

CIRCULAR ECONOMY BUSINESS CASE STUDIES IN SOUTHEAST ASIA



ANJ Agri Papua (ANJAP)

- South Sorong, Indonesia
- Agro-food
- www.anj-group.com
- Analysis period: 2007-2023

Sago as Alternative Starch Source

Business Spotlight

PT ANJ Agri Papua (ANJAP) is part of the PT Austindo Nusantara Jaya Tbk. (ANJ) agribusiness and food company. ANJAP pioneered Indonesia's first natural sago harvesting and starch processing operation on a commercial scale in South Sorong, Southwest Papua, managing a 40,000-hectare (h) concession. The natural sago is harvested from land owned by villagers under customary rights, who receive payment for every sago log (tual) harvested. The logs are processed at ANJAP's sago mill to produce dry sago starch, which is sold mainly to the domestic food industry and retail customers. In addition to providing economic opportunity, ANJAP has also established a biomass power plant to increase the use of renewable energy and decrease the use of fossil fuels that emit greenhouse gases (GHGs), while simultaneously diverting the logs from waste disposal.



Keywords

Bio-energy, Agribusiness, Sago starch, Drip fertigation

Innovation

Manufacturing, End-of-life management, Resource circularity, Resource efficiency, Resource substitution



Analysis of PT ANJ Agri Papua (ANJAP)

Context and baseline

Sago is a traditional source of starch, extracted from local palm species present in the eastern islands of Indonesia and Malaysia, and it provides an alternative to other starch sources such as potatoes, cassava and rice. PT ANJ Agri Papua (ANJAP) is part of the PT Austindo Nusantara Jaya Tbk. (ANJ) agribusiness and food company, established in September 2007 for developing ANJ's pioneering sago starch business in remote Southwest Papua. ANJAP, which holds a license for a 40,000 h concession in a sago forest in South Sorong, has set up a sago mill with monthly production capacity of 1,250 metric tonnes of dry starch. Sago starch is distributed to industries using the Pati Alam brand, to retailers and consumers using the Sapapua brand, and directly to ANJ's Bueno Nasio restaurant which serves sago-based foods.

ANJAP is the first company in Indonesia to harvest and produce natural palm sago. ANJAP processes the palm logs at its sago mill to produce dry sago starch, which is sold to the food industry and on the retail market. ANJAP also manages PT Austindo Nusantara Jaya Boga (ANJB) to support ANJ's emerging food business, particularly the development of product and marketing plans for sago starch outside Papua.

ANJAP also follows the commitment of its parent company, ANJ, with the same sustainability targets and progress towards Net Zero climate emissions by 2030. ANJ is working incrementally towards this ultimate goal by monitoring progress and maintaining a focus on sustainability. The main business of ANJ is the production of palm oil, an essential commodity. Responsible development is at the core of ANJ's values, and the company encourages employees to go beyond compliance in reducing the carbon footprint by taking an active role in tackling the climate crisis of our time.

Sago is part of ANJ's sustainable agribusiness strategy, which is aligned with the government's food security objectives as well as the government's economic and social development acceleration strategy for Papua. ANJAP believes that sago starch presents a significant opportunity as an alternative sustainable carbohydrate source, which could help reduce reliance on rice, wheat, and other staple grains. This also addresses public concerns about the rising price of rice, the main staple food in Southeast Asia, particularly in Indonesia. The observed higher price of rice is linked to climate

change, leading to crop failures.¹ Sago is emerging as an affordable substitute product for rice.

Innovation

ANJAP is improving sago starch extraction rates by optimising its current processing technology, to boost output volumes and lower production costs/kg of starch production. ANJAP recorded its highest extraction rate in November 2023, 11.3%. This improvement was mainly the result of estate-team's initiatives in changing the criteria for selecting sago trees to be harvested combined with mill innovation to maximise the number of sago logs (or tuals) being processed.

Innovation can also be seen in the move away from non-renewable energy sources. ANJAP relies on diesel fuel for power generation because it is not connected to the national electricity grid. Therefore, as part of the holding company's energy transition strategy, it is using some of ANJ's biomass power plant to increase renewable energy use and decrease fuel use and expenses. Currently the power plant is using shells and fibres from its sago crops and ANJ's palm oil mill as bio-fuel for its boilers, replacing diesel as part of a waste-to-energy initiative. The biomass boiler decreased non-renewable energy use by 22% in 2023, however, the challenge remains to achieve the targets for diesel substitution.

Circular Economy impact

The sago plantation and its processing into starch by ANJAP supports the circular economy transition by making efficient use of natural resources (resource efficiency), and by recovering biomass waste (resource circularity) to replace fossil fuel use (resource substitution).

ANJAP is working towards increasing the use of renewable energy, with target of 20% renewable share in energy use by 2025. ANJ, as parent company, has constructed and operates a biomass power plant to increase renewable energy use and cut fuel costs. The boiler uses post-harvest residues including shells and fibres from its sago crops as well as non-extracted palm oil. These organic byproducts are recovered for energy generation instead of ending up in waste streams, a good example of resource circularity.

