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## **EXECUTIVE SUMMARY**





Kopernik, supported by Ford Foundation and CLUA (Climate and Land Use Alliance), aims to build business cases for environmental conservation. To achieve this, Kopernik partners with Lingkar Temu Kabupaten Lestari (LTKL) to analyze the business and market potential of Sengkubak as a local commodity in Sintang. The benefit of Sengkubak and its relation to conservation is further discussed in this report.

Currently, oil palm and rubber are the top commodities in Sintang. However, the fluctuation of commodity prices that tend to decline have impacted the income of smallholder farmers. In addition, the monoculture nature of oil palm plants have negatively impacted on soil quality and the surrounding environment. To address this, the government of Sintang (with the support of relevant stakeholders) aims to identify other potential commodities including forest plants.

A sustainable use of forest resources is important to maintain the function of forests as water reserves, carbon and biodiversity, and sustain the lives of the surrounding community. Thus, the responsibility to protect the forest should not only be held by the government, but also by the community so that the conversion of protected forest lands into plantations or settlements can be avoided.

One of the unique forest commodities in West Kalimantan is the Sengkubak leaf, which has been used for generations by the Dayak community as a flavoring agent. Knowing this potential, the Sintang government wants to conduct further research to seek potential areas for development including business opportunities.

This study was conducted for three months, involving local residents from the village of Tembak in Tempunak District and business owners from the food industry. The information presented in this report is the result of our observation in the field that will hopefully be able to provide a better understanding of the potential to develop Sengkubak as a business opportunity in Sintang.



## **EXECUTIVE SUMMARY**

To develop a business case for conservation, Kopernik conducts this study following four main steps: identification of land ownership, initial assessment and collaboration, research & experimentation, and replication

PHASE I PHASE II

# IDENTIFICATION OF LAND RIGHTS GRANTED

 Identify land and communities at risk of being unproductive or converted into palm plantation

# **ASSESSMENT & PARTNERSHIPS**

- Identify commodities that are environmentally sustainable and economically viable.
- Build partnerships with the local government and community.

#### **RESEARCH & TESTING**

- Map and analyze the commodity value chain from production to consumption.
- Design and test simple technology to improve the process.
- Proof of concept

## SCALE UP/REPLICATION

 Scale up simple technology by local community organizations with support from local government

## **NEXT STEPS**

Based on the success of activities in Sintang, Kopernik sees this as an initial step in supporting the development of business for conservation at the local level. Therefore, Kopernik aims to continue developing business cases in other regional areas to ensure lands continue to be protected.

#### LOCATION:

- Sanggau
- Sintang
- Siak

#### **TIMEFRAME:**

• Jan 2020 - Des 2021



## **ABOUT THIS REPORT**

## Discussion of Sengkubak will focus on three aspects, namely plant studies, market potential, and cultivation



Sengkubak leaves are known to contain glutamic acid and used for generations by the Dayak community as a flavor enhancer in cooking. This plant is also often used as a traditional medicine for headaches or stomach ailments. The benefits and characteristics of the habitat make this commodity has potential to be developed to improve the welfare of the community in the forest area and to increase community awareness of the preservation of their forest.



