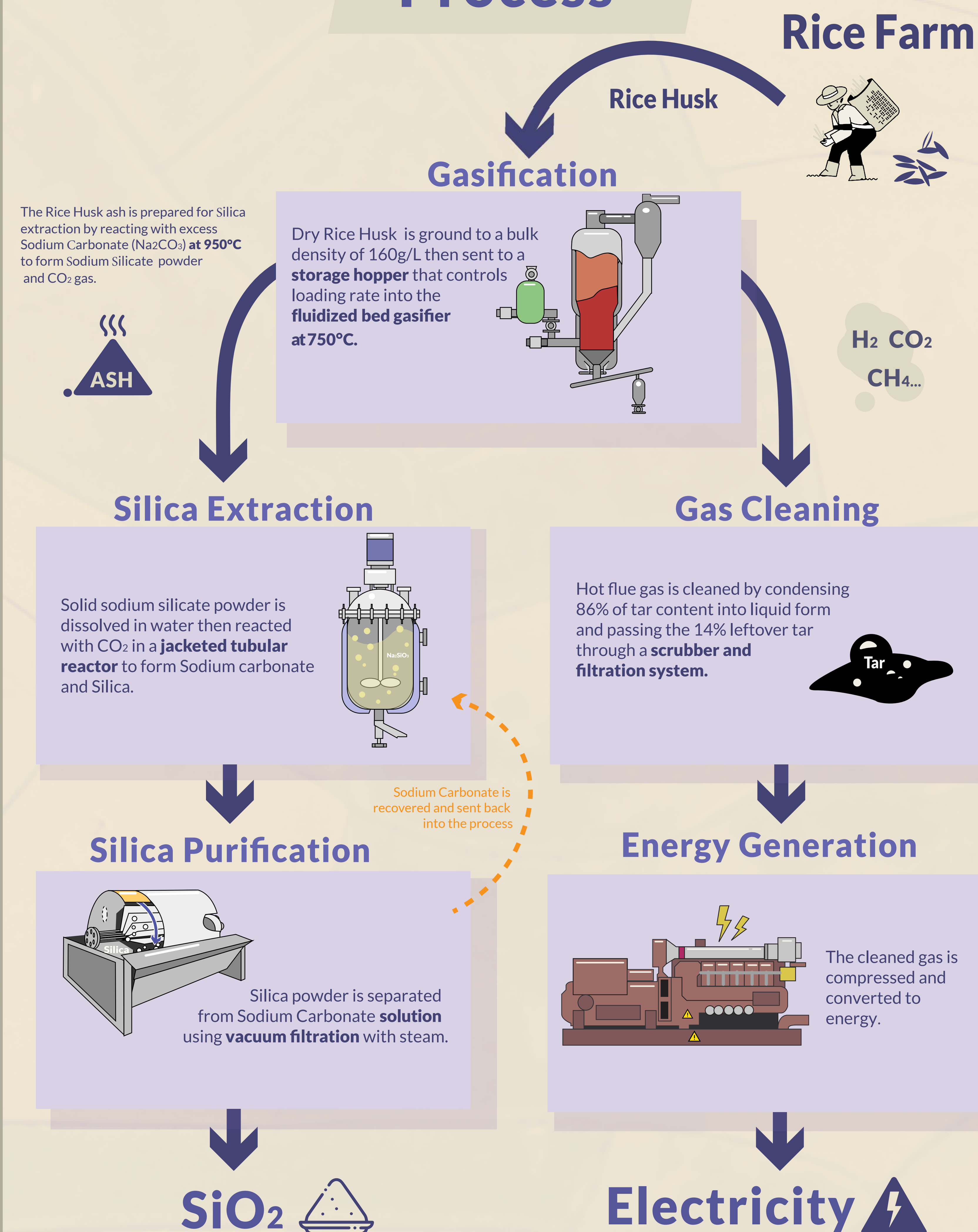


Uses in Agrochemical, Food and Rubber Industries

due to high chemical stability, absorption capacity, and anti-caking properties.



