

Product and Institutional Development of Gambier Agricultural Markets in Rural Indonesia: A Case Study of Nagari Pangkalan, Sumatra Barat Province

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ABSTRACT

Gambier is a speciality agricultural product in Sumatra Barat Province, Indonesia. Gambier farming has improved the community economy and rural development. The problem is that the gambier products produced are still raw materials, the quality is low, and the market for gambier is not perfect. So far, there have been no real solutions and policies from stakeholders to overcome these problems. This study aims to find solutions in product development and institutional improvement of the gambier market. This research uses a qualitative method. The case study is in Nagari Pangkalan, one of the centres of gambier farming in Sumatra Barat. The results showed that it is important to develop gambier products in the form of catechins and tannins in Nagari Pangkalan. The high price of catechins and tannins can increase farmers' income. It is necessary to build a gambier agribusiness centre by involving farmer groups, cooperatives and the government in Nagari Pangkalan. The Gambier Agribusiness Centre will reduce the dominance of gatherers and increase the role of cooperatives in the gambier market. The government designs regulations related to gambier exports by involving cooperatives. The export of gambier through cooperatives will shorten the marketing flow of gambier and benefit gambier farmers more. A gambier market that benefits farmers will indirectly help the economy and rural development.

Keywords: development, markets, gambier, rural areas

INTRODUCTION

Agricultural markets are important for people's economic activities, such as production, distribution and consumption. The market is a place to organize and facilitate business activities and to answer basic economic questions; what to produce, how much to produce, how to produce and how to distribute production (Kohls & Uhl, 2015). Agricultural markets also help poverty alleviation and food security, especially among smallholder farmers in rural areas. Agricultural markets function to capture excess production, distribute production and stabilize prices. A well-functioning market mechanism makes the exchange of goods and services efficient with low transaction costs. However, agricultural markets in rural areas often do not function well, such as a lack of access to assistance and access to finance, a lack of market information, poor producer prices, and inadequate facilities. At the global level, there is inadequate government support, such as taxes, customs, transport, security and adaptation issues (Matsane & Oyekale, 2014; Rahimi & Artukoglu, 2022).

Market problems are also experienced by the gambier (*uncaria gambier roxb*) agricultural products. Gambier products are processed from gambier leaves and twigs. Gambier produced by farmers is still in the form of raw materials, and the quality of the product is also still low. The low quality of gambier is due to farmers mixing the product with leaves and fertilisers. Mixing with other materials is done by farmers to get high yields. (Hosen, 2017). Farmers sell gambier in village markets at low prices. In addition to the low price, the price of gambier also fluctuates. The price of gambier once reached IDR 120,000/Kg in May-August 2017, and the lowest price was IDR 15,000/Kg in February-July 2018. Price fluctuations are caused by market control by gatherers. The distance between gambier villages and urban centres is also far (200-300 kilometres), making farmers dependent on gatherers in the village (Nasrul et al., 2021). In addition to the price issue, the marketing flow of gambier is also long. The marketing flow begins with farmers, village gatherers, city gatherers, and exporters. At each level, each gatherer takes a profit. The farmers bear the transaction costs of the long process. The long marketing flow and the village's distance from the city Centre make market information unknown to farmers. These problems are detrimental to farmers and favourable to gatherers (Hosen, 2017; Nasrul et al., 2021).

In addition to product and marketing issues, the gambier market institutions are also not functioning well. Well-functioning market institutions have clear rules. Clear rules will strengthen the behavioural norms of the transacting groups. Clear rules can reduce high transaction costs. Transaction costs occur due to information inequality and cheating by market participants. Ultimately, well-functioning market institutions will facilitate the transaction process and benefit all parties (North, 2012). The gambier market institution in gambier center village consists of farmers and gatherers. The gatherers are divided into two groups, small gatherers and large gatherers. The small gatherers are part of and financed by the large gatherers in the village. The market structure of gambier in the village is imperfect due to the large number of farmers and gatherers (oligopsony). Therefore, the gambier market in the village is controlled by gatherers to determine the price and quality of gambier. Farmers who have low quality gambier products also receive price reductions from gatherers. The price reduction from gatherers is due to wet gambier and too much mixture (leaves and fertilizer). Unilateral pricing of gambier and price reductions from gatherers are very detrimental to gambier farmers. (Nasrul, 2017; Nasrul et al., 2021).