#### **MARKET POTENTIAL**

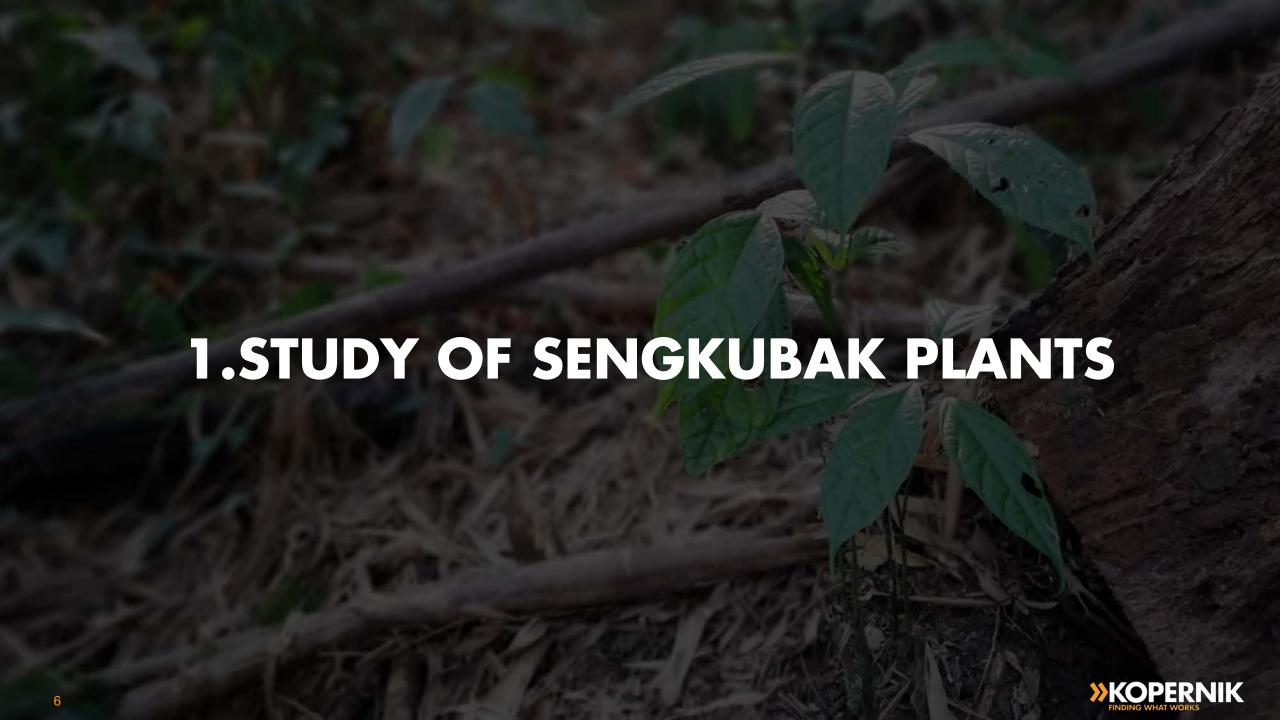
Based on the exposure and responses from the media, Sengkubak has specific market characteristics and its development as a commodity can be directed to the processed food seasoning industry, ecotourism, and creative culinary.

Sengkubak leaves can be processed into special spices from Kalimantan. The ecotourism sector can benefit from the uniqueness of these plants by creating a package of activities such as "foraging" and "banquet from the forest". The uniqueness of Sengkubak also has an attractive value for traditional culinary lovers.



The findings in the field show that the biggest challenge in developing Sengkubak commodities is crop cultivation. Research on cultivation techniques is a top priority that must be done because some efforts to domesticate Sengkubak plants from the forest to the garden by local villagers have not provided a satisfactory level of success. Plant breeding techniques such as cuttings, grafts, and tissue culture can be tested to find out the most effective cultivation techniques.





## 1.1 GENERAL REVIEW



Scientific Name	Pycnarrhena Cauliflora		
Description	<ul> <li>It has pointed oval leaves</li> <li>The average height of a tree is 1 meter or more if it propagates in trees</li> </ul>		
Habitat	<ul> <li>Hilly areas or valleys with secondary forests.</li> <li>It grows wild among large trees and protected from direct sunlight</li> </ul>		
Usage	<ul> <li>Flavor enhancer in cooking</li> <li>Medication for headaches and food poisoning</li> <li>The seeds are believed to bring good luck</li> </ul>		

Sengkubak is a vine type plant that grows in hilly or valley areas, especially in secondary forests in West Kalimantan. Dayak and Malay people have traditionally used Sengkubak leaves for flavoring in cooking. Plants that grow wild in this forest have several times received coverage from the media. BBC Indonesia refers to it as a natural flavor enhancer from Kalimantan, because these leaves give a sweet and savory taste to dishes as flavor enhancer powder.

Several scientific studies prove that Sengkubak leaves do contain glutamate (the primary ingredient of Monosodium glutamate or MSG) and other medicinal ingredients. Kaum, an authentic-cuisine restaurant in Jakarta, has demonstrated the use of Sengkubak in several dishes that attract many consumers. Because of the unique habitat and benefits of this plant, Sengkubak has potential as a sustainable alternative commodity in West Kalimantan. However, to date, no precise cultivation techniques or extraction techniques are known so that the Sengkubak market is still limited.





