



PRE-FEASIBILITY STUDY

Developing a net-zero carbon emissions
nipa palm sugar production and processing
value chain in the Ayeyarwady Delta,
Myanmar

INFO BRIEF
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BACKGROUND

Unilever recognizes that climate change, natural degradation, biodiversity decline, and water scarcity are immensely complex and intertwined problems. Therefore, in the process of identifying and prioritizing potential new food value-chains to be developed, Unilever seeks to take decisive actions to prevent environmental and social damage. In parallel, over the course of 2017-2020, GGGI implemented an array of activities to support investments in Coastal Landscape Restoration in the Ayeyarwady Region and for the promotion of agroforestry nationwide¹.

In 2021, Unilever partnered with the Global Green Growth Institute and its Myanmar supplier of palm sugar, Zawgyi Premier, in order to determine the potential for developing a net-zero carbon emissions nipa palm sugar production and processing value chain in the Ayeyarwady Delta, Myanmar. Strong consideration was given to Unilever's commitment for zero deforestation by 2030, it's commitment to empower a new generation of farmers and smallholders to protect and regenerate their surrounding environment, and its objective to keep a competitive supply chain and long term sourcing commitment with poten-

tial incremental volumes of nipa palm sugar to source. Furthermore, this analysis is aligned and has been designed to support Unilever's approach for a sustainable and regenerative sourcing efforts following Unilever Sustainable Agriculture Code and Unilever Regenerative Agriculture Principles².

In order to inform decision making, this study analyzed the comparative investment in natural, social & human, and financial capital needed, and the impact of different potential processing approaches in terms of monetary and non-monetary benefits. The study was designed to integrate business and landscape sustainability perspectives. It addressed the existing sources of environmental degradation (particularly deforestation of mangrove forests) in the delta and aimed to build human capacities and resilience of small-holder farmers to climate change hazards. At the same time, the study considered the potential demand from Unilever for sugar and the functional value-chain and farmer engagement model that has been tried and tested by Zawgyi Premier.

PRE-FEASIBILITY METHODOLOGY & FINDINGS

To determine the potential and impact of nipa palm sugar production through a net zero carbon emissions approach in the Ayeyarwady Delta, a comparative investment analysis and impact assessment was conducted using GGGI's 3Returns

Framework³. The 3Returns Framework contrasts a Business as Usual (BAU) scenario against several 'green intervention' scenarios in order to understand the changes in key capital indicators and the benefits derived from them.

¹ Investment Analysis: <https://openknowledge.worldbank.org/handle/10986/34987>

Value Chain Analyses: <https://pubdocs.worldbank.org/en/385481611142791519/Insight-Brief-Mangrove-Aquaculture-Polyculture-Products-in-the-Ayeyarwady-Region> & <https://pubdocs.worldbank.org/en/502551611143196249/Insight-Brief-Nipa-Palm-Products-in-the-Ayeyarwady-Region>

² Unilever Links: <https://assets.unilever.com/files/92ui5egz/production/555201fc976d5389fbdf9845099c15b61d1ceb53.pdf/sustainable-agriculture-code--sac---2017.pdf> & <https://assets.unilever.com/files/92ui5egz/production/489410442380812907bc3d97be02ccda1a44ab4b.pdf/Regenerative-Agriculture-Principles-and-Implementation-Guide-April-2021.pdf>

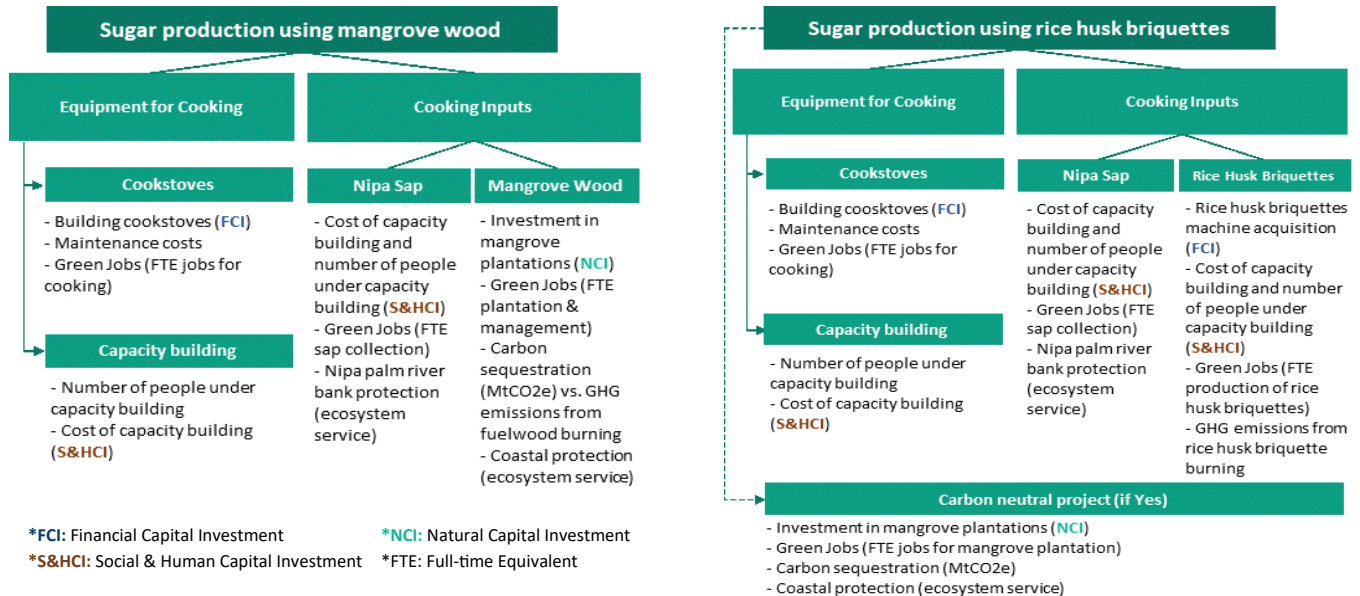
³ 3Returns Framework: <https://www.greengrowthknowledge.org/research/3returns-framework-method-decision-making-towards-sustainable-landscapes>