¹ See e.g.: <https://en.tempo.co/read/1835700/rice-prices-soar-here-are-5-rice-substitutes-for-southeast-asians>

Business and market impact

In 2023, ANJAP focused on improving productivity and cost efficiency, which led to the scaling down of mill operations to one shift daily in 2023. This resulted in a reduction in total sago logs (known as *tual* in Indonesian) processed, from over 356,000 tuals in 2022 to just under 250,000 in 2023. Also in 2023, ANJAP achieved a production of 1,896 tonnes of sago starch, achieving 47.8% of the 3,970-ton target with an average extraction rate of 7.6% from the sago logs. ANJAP saw an improvement in its extraction rate in the second half of 2023, increasing from 6.9% in July 2023 to 10.1% by December. The highest extraction rate of 11.3% was recorded in November 2023. This improvement was due mainly to the initiative of the estate team in changing the criteria on selecting sago trees to be harvested as well as to an innovation in the mill to maximise the number of sago logs processed. In 2023, ANJAP sold a total of 1,585 tons of sago starch and focused on selling sago products in the domestic market by expanding the customer base.

Stakeholders

ANJAP's stakeholder engagement activities include community forums and consultation groups, implementation of community complaints and grievance resolution mechanisms, representation on specified industry association committees and initiatives, and community programmes, all of which are planned, implemented, and documented by ANJAP according to parent company policies and strategies. NJAP's internal processes of identifying and mapping stakeholders are kept current through continuous communications with those whom it aims to engage with.

The main stakeholder for ANJAP are the eight family clans to which ANJAP aims to provide significant long-term economic opportunities, contributing to their increased income and reduced poverty through employment opportunities and community involvement. In turn local economic growth is indirectly stimulated and job opportunities are created.

Women form another important stakeholder group, for whom ANJAP conducts an empowerment programme called 'Warung Mama', which provides targeted economic opportunities and addresses the limited avenues open to them for boosting family income. The programme supports local women (mamas) from Saga Village, Metamani District, South Sorong Regency, by offering training to prepare sago-based dishes for sale. ANJAP also trains the mamas in basic financial management for small businesses. Since 2019, 11 members from Saga and Puragi

Village, Metamani District, have participated in this programme. Not only are the women empowered, but locally produced sago is promoted as a versatile, nutritious food source.

Each member earns income from selling dishes such as sago cendol ice, sago-based chicken noodles, pandan cakes, donuts and banana rolls, with potential earnings of up to IDR 2 million per month (EUR 114). In 2023, Warung Mama earned a gross revenue of IDR 196 million (EUR 11,195). In addition, the mamas are learning farming skills in hydroponic gardens, and growing vegetables for consumption and sale. This initiative aims to develop these fresh vegetables into locally processed products for the market.

Warung Mama won the Most Valued Building Block Formation Project at the Responsible Development (RD) Excellence Awards held by the parent company, ANJ.

ANJAP is also a member of the Indonesian Sago Community (MASSI), through which it participates in promoting the development of sago as part of the national food security effort.

Implementation

ANJAP's natural sago forests are customarily held by eight native family clans who are compensated for each sago log collected.

The sago starch is processed from sago palms that naturally grow in swamps in the ANJAP sago forest concession. To ensure that the harvesting process is sustainable and allows the natural regrowth of the sago palms, ANJAP implements selective harvesting limited to mature palms only. After harvesting, ANJAP replaces the harvested palms with sago suckers selected from the surrounding areas. Soil and biomass disturbed during harvesting are also restored. Residue from the harvest is collected and used for renewable energy generation. Sago fibre waste amounts to 14% of processed sago logs.

ANJAP does not apply any chemical pesticides, fertilisers, or any other chemical substances on the land within the sago forest concession. Sago starch processing in the mill makes use of modern industry equipment which is more efficient and without whitening chemicals. In other words, although ANJAP has yet to obtain organic product certification, the sago starch being produced is expected to meet the requirements for organic certification.

Takeaways

ANJAP set out to create an integrated sago plantation with a starch-processing mill in community managed forests so as to supply new starch products for domestic and international markets. In recognising the importance of managing sago forests and peatlands, the company has succeeded in implementing a low-input and low-impact plantation model, and in using plantation byproducts as the major energy source for the operation of the starch mill. Collaboration with local communities and land owners made this possible, and also created new job and income opportunities for women in the communities it operates in, who are now producing sago starch-based food products.



Acknowledgements

This business case study was prepared within the framework of the Technical Advisory project: Mobilising Business Action for Circular Economy in the ASEAN countries under the EU SWITCH-Asia Policy Support Component for the sole purpose of documenting and analysing business experiences with the circular economy. The case study was produced by Nia Sarinastiti (national expert, Indonesia) and reviewed by Rene Van Berkel and Thomas Thomas (regional experts) on the basis of information provided and validated by PT ANJ Agri Papua (ANJAP), Indonesia.

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