

THE WORK TIME ALLOCATION OF LONGLINE FISHERMEN WIVES AND PRODUCTIVE CONTRIBUTION OF FISHERIES SECTOR TO HOUSEHOLD INCOME IN KARANGGANDU VILLAGE, TRENGGALEK

Curahan Waktu Kerja Istri Nelayan Pancing Ulur dan Kontribusi Produktif Sektor Perikanan Terhadap Pendapatan Rumah Tangga di Desa Karanggandu Trennggalek

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ABSTRACT

This study aims to analyze the productive working hours and income contribution of fishermen's wives to the household income of longline fishermen in Karanggandu Village, Trenggalek. The sample was determined using purposive sampling of 24 longline fishermen's wives who work productively in the fisheries sector. The results show that the types of productive work performed by fishermen's wives in the fisheries sector are fish selling, reyeng making, and smoked fish production. The amount of time spent working is 90 HOK/year for fish sellers, 123 HOK/year for reyeng makers, and the most time is spent on smoked fish production, which is 135 HOK/year. The average household income of longline fishermen is Rp. 121.224.410/year. The contribution of income from fishermen's wives who work as fish sellers is 55% (11 people), fish paste makers 5% (10 people), and smoked fish businesses 63% (3 people). The contribution of fishermen's wives' income is relatively high, especially in the smoked fish business, but only 3 people are engaged in this business due to limited capital and labor. The greater the ability to utilize production factors, particularly skills, capital, and simple technology, the greater the added value created and the contribution to the economic welfare of fishing families.

Keywords: Work Time Allocation, Fishermen's Wives, Contribution, Household Income

ABSTRAK

Penelitian ini bertujuan menganalisis curahan waktu kerja produktif dan kontribusi pendapatan istri nelayan terhadap pendapatan rumah tangga nelayan pancing ulur di Desa Karanggandu Trenggalek. Penentuan pengambilan sampel dilakukan secara purposive sampling sebanyak 24 istri nelayan pancing ulur yang bekerja produktif pada sektor perikanan. Hasil penelitian

menunjukkan jenis pekerjaan produktif istri nelayan pada sektor perikanan yaitu penjual ikan, pembuat reyeng dan usaha ikan asap. Curahan waktu kerja sebanyak 90 HOK/Tahun pada penjual ikan, pembuat reyeng sebanyak 123 HOK/Tahun dan curahan waktu kerja terbanyak yaitu pada usaha ikan asap sebesar 135 HOK/Tahun. Rata-rata pendapatan rumah tangga nelayan pancing ulur sebesar Rp. 121.224.410/Tahun. Kontribusi pendapatan istri nelayan yang bekerja sebagai penjual ikan sebesar 55% (11 orang), Pembuat reyeng sebesar 5% (10 orang) dan usaha ikan asap sebesar 63% (3 orang). Nilai kontribusi pendapatan istri nelayan tergolong tinggi khususnya pada usaha ikan asap namun hanya 3 orang saja yang melakukan usaha tersebut, hal ini karena keterbatasan modal dan tenaga. Semakin tinggi kemampuan dalam memanfaatkan faktor produksi khususnya keterampilan, modal, dan teknologi sederhana, maka semakin besar pula nilai tambah yang tercipta dan kontribusi yang diberikan terhadap kesejahteraan ekonomi keluarga nelayan.

Kata Kunci: Curahan Waktu Kerja, Istri Nelayan, Kontribusi, Pendapatan Rumah Tangga

INTRODUCTION

The fisheries sector constitutes one of the principal pillars supporting the coastal community economy in Indonesia. As an archipelagic nation with the second-longest coastline in the world, capture fisheries and aquaculture activities contribute significantly to job creation, food provision, and foreign exchange earnings (Ministry of Marine Affairs and Fisheries (KKP, 2022). The fisheries sector of East Java Province generates a growth rate of 2.42% and a contribution of 2.43%, indicating that the fisheries sector is classified as a developing industry (Sofiati *et al.*, 2022). The economy of fishing households is highly dependent on fish catch yields (Latief *et al.*, 2021). However, the lives of fishers are often marked by socio-economic vulnerability, particularly related to fluctuations in catch volume, seasonality, and limited access to resources and technology (Satria, 2015). When income from the fisheries sector ceases or continues to decline, fishing households often experience difficulties in meeting daily needs; fishing households must be able to meet basic necessities, especially food needs (Sumantri *et al.*, 2020). This condition encourages fishing households to optimize the potential of all family members in sustaining household economic resilience. The uncertainty of income earned by the head of household as a fisher in coastal communities drives household members, namely wives and children, to work in order to help meet household living needs (Rokmah A.S, *et al.*, 2019).