Gambier market problems need to be solved, considering that gambier farming has promising economic potential for the community and rural areas. Gambier is a leading export commodity and specific to the province of West Sumatra and Indonesia. Ninety-six percent of the world's gambier comes from Indonesia, the rest from Malaysia. Most of the gambier products in Indonesia come from Sumatra Barat Province (80%), the rest from Sumatra Utara Province, Sumatra Selatan Province and Riau Province (Manalu & Armyanti, 2019). Gambier production in Sumatra Barat province is currently around 14,000 tons every year. The area of gambier plantations in Sumatra Barat is 28,016 Ha. The largest production is in Lima Puluh Kota Regency, covering 16,574 Ha and after that in Pesisir Selatan Regency covering 9,963 Ha. Gambier production in Lima Puluh Kota Regency reaches 4,000 tons to 5,000 tons every year. The number of farmers involved in gambier cultivation reaches 36,978 households (BPS, 2024). The average income of gambier farm labourers is IDR 150,000 to IDR 200,000 every day. The average income of gambier landowners is twice the income of gambier farm labourers, because they use a profit-sharing system (Nasrul et al., 2023). Most gambier farmers do not have formal institutions. Very few gambier farmers are members of formal groups such as cooperatives and farmer groups. Gambier farmers usually create small groups of 2 to 5 people (informal) for cultivation and production. This condition makes it difficult for farmers to get empowerment from the government or related stakeholders

(Munggari et al., 2022). Government assistance to gambier farmers so far, often does not touch the problems of gambier farmers. Government assistance is more focused on cultivation and production issues, such as assistance with gambier seeds and gambier production tools. Gambier cultivation and production problems are very easy to solve by gambier farmers. This is because the cultivation and production of gambier has been going on for a long time and for generations. The most important problems at this time are price issues, market institutional issues, marketing issues and product quality (Hosen, 2017; Nasrul et al., 2023).

Nagari Pangkalan (Nagari is another name for a village), one of the centres of gambier cultivation, also suffers from the same problems of gambier production (product quality) and market as above. Gambier production is still in the form of raw materials with low quality. Gambier farmers depend on the gatherers in the village market to sell their gambier. The gambier market structure is imperfect, due to the small number of gatherers and large number of farmers (oligopsony). Gambier farmers are often disadvantaged by gatherers in determining the price of gambier. Farmers' gambier prices will also be reduced due to the quality of gambier that is determined by the gatherers. Since 2021, a gambier cooperative has been established in Nagari Pangkalan. The cooperative's business is also limited to producing and buying gambier. However, due to limited capital, the cooperative has not been able to compete with the gatherers in the village.

Considering the potential and problems of gambier farming, the purpose of this research is to find solutions and policies to develop gambier products, markets and marketing in rural areas. The development of agricultural products in rural areas requires market institutions that function and run well. Rural market institutions require rules, institutions and social structures. Therefore, transactions in rural markets benefit all parties and prosper the community (North, 2012; Slater & Tonkiss, 2001). So far, there have been no solutions and policies from the government and stakeholders to solve these problems.

METHODOLOGY

This research examines the behaviour, functions and problems of institutions and actors involved in the transaction process in the gambier market, so the suitable method is a qualitative research method. Qualitative research methods seek to uncover, understand and comprehend organisations, groups and individuals (Strauss & Corbin, 2008). This research uses a case study design. The case study design is an appropriate strategy for research that uses the main how or why questions, as well as the limited time the researcher has to control events. The focus of case study research is contemporary phenomena and tracking contemporary events. Furthermore, the case study design focuses the researcher on the design and conduct of the research (Yin, 2017). The research or case study was conducted in Nagari Pangkalan. Nagari Pangkalan is one of the gambier centre villages in Lima Puluh Kota Regency, Sumatra Barat Province, Indonesia. Besides being a gambier centre village, Nagari Pangkalan has a Gambier Cooperative. The cooperative has 8 gambier farmer groups as its members. Field data collection was conducted from January to August 2023. Data collection was conducted through field interaction and online communication of both secondary and primary data.