## 1.2 CONTENT USAGE

#### CONTENT

- It contains 58 mg / 100 gr. of glutamic acid, which contributes to the savory taste in cooking. This component of glutamate does not taste when bound to protein but will be released and give off umami flavor through the heating process during cooking. Research about sensory analysis of the flavor shows that the best concentration of Sengkubak extract powder for cooking is at 0.25%.
- Another study showed that Sengkubak leaves in methanol extract was toxic to Artemia salina L. larvae with LC50 value
   <1000 ppm showing its potential as an anticancer substance.</li>



#### **USAGE**

#### **Natural flavoring**



Dayak and Malay people have used Sengkubak to cook cassava leaves and bamboo shoots. The leaves give a savory and sweet taste (umami) to the cuisine, which is similar to the flavor of Monosodium glutamate (MSG) powder. Villagers get Sengkubak leaves by picking them in the forest and selling them for IDR 5,000 per bunch (around 20 sheets). Each use is usually about 3-4 leaves, by slicing and finely mashing them before mixing with cassava leaves or other vegetables. Sengkubak leaves can also be dried and stored for months to be used like bay leaves.

#### **Traditional medicine**



The use of Sengkubak leaves by the Dayak community is not only as a flavor enhancer, but also as a traditional treatment for headaches, flatulence, and fever (fever compresses). The antioxidant content of this plant also has potential as an anti-cancer drug. The part of the plant called buntat (fruit), is also a part that is believed to have spiritual / magical value as a talisman to repel spirits including possessed



## THE USE OF SENGKUBAK LEAVES IN CASSAVA LEAVES COOKING









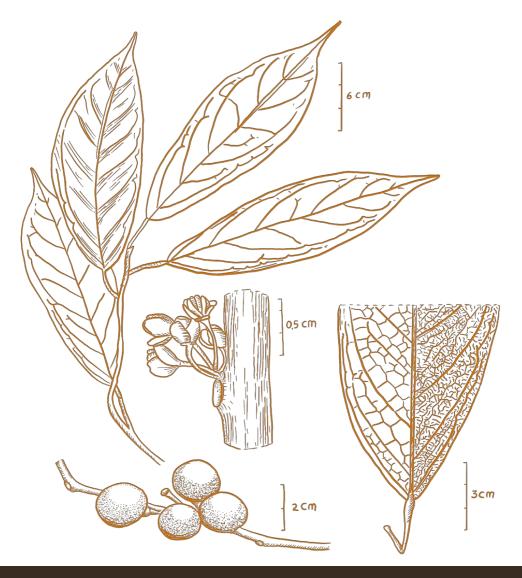
## 1.3 BIOLOGY AND HABITAT

Sengkubak habitat is found in secondary forests and lowlands with an altitude of 50-150 meters above sea level. Sengkubak distribution is known to exist in West Kalimantan, South Kalimantan, as well as several coastal areas in East Java (Malang, Tulungagung), and Sumba. Sengkubak has a spatial distribution, tends to cluster, and is positively associated with rubber trees and tengkawang. This plant belongs to the liana plant group, which means it requires another object to get sunlight. In the Sengkubak plant forest, it is found climbing / twisting into trees or appearing to stand alone among larger trees.

Morphology of Sengkubak Plants				
Trunk	Sengkubak or Pycnarrhena cauliflora plants have an average height of 1.5 meters to dozens of meters if they spread to trees.			
Leaf	Square oval-shaped leaves measuring 5-12 cm with lateral leaf bone and shiny on both surfaces.			
Fruit	Along the stems grow small flowers that are used as a reproductive tool with a seedling potential of around 69% Dark brown fruit 2 cm in diameter.			



Research on ethnobotany in Sengkubak states that the potential for growing this plant is an average of 14 individuals per hectare, making this plant quite rare to find in its natural habitat.



Sketch of leaves, flowers and fruit from Sengkubak plants.



## 1.4 VALUE OF NATURE SUSTAINABILITY

## Sengkubak and Community Forests (HKm)

HKm is a state forest whose primary purpose is to empower people in and around the forest area. HKm is one of the policies issued by the Ministry of Forestry to reduce the rate of deforestation in Indonesia, by way of forest management by the people who can provide welfare for the community while maintaining forest sustainability.

The Sengkubak habitat study emphasizes that this plant usually grows under large trees in the forest and positively associates with plantation commodities such as rubber. The association indicates that Sengkubak is not a monoculture plant and has close links with the biodiversity of an ecosystem.

Sengkubak can be a forest commodity that can provide valuable benefits to the community around the forest area. If this forest commodity is proven to be a source of income, people will be more aware and concerned with forest sustainability, which, in turn, is an embodiment of the concept of community forestry.





Villagers pick Sengkubak leaves for daily cooking needs.