The role of women in the fisheries sector worldwide has gained increasing international attention; however, the contribution of women to fisheries production is still often overlooked by society, industry, and policymakers (Harper *et al.*, 2020). In the economy of fishing households, the role of wives extends not only to financial management and household consumption but also includes active participation in productive activities related to the fisheries sector. The activities of fisherwives are not limited to domestic tasks but also encompass income-generating activities such as fish processing (Taufiq & Haqiqiansyah, 2022). Fisherwives allocate substantial productive time and contribute to household income (Ayu *et al.*, 2017). The income contribution of fisherwives is sometimes still relatively low, around 33.13%, although significant (Rispanyo *et al.*, 2021). The allocation of working time by wives in the fisheries sector plays an essential role in increasing household income while reducing the economic vulnerability of fishing families (Widodo, 2020). Thus, the productive contribution of fisherwives merits attention as part of the analysis of coastal household economic resilience.

Trenggalek Regency possesses promising capture fisheries potential (Purwanti *et al.*, 2022). One coastal area whose community relies on fisheries activities is Karanggandu Village, Trenggalek Regency. The dynamics of handline fishers' livelihoods in Karanggandu Village demonstrate that household economic sustainability is determined not only by the husband's

fishing activities but also by the productive labor of the wife. One of the fisheries-related activities carried out by fisherwives in Karanggandu includes working as fish vendors, smoked-fish processors, and *reyeng* makers. These three forms of employment constitute the backbone of supplementary household income for fishing families while reflecting the significant role of women in sustaining the economic viability of coastal households. Coastal women represent highly strategic social capital for supporting the overall livelihood continuity of fishing communities (Nirmasari & Bibin, 2021). The income contribution of fisherwives is considerably high, ranging between 41–45% (Qulubina *et al.*, 2025). This indicates that the income contribution of fisherwives greatly influences the household income of fishing families.

Based on the background, this study aims to identify the characteristics of handline-fisherwives, analyze the allocation of working time among handline-fisherwives, analyze fishing household income, and analyze the productive contribution of the fisheries sector to household income in Karanggandu Village, Trenggalek. The results of this study are expected to provide a comprehensive description of gender roles in fisheries economics and serve as a reference for formulating coastal community empowerment policies.

METHODS

This research was conducted from December 2024 to April 2025 in Karanggandu Village, Watulimo District, Trenggalek Regency, East Java, known as a coastal area with abundant fisheries potential and a majority of the population working as fishermen. Sampling was conducted using purposive sampling, with specific criteria: wives of handline fishermen who work in the fisheries sector and have more than 1 year of work experience. The sample used the Slovin formula, namely 24 wives of handline fishermen who work in the fisheries sector. Data collection was carried out through direct interviews with fishermen's wives, observation, and documentation. The data analysis method according to the research objectives is:

1. The Fisherman's Wife's Working Time

A wife's work time refers to the amount of time a wife spends on various activities, both economic and non-economic. According to (Dewi Lestari & Winahyu, 2021), the amount of work time devoted to productive activities can be converted into Daily Workers (HOK) using the following formula:

$$CWK = \frac{\text{Number of Working Days (JHK)} \times \text{Working Hours (JK)}}{8 \text{ hours}}$$

Information

CWK : Working Hours

JHK : Number of Working Days

JK : Working Hours

2. Fishermen's Household Income

Fishermen's household income is the total income earned by family members working in the fisheries sector or in other sectors (Sumantri *et al.*, 2020). According to Latief *et al.*, (2021), to calculate household income, take into account total costs, receipts, and income using the formula:

Total cost

$$TC = FC + VC$$

Information

TC : Total Cost (Rp)

FC : Fixed Cost (Rp)
VC : Variable Cost (Rp)

Total Receipts

$$TR = P \cdot Q$$

Information

TR : Total Revenue (Rp)
P : Price (Rp)
Q : Quantity

Income

$$Pd = TR - TC$$

Information:

Pd : Revenue (Rp)
TR : Total Revenue (Rp)
TC : Total Cost (Quantity)

Household income is calculated using the formula (Rosyidi, 2004) as follows:

$$It = Im + If + Io$$

Information :

It : Income Of Total or Household Income
Im : Income Of Male or Husband's Income
If : Income Of Female or Housewife's Income
Io : Income Of Others or Income of other Members.