Primary data was collected through in-depth interviews which involved 11 informants. The informants were 5 gambier farmers and 2 gambier gatherers. In addition to farmers and gatherers, in-depth interviews were also conducted with 2 leaders of gambier cooperatives, the head of the cooperative office and the village head. To complete the data and design the institutional model, a Focus Group Discussion (FGD) was conducted. FGDs were conducted twice. The first FGD was conducted with farmer groups that are members of the gambier cooperative. The second FGD was conducted with the gambier cooperative. FGDs were conducted behind closed doors without involving the head of the institution to avoid domination in the discussion. The thematic nature of the FGD data focused on the market institutional development model, related to institutional form and function. Informants and interview sources and FGD participants were determined purposively on the grounds that they were willing to be interviewed and knew the problems. Secondary data was taken from the most recent and accurate cooperative reports, village data, and sub-district statistics (Miles et al., 2019; Moleong, 2016).

Data analysis was conducted through qualitative data analysis. The stages of qualitative data analysis are data reduction, data display, and conclusion drawing. To get high confidence in qualitative research, qualitative triangulation analysis was carried out. Triangulation analysis combines methods, sources and theoretical techniques. The triangulation technique is done by checking the degree of trust in the research results with several data sources with the same method. In this case, the results of interviews with

farmers, institution administrators, as well as agencies related to the same problem are compared. Source triangulation is done by comparing data from individual interviews with the results of FGDs. The results of FGDs were also analyzed to design a model for the development of the gambier market institutions. Next is theory triangulation, which is achieved by comparing the results of the analysis with themes and explanations. The last is comparing the research results with logical thoughts, before verifying them with the research subject (Miles et al., 2019; Moleong, 2016).

RESULTS AND DISCUSSION

Product and market development potential of gambier farming

Nagari Pangkalan is one of the centres of gambier cultivation and market in the Pangkalan Koto Baru Sub-district. The area of gambier farmers is 4,417 Ha with a total production of 3,0028.66 Tonnes every year (BPS, 2025). Gambier product is the sap that is deposited through the process of boiling and pressing the leaves of the gambier plant (*Uncaria gambier Roxb*). Gambier precipitated after the pressing process is in the form of a paste. Next, the gambier paste was moulded with a small pipe with a diameter of 1.5 cm and a height of 3 cm. After moulding, the gambier is dried by sunlight, if it rains, the gambier is dried on a boiling stove. The drying process takes 2 to 3 days. The average yield of gambier production is around 10 to 15 Kg every day. The production process is carried out in production houses (felt houses) located in farmers' fields. After one week, the dried gambier is sold to gatherers in the village market.

About 35% of the people in Nagari Pangkalan are engaged in gambier farming. Gambier production is carried out by 2 or 3 people for one land (about 2 Ha). The average production ranges from 200Kg to 250Kg in one week. Farmers sell gambier products once a week on Saturdays at the village market. The products produced by farmers are still raw materials that are sold at low prices. Gambier is sold to village gatherers for around IDR 50,000/Kg. On average, farmers earn IDR. 200,000 every day. Gambier produced by farmers is also of low quality, because farmers mix their gambier with other ingredients to get a large yield. Farmers often mix their product with fertiliser and use gambier leaves. The mixing is done during the gambier production process. This condition makes the price of gambier cheap due to low quality. The quality of the gambier produced is lower because it is still wet. Gatherers will reduce the price of the mixed and wet gambier by up to IDR. 5,000/Kg from the market price. The price of high quality gambier reaches IDR.120,000/Kg (July 2023).

As a gambier centre, Nagari Pangkalan needs to develop gambier products. Gambier can be developed in the form of semi-finished products in the form of catechins and tannins. Catechins and tannins are chemical substances found in gambier products. Product development also solves the problem of the low price of gambier. Catechin has a very expensive price, the price of catechin reaches IDR. 2,000,000/Kg. The price of tannins is cheaper, but still high compared to the price of ordinary gambier. The price of tannin reaches IDR. 250,000/Kg. Catechins are used by the pharmaceutical, cosmetic and food preservative industries. Tannins are used by the textile and food colouring industries, leather tanners and wood adhesives (Cosarca et al., 2019). Training on catechin and tannin production has been conducted for gambier farmer groups in Nagari Pangkalan. Catechin and tannin production can be done at home, and the tools are simple, with affordable production costs. Catechin agro-industry development is feasible. The Revenue Cost Ratio (R/C) analysis is 2.7, and the Break Event Point (BEP) for catechin is Rp. 737,500, which is very profitable considering the current price of catechin reaches IDR. 2,000,000/Kg. Tannin production is also feasible to develop, where the results of the Revenue Cost Ratio (R/C) analysis are 1.6 and the Break Event Point (BEP) for tannin is IDR. 118,787/Kg, so it is very profitable considering the current price of tannin is around IDR. 250,000/Kg (Nasrul & Arief, 2023).