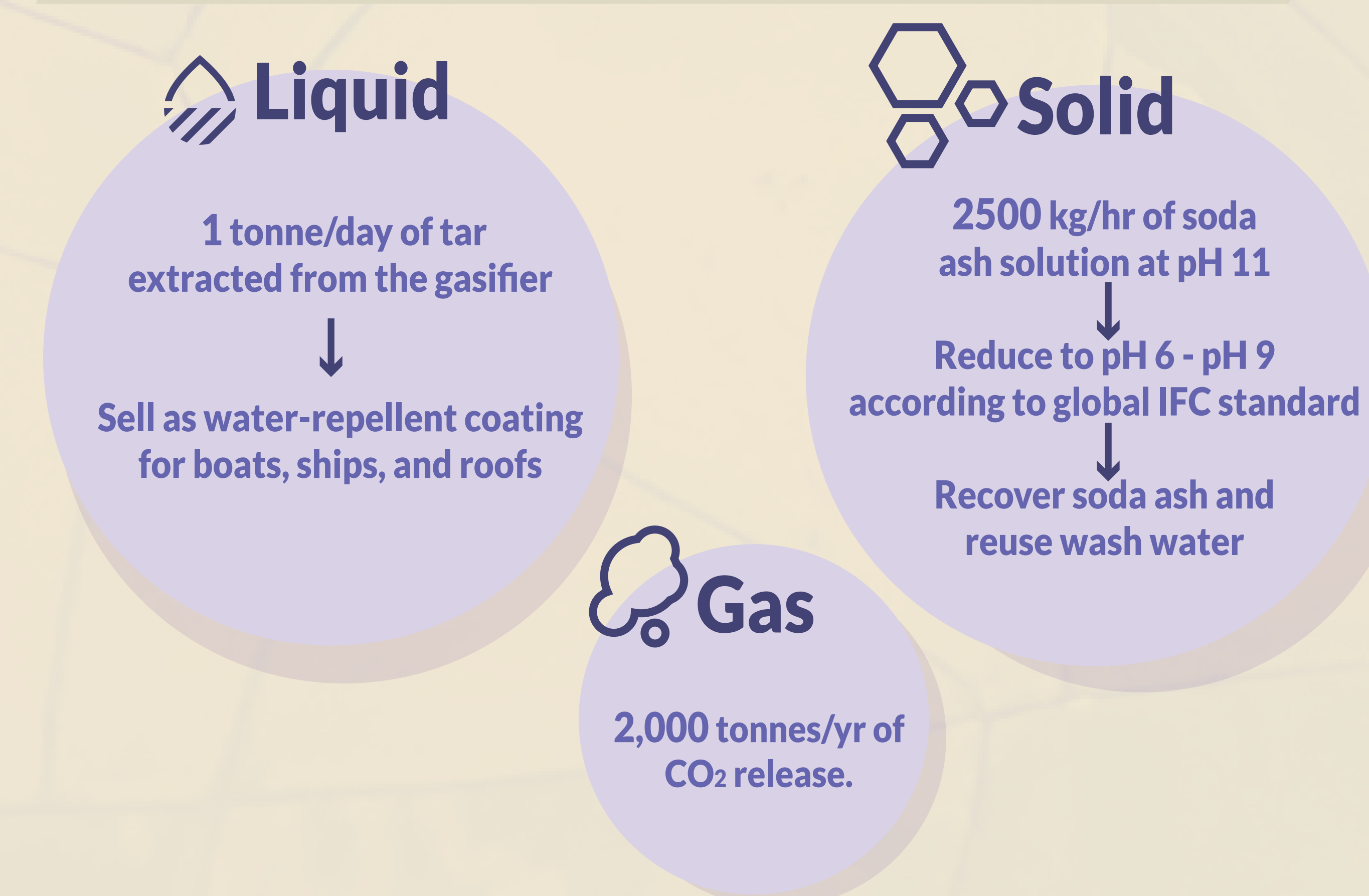
Process



Plant Layout

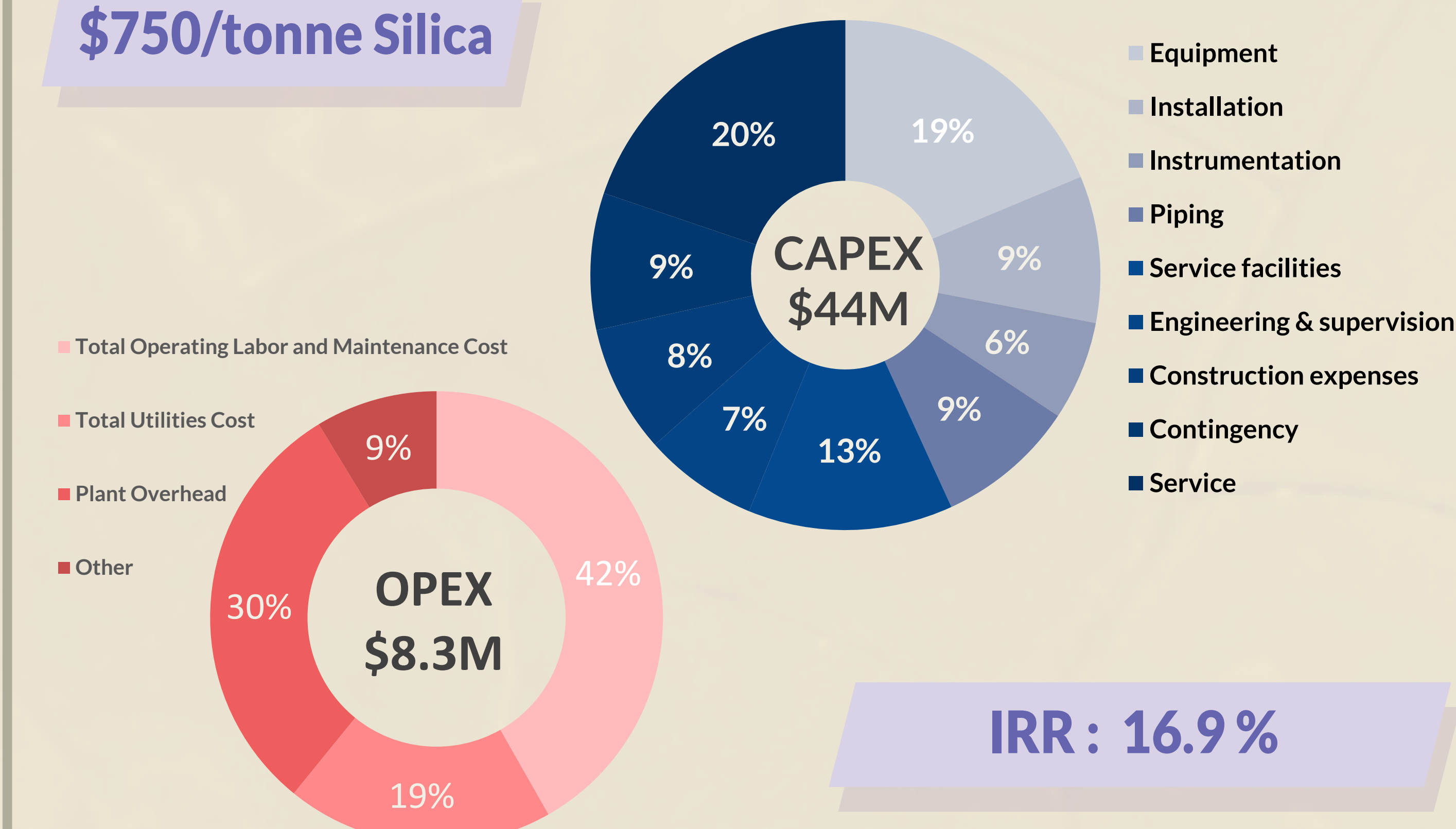


Environmental Assessment



Economics

\$750/tonne Silica



IRR : 16.9 %

NPV : \$ 47M

PAYBACK : 5 years

PROFIT : \$ 6M/year

Silica \$11.5M
+ Electricity \$3M
REVENUE \$14.5M

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