3. Contribution to Fishermen's Wives' Income

The contribution of women fishermen's income is the percentage of income earned by their wives to the total income of the fishermen's household, which reflects how active the role of women fishermen is in increasing family income for their survival (Marini and Ningsih, 2015).

$$Kr = \frac{If}{Im + If + Io} \times 100\%$$

Information :

Kr : Income Contribution of Fishermen Housewives
Im : Income of Male or Husband
If : Income of Female or Housewife
Io : Income of Others or Income of Other Members

Criteria for Contribution of Fishermen's Wives' Income

0% - 25.00% : Low
25.01% - 50.00% : Medium
50.01% - 100% : High

RESULTS

The characteristics of the respondents in this study, namely the wives of handline fishermen in Karanggandu Village, include various aspects that can provide an overview of the profile and socio-economic conditions of fishermen's households, which are reviewed based on age, level of education, experience in carrying out productive activities in the fisheries sector and the type of productive work carried out by the fishermen's wives as follows.

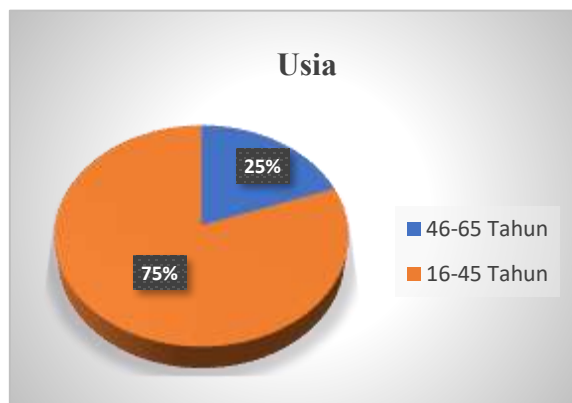


Figure 1. Age of Fisherman's Wife

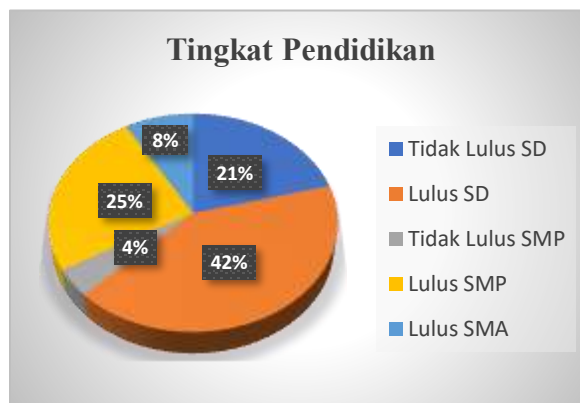


Figure 2. Fishermen's Wives' Education

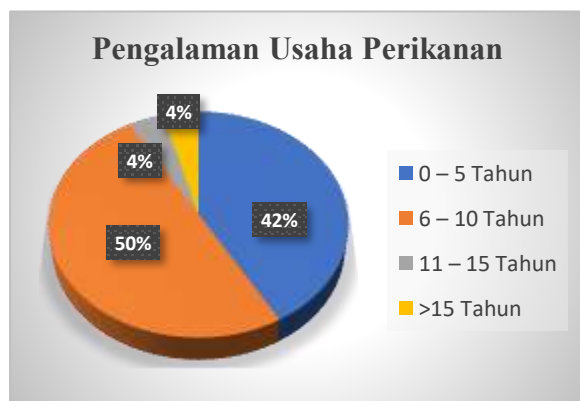


Figure 3. Fisheries Business Experience



Figure 4. Productive Fishery Activities

The working hours of handline fishermen's wives are productive activities in the fisheries sector that contribute to household income within a year. The productive working hours in the fisheries sector can be seen in Table 1.

Table 1. Working Hours of Fishermen's Wives

Productive Fisheries Activities	Average Working Hours/Day	Average Working Days/Year	HOK/Year
Fish Seller	4	180	90
Reyeng Maker	6	164	123
Smoked Fish Business	5	216	135

Household income for fishermen is the total income earned by each family member, both from primary and secondary sectors, which is then used to meet daily living needs. The calculation of household income for handline fishermen can be seen in Table 2.

Table 2. Average Income of Handline Fishermen Per Year

Fisheries Sector Income (Rp/Year)	Alternative Livelihood Income (Rp/Year)	Total Income (Rp/Year)
82,159,704	39,064,706	121,224,410

Table 3. Average Income of Handline Fishermen's Wives Per Year

Productive Activities of Fishermen's Wives	Average Value (Rp/Year)		
	Reception	Total cost	Income
Fish Seller	151.440.000	2.137.273	149.302.727
Reyeng Maker	12.168.000	5.574.000	6.594.000
Smoked Fish Business	213.800.000	7.530.000	206.270.000

Table 4. Average Household Income of Handline Fishermen Based on Wife's Fishery Productivity Per Year

Productive Activities of Fishermen's Wives	Husband's Income (Rp/Year)	Wife's Income (Rp/Year)	Total Household Income (Rp/Year)
Fish Seller	121,224,410	149,302,727	270,527,137
Reyeng Maker	121,224,410	6,594,000	127,818,410
Smoked Fish Business	121,224,410	206,270,000	327,494,410

The contribution of wives' income to household income is the amount of income earned by wives, both from fisheries and from other work, to the total household income. This contribution is usually measured as a percentage of total household income and serves as an important support in meeting daily living needs, reducing economic vulnerability, and improving family well-being. The level of income contribution of wives of handline fishermen is shown in Figure 5.