Furthermore, Nagari Pangkalan as the centre of the sub-district, also has the potential to develop a gambier market. As the centre of the sub-district, the gambier market in Nagari Pangkalan is often the destination for gambier farmers from surrounding villages to sell gambier. The large and complete village market is utilised by gambier farmers to buy various items. Nagari Pangkalan market also has a special place for gambier transactions. The gambier kiosk is where the gatherers and gambier farmers transact. The number of gambier gatherers is 7 people. But they are not always present at the gambier kiosk for transactions. The number of gatherers who transact at the kiosk is based on the price of gambier. When the price of gambier is high, more gatherers come because of the abundant production. Conversely, if the price of gambier falls, there are fewer gatherers. Gambier transactions are conducted

on Saturdays. The Nagari Pangkalan government decided on Saturday as the transaction day. On Saturdays, apart from gambier transactions, the village market is also used to transact other commodities. Other than on Saturdays, farmers sell gambier to warehouses or gatherers' houses. The strategic location of Nagari Pangkalan has the potential to become the centre of gambier market development in Lima Puluh Kota Regency, Sumatra Barat Province. Nagari Pangkalan is located on the side of the road, between Riau Province and Sumatra Barat Province. Gambier as an export commodity will be easily forwarded to exporters in Padang City (Sumatra Barat Province) or Pekanbaru City (Riau Province). Through these two cities, gambier is exported to major export destinations such as India, Pakistan, Singapore and China. While domestic demand is mostly in Jawa Tengah Province, Jawa Timur Province and Yogyakarta Province. 90% of gambier products from Nagari Pangkalan farmers are sold to exporters, the remaining 10% are sold domestically. The product potential and location of Nagari Pangkalan above can be used as one of the gambier trade centres in the Pangkalan Koto Baru Sub-district and even in the Lima Puluh Kota Regency. The central market has a positive impact on farmers' income, price certainty, and shortens the marketing flow and increases the economic growth of an area. The results show that the presence of agribusiness centres and agricultural trade centres helps farmers market their products at higher prices and market certainty. This condition will help farmers reduce their dependence on gatherers. Agribusiness centres will also shorten the marketing flow, which has been detrimental to farmers. Indirectly, agribusiness centres also help in the development of rural areas (Novita, 2020).

Gambier Agricultural Product and Market Development Model

The results of several studies show that the gambier agricultural market is not yet competitive, because the products sold are raw materials, of low quality and at low prices (Hosen, 2017; Manalu & Armyanti, 2019). Gambier products need to be upgraded from raw materials to semi-finished materials at Nagari Pangkalan. Gambier products in the form of raw materials are catechins and tannins. The price of tannin is around IDR. 250,000/Kg while the price of catechin reaches IDR. 2,000,000/Kg. Catechins and tannins can be produced on a household scale at a low cost. Catechins and tannins have many uses for various industries, both at domestic and abroad (Malrianti et al., 2018; Munggar et al., 2022). Considering the potential of gambier products, catechins and tannins, it is also necessary to develop gambier market institutions. The gambier market institution helps farmers sell their products domestically and abroad. So that gambier farmers no longer rely on gatherers. Market control by gatherers and exporters is currently very detrimental to farmers (Nasrul et al., 2023). Strengthening the gambier market is also done through government intervention. Government intervention is through regulations and institutions that control the quality of gambier products. This institution provides recommendations regarding the quality of gambier products produced by farmers. Subsequently, gambier products that already have standards are collected in cooperatives. The cooperative will sell the farmers' gambier collectively to buyers at domestic or abroad. Gambier products that have a clear quality and standard will gain the trust of buyers. The institution that regulates gambier quality can be placed in the cooperative. Sales through cooperatives also shorten the marketing chain. Through cooperatives, farmers' gambier can be sold directly to overseas buyers. Previous research has also shown that gambier market institutions help farmers find buyers and facilitate the distribution process. Market institutions also help shorten the marketing chain. A short marketing chain reduces the transaction costs charged to gambier farmers (Hosen, 2017; Nasrul et al., 2020).