## 2.1 MEDIA EXPOSURE

Media exposure through online articles, video coverage, and national level events on Sengkubak shows interest from various parties. It also opens up opportunities for business development in the culinary sector.



KAUM, an authentic-cuisine restaurant in Jakarta in collaboration with LTKL, held a culinary exploration visit to Sintang and raised Sengkubak in one of Sintang's signature creations: Ayam Kampung Liak. This event succeeded in attracting interest and received positive responses from the visitors.

#### **EXPO EVENT**



The Sintang District Government presented Sengkubak as one of the potential commodities from Sintang at the APKASI Expo event, July 2019. At the end of the event, one of the multinational companies engaged in instant food was interested in getting samples of Sengkubak powder.

#### **VIDEO REPORT**



BBC News Indonesia made a video coverage of "Sengkubak, a natural flavor enhancer from Kalimantan." The BBC team also conducted a simple experiment with cassava leaves cooking with and without Sengkubak. The results showed that the cooking of cassava leaves with Sengkubak were more tasty and delicious.

# MARKET POTENTIAL

Food Product

> Ecotourism

Creative Culinary



## 2.2 BUSINESS OPPORTUNITIES

Sengkubak has specific market characteristics (niche market) because of its use in traditional cuisine, local wisdom and environmental sustainability. Therefore, Sengkubak market can be categorized into three industry segments, namely Food Products, Eco-tourism and Creative Culinary Industries.



Indonesian local food products are highly valued when exported because they are considered exotic. This uniqueness makes Indonesian food and beverage products manage to secure quite large transactions in various international exhibitions.

Seeing this, Sengkubak leaves have enough potential to be processed and marketed as a spice in cooking because they have a unique value from Kalimantan.



Until 2018, the number of tourists visiting West Kalimantan to visit forests and other natural attractions reached 70,000 people. Sengkubak has the potential to become an additional attraction for visitors because it can only be found in its natural habitat in the forest.



Based on the high contribution of the culinary sector to the national creative economy, the culinary business trend in 2019 is expected to continue to increase, mainly if consumers are increasingly directed towards authentic menus that are not yet common in the market. The seasoning products from Sengkubak have the potential to support the creative culinary sector of the archipelago because of its uniqueness.



## 2.2.1 BUSINESS OPPORTUNITIES AS FOOD PRODUCT

In terms of business opportunities as food products, there are three determinants of whether or not a product is accepted by consumers, namely taste, health benefits, and price point.



#### **TASTE**

Kopernik, together with Javara, a social business that operates in the value chain of native Indonesian agricultural products, conducts sensory tests using Sengkubak leaves. This short test shows that dishes with Sengkubak leaves are sweeter and tastier compared to dishes without artificial flavoring but still cannot match the savory taste with dishes using chicken broth. The sensory test indicates that Sengkubak, as a flavoring, will compete with similar products such as chicken broth and mushroom broth.



# For generations, this plant has been used as a natural remedy. These leaves are also identified as having antioxidant properties that are useful for preventing cancer. This characteristic can be an attraction for consumers who prioritize a

healthy lifestyle that can add value to the selling point.



Businesses need to pay attention to the production capacity of Sengkubak products to determine the appropriate price point. However, so far, the practice of extracting Sengkubak (into fine/coarse powder) is only for household scale, not yet reaching commercial scale.





## REFERENCE PRODUCTS

Food Product







			MICE SALE
Category	General products (spices)	General Products (seasoning)	Premium seasoning products
Product Name	Dry Bay Leaves	Mushroom Broth	Basil Salt
Contents	Bay Leaf	Mushrooms, salt, potatoes, carrots, tomatoes, coconut sugar, celery, onions	Basil, Salt
Usage	Used mainly as a food-flavoring spice	Mixed into all types of cuisine as a flavor enhancer.	Added to the chili sauce, or pepes cuisine to give a distinctive basil aroma.
Selling Price	Rp 12.000 – Rp 20.000	Rp 10.000 – Rp 40.000	Rp 35.000
Comparison with Sengkubak products	Sengkubak has been sold as dried leaves, and can be sold to a wider market (not only limited to traditional markets).	The content of glutamate in Sengkubak gives a savory taste to the cuisine and can be combined with mushrooms or tomatoes so as to provide a stronger taste.	Sengkubak can be mashed and combined with other spices as a seasoning product with a distinctive taste of Borneo.