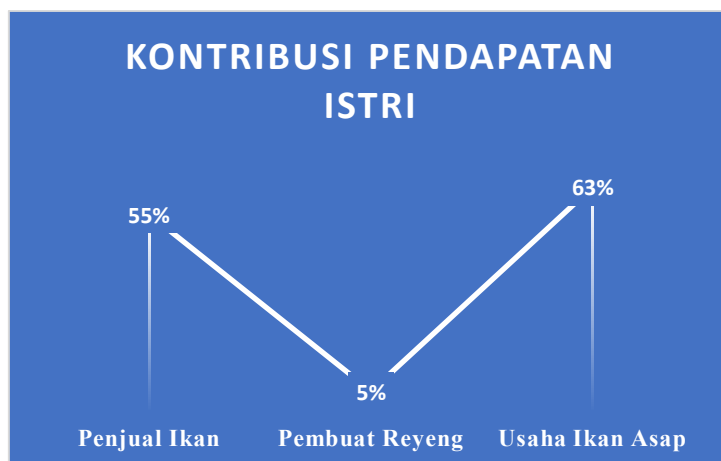


Figure 5. Level of Contribution of Fisheries Sector Revenue

DISCUSSION

Karanggandu Village is a village located in Watulimo District, Trenggalek Regency. Karanggandu Village covers an area of 52.87 km² (52.87 ha). Geographically, the area of Karanggandu Village is situated at 111°41'30.01" East Longitude and 8°16'59.99" South Latitude (BPS Watulimo, 2024). Karanggandu Village directly borders several districts and villages: to the west, it borders Munjungan District; to the north, Margomulyo Village and Sawahan Village; to the east, Prigi Village and Tasikmadu Village; and to the south, it borders

the Indian Ocean. The population of Karanggandu Village engaged in fishing activities amounts to 292 individuals, with the majority of Karanggandu fishermen using line-and-hook fishing as the main fishing gear, totaling 24 fishermen. This type of fishing gear is commonly used due to its simplicity and ease of operation. Line-and-hook fishermen in Karanggandu Village typically carry out fishing activities an average of five times per week. Fishing activities are conducted as one-day fishing from 06:00–17:00 WIB, while night fishing occurs from 17:00–06:00 WIB.

The productive activities of line-and-hook fishermen's wives in the fisheries sector include operating as fish sellers, reyeng makers, and smoked fish business operators. Age is also a factor influencing participation in productive fisheries activities. The majority of line-and-hook fishermen's wives in Karanggandu Village engaged in productive fisheries activities are aged 16–45 years (75%) and 46–65 years (25%). The demographic structure plays an important role in understanding the contribution of fishermen's wives to household economies. With most wives in the productive age range, their participation in supporting household income becomes increasingly significant. Productive-aged fishermen's wives have a greater opportunity to engage in various supporting activities, such as processing fish catches, marketing activities, and other side businesses (Kusnadi, 2002; Satria, 2015; FAO, 2018).

The education level of fishermen's wives remains relatively low. The majority of fishermen's wives are primary school graduates (42%), and 21% did not complete primary school. This condition reflects the limited educational attainment of the community, which ultimately can impact human resource quality and limit opportunities for improving socio-economic welfare in Karanggandu Village. Education is a fundamental factor in development, as it directly contributes to the enhancement of human resources quality and productivity (Todaro & Smith, 2015). This condition affects the community's ability to adapt to economic changes, technological developments, and employment opportunities in the productive sector. Nevertheless, fishermen's wives have access to coastal resources to carry out their productive activities, which do not require high educational qualifications (Nirmasari & Bibin, 2021). Small-scale fishermen's livelihoods are highly dependent on natural capital, namely the abundance of fish resources (Saksono *et al.*, 2023).