A well-run market institution will increase the income of gambier farmers and indirectly play a role in rural development. For this reason, it is necessary to design a good and effective gambier market institution development model in Nagari Pangkalan. The gambier market institutional development model can be seen in the Figure 1.

The Figure 1 shows that gambier products are developed in the form of catechins and tannins. Product development is to gain new business, new markets and additional income for farmers. Production costs for the highest catechins and tannins are only about 60%, so profits can reach 40%. Catechin and tannin production does not require a large location. The initial stage of production can be done at home. The production process of catechins and tannins is also simple. Catechin and tannin production can be an additional livelihood for gambier farmers. Alternatively, catechin and tannin production can be done by housewives. Housewives have not been involved in gambier production due to the heavy process and production in distant gambier fields. Catechins and tannins are in high demand due to their many benefits. Catechins and tannins are useful for the pharmaceutical industry, food industry, and textile

industry at home and abroad. So the business opportunities for catechin and tannin products are very promising in the future. As a new product, the market for gambier, catechins and tannins requires a process of improvement and development. Institutional improvement of the gambier market is done through the role of the government and the actors involved in the gambier market.

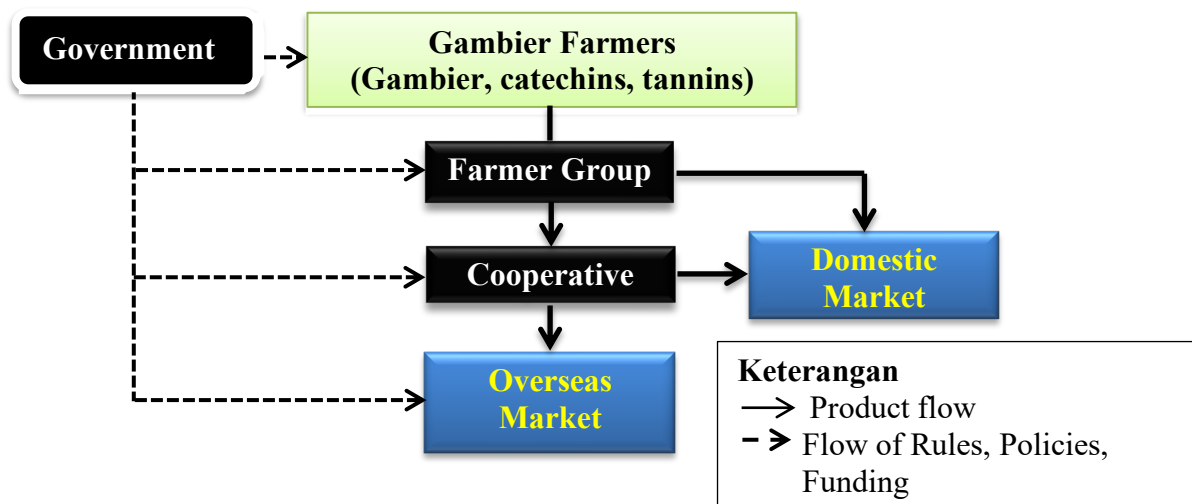


Figure 1. Institutional forms, regulations and effective transaction processes in gambier markets

There are two important institutional improvements to the gambier market. The first is to improve the long marketing flow of gambier. The long marketing flow of gambier has been very detrimental to farmers. The long marketing flow of gambier starts from farmers, small gatherers, large gatherers in the village, large gatherers in the city, and exporters. Transaction costs due to the long flow are borne by the farmers (price takers). Each gatherer takes advantage of the long process. On average, each gatherers takes a profit of around 5%/Kg from the market price. Thus, there is a very high price difference between the price at the farm level and the price of gambier abroad. Based on these conditions, the government and farmers must intervene in marketing. Marketing interference by shortening the marketing flow of gambier (black line). The domestic marketing flow can be done directly by farmers through farmer groups. Farmer groups standardize products with high quality. For foreign markets, farmer groups sell products through cooperatives.