## 2.2.2 BUSINESS OPPORTUNITIES IN THE ECOTOURISM SECTOR

One of the policies in the development of West Kalimantan tourism destinations is the integration of natural, cultural and manmade tourism attractions, which aim to make a sustainable contribution to the local community. This emphasizes the importance of a tourism package that combines natural and cultural appeal so that it can be the unique selling point of a tourist destination.

#### 'FOREST TO TABLE' CONCEPT

Ecotourism activities can incorporate the concept of 'forest to table' which carries the presentation of dishes with ingredients that are picked directly from the forest. Ecotourism activities can include 'foraging' activities or searching for wild plants such as Sengkubak in the forest and collected as food ingredients.



Agung, a local villager in Tembak who introduced Sengkubak in its natural habitat in the traditional forest of Tembak village, Sintang Regency.



The ingredients that are picked wild in the forest can then be processed into dishes that are served directly to tourists.





## 2.2.2 BUSINESS OPPORTUNITIES IN THE ECOTOURISM SECTOR

The Tembak Village in Sintang has the potential to be developed as a traditional tourism and conservation destination such as Sungai Utik forest, Batu Lintang Village, Kapuas Hulu, given its similar characteristics. With this development, Sengkubak could become one of the points of attraction foraging

Eco-Tourism

## SUNGAI UTIK, KAPUAS HULU, KALBAR

## **TEMBAK, SINTANG, KALBAR**





Sungai Utik Forest, covering an area of 9,452 hectares, has been declared a tradition forest. The main income of the community is selling rubber, tengkawang, and agarwood from the forest, and occasionally from tourist visits and weaving sales.



This sub-village has 50 hectares of customary forest. The people of this hamlet are committed not to turn the forest into an oil palm plantation. The main income of the community is from rubber tapping. Once a year, this village also receives tourist groups from abroad.

Community



The Iban tradition stipulates restrictions on logging, hunting of animals and introducing adat sanctions if there is a violation. The Dayak Iban Community won the 2019 Equator Award, along with 22 local and indigenous communities around the world from the United Nations Development Program.



The community limits logging for each head of family. Mothers have a shared garden, and are planted with vegetables for daily use. There are also medicinal gardens planted with herbs such as Bawang Dayak and Sengkubak.

Location



Kapuas Hulu Regency itself is one of the three districts included in the Heart of Borneo, which is an area designated for nature conservation and ecotourism. Sungai Utik can be reached 70 km with quite good road conditions from the nearest airport in the city of Putussibau.



Tembak Village, located in Tempunak sub district, can be reached by a 4-hour drive from Sintang Airport. There is a betang house (Dayak traditional long house) that displays the history and philosophy of the Dayak community in living side by side.



## 2.2.3 BUSINESS OPPORTUNITIES FOR CREATIVE CULINARY

Kalimantan is famous for having a variety of unique forest plants and can be consumed as vegetables and medicine. However, only Sengkubak is known to provide sweet and savory flavors to the cuisine. Because of this competitive advantage, Sengkubak can be a regional specialty commodity that can spur the development of creative culinary businesses in Sintang.

Sengkubak application in the creative culinary business also does not require processing or large capital. This leaf has characteristics such as bay leaves in cooking so that it can be used directly in a fresh or dry condition.

Authentic cuisine is usually hunted by culinary lovers who are always looking for unique new things. Therefore, to increase the attractiveness of consumers in this industry, new cuisine creations are still needed and the development of a variety of dishes with Sengkubak.





The culinary tourism market in Banyuwangi area can be a source of inspiration for further development of the creative culinary business that embraces all levels of society.



Local culinary product initiatives offer a unique tourism experience between consumers and producers directly. The variety of food and beverage products offered by an area has major implications for the economy, culture and sustainable development.





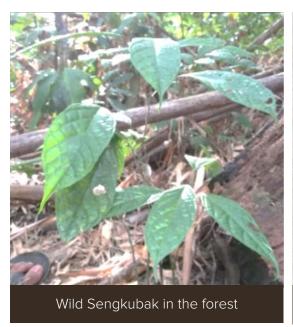
## 3. SENGKUBAK CULTIVATION EFFORTS

## Efforts to domesticate Sengkubak from their natural habitat in the forest to the garden show different results.

This indicates differences in habitat vegetation, where vegetation in forests is much richer than in gardens and can affect nutrients contained in the soil.