Taking the current BAU situation, in which most nipa palm owners primarily market nipa palm fronts for thatching, three different nipa palm sugar production models were analyzed based on the nipa palm sap processing technologies and resources available in the Region:

- 1) **Model 1:** A nipa sugar production using mangrove wood for cooking (with sustainable mangrove plantation management);
- 2) **Model 2:** A carbon neutral nipa sugar production using rice husk briquettes for cooking (with mangrove plantations for carbon sequestration); and
- 3) **Model 3:** A non-carbon neutral nipa sugar production using rice husk briquettes for cooking.

Figure 1. Investment Models and Aspects Considered



Comparing these three different models, the carbon neutral nipa palm sugar production using rice husk briquettes model (with mangrove plantations for carbon sequestration) appears to be the most sustainable model. Under this production model, in order to meet a target of producing 4,000 tons/year of nipa palm sugar, the investment needed is estimated at USD 3.17 million, while the net economic benefits over 10 years from sugar production are estimated at USD 5.25 million, resulting in a Return on Investment (ROI) ratio of 2.66.

From a landscape perspective, the production of nipa palm sugar under this carbon neutral production model would enhance the coastal natural capital in 617 hectares, and could support over 2,500 families with capacity building and technical assistance. Additionally, investing in producing nipa palm sugar in the region will create and keep more than 2,200 full-time equivalent green jobs.

NIPA PALM SUGAR PRODUCTION	Model 1	Model 2	Model 3
Natural Capital Investment (million USD)	Green	Yellow	Red
Social & Human Capital Investment (million USD)	Red	Green	Green
Financial Capital Investment (million USD)	Red	Green	Green
BUSINESS ANALYSIS (million USD)	Model 1	Model 2	Model 3
Sugar Production Business NPV (million USD)	Red	Yellow	Green
LANDSCAPE ANALYSIS (million USD or unit)	Model 1	Model 2	Model 3
Natural capital (ha of nipa palm & mangrove)	Green	Yellow	Red
Value of nipa palm river bank protection (PV)	Green	Green	Green
Value of mangrove coastal protection (PV)	Green	Yellow	Red
Cumulative biomass carbon sequestration (MtCO ₂ e)	Green	Yellow	Red
Social & Human capital (# people under cap. build.)	Yellow	Green	Green
Green jobs created/maintained/(# FTE)	Yellow	Yellow	Yellow

Table1. Nipa palm sugar production investment, business, and landscape impact assessment result's summary

Green = Highest investment/positive impact
 Red = Lowest investment/positive (or negative) impact
 Yellow = Medium investment/impact

PROPOSED PATH FORWARDS

There are clear opportunities for developing socially-responsible and environmentally impactful agri-business production models by integrating both business and landscape sustainability impacts in the initial design phase. In this analysis, a nipa palm sugar production model using rice husk briquettes, and that offset the carbon emissions through on-site sustainable mangrove plantations, thereby ensuring a carbon neutral outcome, is the most sustainable model (considering the objective of meeting both business and landscape objectives).

As a next phase, before project implementation can proceed, a full feasibility study and detailed field assessments need to complement the initial studies in order to further design the cooking process, assembly in detail the entire supply chain, specify the nipa palm and mangrove plan-

tation management techniques to be applied, and confirm the investment needed for the implementation of the project.

Furthermore, a multi-stakeholder engagement process is required for further development of this project. Finally, co-funding for pilot project development will be sought from sources such as the Unilever Climate and Nature fund and/or green/climate finance institutions and/or impact investors.

This study demonstrates the value of developing partnerships between the private sector and other actors to ensure that investments in new food value chains are aligned with the global consensus of the urgency to take action to combat climate change, protect biodiversity, and ensure fair incomes for farmers worldwide.