The second improvement is the reconstruction of the gambier market institutions by the government. Reconstruction is carried out through strengthening farmer groups, strengthening gambier cooperatives and foreign market policies (dashed line). The government also needs to increase the role of farmer groups and cooperatives in gambier marketing (black box). Cooperatives, together with farmer groups, are given training and assistance to be more empowered. Empowerment can be in the form of improving the production process, improving product quality and marketing knowledge.

Furthermore, each institution involved in the gambier market needs to be strengthened and clarified. In more detail, the policies and duties of each institution involved in the gambier market are as follows:

Farmer groups

Farmers must be part of a formal farmer group. Most gambier farmers in Nagari Pangkalan are not yet formally organised into groups. In 2021, through an empowerment process from the government, a gambier cooperative was established in Nagari Pangkalan. To support the gambier cooperative, eight farmer groups were formed. Each farmer group consists of 20 to 25 gambier farmers. The eight gambier farmer groups were established by the village government. The gambier farmer groups were given empowerment such as cultivation, production and marketing of gambier products. The farmer groups are also provided with equipment and supplies such as gambier seeds, production tools and production houses. Farmers who join farmer groups will easily get business capital assistance through government financial institutions.

Results from several studies show that formal farmer groups as business units will facilitate the provision of production facilities and marketing. Formal farmer groups facilitate farmers' production and develop

various commodities in the farming business (Arsyad et al., 2018). Formal farmer groups will get extra support to maximize production and capacity building (Ingutia & Sumelius, 2022). Formal farmer groups can be an effective alternative, depending on the specific conditions and adaptation of the model to the local context (Agarwal, 2018).

Cooperative

Nagari Pangkalan has one gambier cooperative named Gambier Syariah Anam Koto Mandiri Cooperative. This gambier cooperative is still new, established in 2021. This gambier cooperative accommodates eight gambier farmer groups. However, the cooperative's business is still limited to producing and buying gambier from farmers. The existence of the cooperative is very useful for gambier farmers. In 2022, the cooperative received assistance from the government for production tools and equipment. The tools and equipment are; 2 production houses, 2 electric felts, 2 motorised tricycles and an electric dryer. The government assistance to the gambier cooperative can be utilised alternately by farmer groups. The cooperative also directly buys the produce of the farmer groups. The price given by the cooperative is higher than the price set by the gatherers. The cooperative's total production is around 70kg every day. Current production is still mostly in the form of dried gambier. Catechin and tannin production has been carried out, but is small. Catechin and tannin products have not yet found buyers in large quantities. The dried gambier produced and collected by the cooperative cannot be exported directly, as it finds buyers abroad. Other business units in the cooperative are also not yet running. In the future, the cooperative needs to add and run several business units such as: cultivation and production, savings and loans, joint marketing and supervision. The functions of these business units are as follows.

Cultivation and production business unit. The cultivation and production business unit provides various cultivation and production equipment and supplies. Farmers can buy or pay in instalments for the tools and equipment they need. The cooperative provides cheaper prices than the market price. The location of the village away from the city will also help farmers get the tools and equipment they need. This business unit will also indirectly help reduce production costs and farmers' time. Through cooperatives, farmer groups can also receive cultivation and production assistance from the government.

Savings and loan business unit. This business unit helps farmers with their capital. This business unit can adjust the interest rate and initial loan instalment according to the needs of the gambier. The interest rate agreed by the manager is lower than other loans. The initial loan instalment is agreed upon after the production period. Gambier is usually produced after six months of planting. The agreement on interest and loan instalment time will make it easier for farmers to avoid borrowing from other parties. Farmers often borrow from gatherers for the cultivation and production process. Borrowing farmers are obliged to sell their products to gatherers who provide loans. The gatherers who provide the loan will cut the price, cut the weight of the gambier and the loan. Borrowing from gatherers is very detrimental to farmers.

Sales business unit. This business unit already exists but needs to be developed. The sales business unit is developed by preparing product profiles, packaging and branding. Furthermore, as a new product, catechins and tannins need to be promoted and sold online. Keperasi builds a website that contains product information as well as sales. The market for gambier, catechin and tannin does not only rely on the village market. The government facilitates cooperatives to market or final buyers within and outside the country. Domestic markets include the pharmaceutical industry, the cosmetics industry, and the textile industry. For foreign markets, the government facilitates cooperatives through seminars, exhibitions, and foreign cooperation.