The experience of respondents who have moved Sengkubak from the forest to the yard of the house:

- Sengkubak is able to flourish and reach a height of 2 meters, but has not been able to produce new tillers.
- Plants appear to have wilted, smaller, yellowish leaves. But in terms of taste there is no difference with Sengkubak found in the forest.
- Plants look different from those found in the forest.

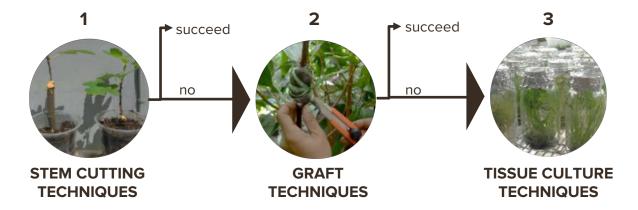




## Research on Sengkubak breeding

The findings in the field show that there are still challenges faced by villagers in all Sengkubak planting efforts, especially to produce new tillers. For this reason, some experts from the STKIP Persada Khatulistiwa Sintang recommend systematic research on the most effective breeding methods to avoid the extinction of these plants in the forest if taken continuously.

#### Research recommendations for Sengkubak cultivation methods:







## 4. CONCLUSION

#### POTENTIAL OF SENGKUBAK

- Sengkubak leaves have unique benefits as a flavor enhancer that has been used by local people for generations.
- Sengkubak plants are not monoculture plants and can only grow in synergy with other plants, thereby, supporting biodiversity in an ecosystem.
- Exposures and reviews from the media illustrate the market potential in three sectors, namely in the food, tourism, and creative culinary industries.





If the use of Sengkubak could improve the welfare of the community around the forest area, a sense of awareness will grow to preserve the forest as a natural habitat for the Sengkubak plant.

#### **ACTION STEPS**



- Conduct research on appropriate breeding and cultivation methods.
- Trial several extraction methods and determine the exact extract percentage.



 Creating ecotourism packages with unique activities so that they can attract tourists with special interests



 Inviting Indonesia creative chefs to create new cuisine creations with Sengkubak to further provide training to local chefs.





## **METHODOLOGY**

#### **DATA COLLECTION**

This study uses the qualitative interview method as the main method of data collection. Interviews with respondents were carried out in person (face-to-face). Two sets of questionnaires were developed for citizen respondents and business actors.



#### **Literature Review**

A review of various scientific journals and articles on Sengkubak plants.



#### Interviews with local villagers

Interview with village officer and group discussion (Focus Group Discussion) with villagers



#### Interview with business players

Interviews with culinary restaurant owners and social business owners for food products.

#### **DATA ANALYSIS**

Records of the results of the interview are transcribed into written documents. The information and data collected are then analyzed according to the Issues mentioned in the report's objectives. The issue is then grouped into three major themes:

- 1. Study of plants: review the use and habitat of Sengkubak.
- 2. Market potential: examine the right industrial market for Sengkubak and its development potential.
- 3. Cultivation: highlighting crop cultivation and plant breeding techniques.

#### **RESEARCH LIMITATIONS**

This research has limitations, among others:

- 1. Lack of direct verification of some domestication efforts carried out by villagers due to planting locations that are far and out of reach.
- 2. Lack of information regarding plant development from young to old. Sengkubak plants are quite rare in the forest, so not many villagers know the complete development of this plant.



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## **ABOUT PARTNERS**

In the spirit of collaboration to find the best solutions to overcome poverty, Kopernik works closely with local partners in the implementation area to ensure the sustainability of the programs that are carried out.



#### Lingkar Temu Kabupaten Lestari (LTKL)

is a collaborative forum formed and managed by the Regency Government to realize sustainable development. Through LTKL, the direction of district development is supported to be able to balance economic, social and environmental aspects through the collaboration of all stakeholders, both within the district and between member districts



**Sintang Regency Government** is one level II autonomous region in the province of West Kalimantan. The Regency has a vision to realize the Sintang community that is smart, healthy, advanced, religious and prosperous, which is supported by the application of good and clean governance in 2021



## **ABOUT KOPERNIK**

Kopernik conducts experiments to find the best solution in overcoming poverty. We prioritize working towards achieving global goals for sustainable development with remote communities

## **OUR VISION**



Looking for the best solution in efforts to reduce poverty in remote areas.

#### **OUR MISSION**



A world where disadvantaged people living in remote areas can realize their full potential and enjoy a dignified life free from poverty.

#### **OUR WORK**



Through rapid prototyping and experimentation, we work directly with communities in remote areas, and our partners from the development, public and private sectors to reduce poverty.