Monitoring the business unit. This business unit supervises the quality of the products (gambier, catechins and tannins). The supervision unit also designs rules related to product standards and quality. Quality standards are monitored from the production process to product packaging. For each process, a standard operating procedure is developed. The quality of gambier produced is tested according to predetermined standards through certified institutions. Production and halal licences are prepared through relevant institutions. As an ingredient of medicines and cosmetics, the product is also authorised by the Food and Drug Administration. All permits are revised and improved periodically at the relevant institutions.

The results of several studies show that cooperatives play an important role in market certainty and the process of distributing farmers' products. Cooperatives also play an important role in the development

of agriculture and rural areas. Cooperatives have a positive impact on the income of smallholder farmers who join the cooperative, so that the cooperative can also indirectly improve the welfare of rural communities (Agarwal, 2018; Ingutia & Sumelius, 2022).

Government

Seeing the many problems of the gambier market, the role of the government is expected to help solve them. The village government helps farmers to join formal farmer groups. The government strengthens farmer groups by providing agricultural extension workers, cultivation and production equipment and supplies. The government also helps farmer groups in the form of business capital or access to financial institutions.

To strengthen the business capital and sales of farmers' products, the government needs to facilitate the establishment of cooperatives. All farmer groups join the cooperative. The government empowered the cooperative in terms of human resources and management. Strengthening and empowerment are also carried out in the business units that are formed. The local government also requested bank assistance to support the cooperative's capital. Furthermore, the government assists the process of cooperation between farmer groups and cooperatives with the business world and exporters. The government also provides capacity, facilities and infrastructure assistance for farmer groups and cooperatives to funding programmes. These supports will make it easier for farmer groups and cooperatives to access the domestic and international gambier market.

Finally, the government made rules to intervene in the gambier exports. Gambier exports must involve or go through cooperatives. Gambier exports through cooperatives will cut the long marketing flow of gambier. The long marketing flow has been detrimental to farmers. Collusion between gatherers and exporters in marketing gambier abroad is also detrimental to farmers. Regulations requiring gambier exports through cooperatives will greatly benefit farmers. Market intervention by the government through cooperatives is very possible, considering that gambier is the leading commodity in West Sumatra. The monopoly of the gambier market should be carried out by the government through cooperatives, not by gatherers and exporters. Monopoly by the government and cooperatives will benefit farmers who have been disadvantaged in the gambier market for decades.

The results show that the government needs to promote the cooperation of small farms and households with agricultural holding companies and emphasise the development of rural employment opportunities. Provide greater authority to local governments to achieve sustainable agricultural and rural sector development. Emphasise the importance of continuing decentralisation reforms for sustainable rural development (Rieznik & Beom, 2018). In the case of China, the government has successfully empowered and developed poor villages. The government plays a role in supervising trade and promoting rural products. The government also provides online consultation and coaching (Yu, 2022). The government also plays a role in building infrastructure such as roads, irrigation channels and agricultural markets. The government also encourages the improvement of farmers' institutions through farmer groups and organisations that assist farmers. Institutional improvements are also made by providing financial assistance through banks, cooperatives, and informal credit institutions. The government also encourages the use of technology that supports agriculture so that farmers can produce quickly and efficiently. Marketing of agricultural products has been pursued by the government, both regulating product quality, marketing networks, and developing technology-based marketing systems to facilitate the sale of agricultural products (Maryunani, 2020; Zulkiflibasri et al., 2022).

Solutions and policies

The results of production data and the selling price of gambier so far require the development of gambier products from raw products to semi-finished products. Gambier products in the form of raw materials have been of low quality and low price. Product development is carried out through the manufacture of gambier catechins and tannins, which have higher prices. Gambier catechins and tannins can be produced on a household scale at low cost. Production of catechins and tannins can be done by farmer housewives. Product development can gain new markets and increase farmers' income.

FGDs with resource persons recommended the development of a gambier agribusiness centre with farmer groups and cooperatives in Nagari Pangkalan. The Gambier Agribusiness Centre can provide market certainty and reduce dependence on gatherers. Gambier transactions are carried out every day at the Gambier Agribusiness Centre. The location of Nagari Pangkalan, which is passed by a provincial

road, is very strategic for gambier export options to Pekanbaru City (Riau Province) and Padang City (Sumatra Barat Province). Nagari Pangkalan is also located in the centre of Lima Puluh Kota Regency as the central gambier district in Sumatra Barat Province. The Gambier Agribusiness Centre assists the development of rural areas in Nagari Pangkalan. The Gambier Agribusiness Centre involves all existing institutions in the village, such as farmer groups, gatherers, cooperatives and village government and related stakeholders.

Finally, from the interviews and FGDs, it is necessary to reconstruct market institutions through government policy. Reconstruction of market institutions to shorten the marketing flow and eliminate farmers' dependence on gatherers. Strengthening market institutions through farmer groups and cooperatives. Cooperative units should be strengthened and developed to maintain product quality. Through cooperatives, farmers can sell their products directly to domestic and foreign industries. The government intervenes in the market through the regulation of the gambier market. Regulations govern the quality of gambier that is exported. Gambier exports must involve or go through cooperatives. The involvement of gambier exports through cooperatives will benefit gambier farmers as members of the cooperative.

Other research results show that agricultural development is to encourage institutional innovation with expertise that includes market knowledge, agribusiness, and rural finance. Agricultural village development is related to the handling of agricultural commodities in a broad sense, covering the production chain, processing of production inputs and outputs as well as supporting agricultural institutions (Hosen, 2017; Manalu & Armyanti, 2019). Farmers still find it difficult to break away from intermediary traders. They are often the smallest part of the agricultural production marketing system. Farmers' decisions to utilize agribusiness centers are strongly influenced by farmers' knowledge of agribusiness centers and informal relationships with non-center agribusiness institutions. Marketing institutions in these agricultural production centers are the establishment of agribusiness units involving input traders, farmer groups, and traders under the same management control, the development of commodity production and market information systems, and the development of partnerships (Riyadh, 2018). So far, gambier market institutions tend to be traditional and controlled by gatherers (Nasrul et al., 2015, 2020).

In addition, government policies and synergies between institutions are also needed to strengthen the gambier market. Policies and rules made in market institutions must be adjusted to the needs of gambier farmers. Agriculture in general has a high risk in the cultivation and production process. Good policies and rules of market institutions will benefit all parties, especially gambier farmers. The results show that rural institutional synergies create rules and law enforcement mechanisms to overcome market failures due to high transaction costs. Arrangements are made for joint marketing, financial loans, and payment breaks for better returns. Synergies and co-marketing have a statistically significant influence on the net profit received by farmers. Farmer group development requires synergy and government policies on loans and improved production and marketing (Bahtiar et al., 2022; Zulkiflibasri et al., 2022). The government has not played much role in addressing the institutional problems of the gambier market. The government more often provides assistance with facilities and infrastructure for gambier cultivation (Nasrul et al., 2021).

CONCLUSIONS

Farmer gambier products are currently an export commodity in the form of raw materials of low quality. The low quality makes the price of farmer's gambier cheap. The gambier market structure is imperfect, with the gambier market controlled by gatherers to the detriment of farmers. There is potential to develop gambier products in the form of catechins and tannins that have higher prices. The production process of gambier catechins and tannins is simple and inexpensive and easily adopted by farmers. Markets for catechins and tannins have the potential to be developed at home and abroad. The development of gambier products and markets helps increase farmers' income, and indirectly helps the development of rural areas.

Government policies and inter-institutional synergies are needed to establish gambier agribusiness centres and strengthen gambier market institutions. Gambier agribusiness centres provide market certainty and facilitate joint sales for gambier exports. Policies and rules made in gambier market institutions must be adjusted to the needs of gambier farmers. Empowerment of farmer groups and cooperatives is needed to strengthen the gambier market institutions. Cooperatives are potential institutions to develop gambier products and markets in rural areas. The managerial weakness of

cooperatives needs to be developed to help assist farmers in the provision of production facilities, cultivation, and marketing. Cooperatives also reduce farmers' dependence on gatherers. Conflicts of interest between gatherers and cooperatives can be addressed by involving gatherers in the cooperative. The government reconstructs and intervenes in the gambier market institutions. The government is designing gambier export regulations that involve or go through cooperatives. Gambier exports through cooperatives will shorten the marketing flow of gambier. Gambier exports through cooperatives will benefit gambier farmers as cooperative members. Gambier exports through cooperatives eliminate the monopoly of gatherers and exporters in selling gambier abroad.

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