Experience in the fisheries sector is important for measuring expertise and skills in carrying out fisheries business activities, as not all women have the same experience or social status (Ansaar, 2018). Based on experience in managing productive fisheries enterprises, most fishermen's wives have been involved in these activities for a considerable period. Fifty percent of respondents have been engaged in such enterprises for 6–10 years, 42% for 1–5 years, and a small proportion for more than 15 years. This condition indicates that the involvement of fishermen's wives in productive enterprises is not temporary but part of a livelihood and economic diversification strategy for fishing households. This aligns with the livelihood strategy concept, which explains that fishing households tend to diversify livelihoods to reduce economic vulnerability due to fluctuations in catch results. The duration of business experience is proportional to skill level, creativity, and adaptability to market dynamics. Significant factors affecting fishermen's wives' work in the fisheries sector include age, length of work experience, education duration, and wage amount (Simanullang, 2020). Thus, the long experience of fishermen's wives serves as significant social and economic capital supporting coastal household economic resilience (Yustiani & Ramli, 2018).

The working hours of line-and-hook fishermen's wives in Karanggandu Village are divided into domestic and productive activities. This study, however, specifically focuses on analyzing working hours of wives in the fisheries sector, although some wives also engage in non-fisheries work. Productive fisheries enterprises of line-and-hook fishermen's wives in Karanggandu include fish selling, reyeng making, and smoked fish business. Fish sellers work an average of 4 hours/day for 180 days/year, assuming five productive days per week, resulting in 90 HOK/year. This activity occurs only during the fishing season. Reyeng making requires

123 HOK/year, assuming 164 working days/year and 6 hours/day. This activity utilizes the abundant bamboo surrounding Karanggandu Village, attracting many wives to engage in this business. The smoked fish business requires 135 HOK/year, assuming 216 working days/year and 5 hours/day. This enterprise takes advantage of the abundant and easily available fresh fish resources. Coastal tourism potential encourages this business, targeting tourists visiting the Trenggalek coastal area. The smoked fish business operates year-round, with peak demand during holidays and Eid al-Fitr when many tourists visit.

Household income of line-and-hook fishermen is calculated based on the husband's income from fisheries activities and additional income from alternative livelihoods during off-fishing periods. Household income also includes the contribution of wives actively involved in productive fisheries enterprises. In the context of Karanggandu line-and-hook fishing households, children's income is excluded as they are still in education and not yet employed. The average income of line-and-hook fishermen is Rp.121,224,410/year, with alternative livelihoods contributing 32% from forest farming commodities, such as cloves, durian, and coconut. This indicates that most Karanggandu fishermen still rely on terrestrial natural resources to support household economies, especially during off-fishing periods.

The income of line-and-hook fishermen's wives shows that productive activities significantly contribute to household income. Income from fish selling amounts to Rp.149,302,727 (11 respondents), reyeng making Rp.6,594,000 (10 respondents), and smoked fish business Rp.206,270,000 (3 respondents). Among the three types of productive fisheries enterprises, smoked fish and fish selling contribute the largest net income with high profit margins due to relatively low costs. However, the smoked fish business faces challenges at certain times, mainly due to scarcity of fresh fish caused by decreased catches, especially during bad weather or off-peak seasons. Rising fish prices are also a significant issue, as limited stock forces purchases at higher prices, reducing profit margins. Moreover, raw fish quality may be inadequate due to storage and transport delays, lowering product quality. When local fish stock is low, raw materials must be sourced from other regions, increasing time and transportation costs. Reyeng making contributes relatively small additional income, serving more as complementary revenue. These findings emphasize that diversification of wives' enterprises can strengthen household economic resilience, particularly through trade and processing of fisheries products at larger scales. This aligns with previous studies showing that longer production time correlates with higher income (Putri & Fakhrudin, 2022). The role of women in smoked fish processing strongly supports household economies (Maradia *et al.*, 2021). Small household-based enterprises, such as selling fresh and processed fish, are crucial for sustaining fishermen's livelihoods amid catch uncertainties. This study confirms that fishermen's wives' roles are not merely supplementary but strategically important in strengthening coastal household economies (Qulubina S.G & Wiyono S.E, 2025).

Based on total calculations, household income of line-and-hook fishing households varies according to the type of productive fisheries activity undertaken by the wife. Households with wives working as fish sellers earn Rp.270,527,137/year; those with wives in reyeng making earn Rp.127,818,410/year; and those in smoked fish business earn Rp.327,494,410/year. Each wife's income contributes to the total household income of line-and-hook fishing households in Karanggandu Village. Variation in productive activities undertaken by wives significantly affects household income. Fish selling, reyeng making, and smoked fish processing contribute differently, with smoked fish generating the highest income, followed by fish selling, while reyeng making provides the lowest additional income. This indicates that wives' involvement in fisheries is not only supportive but also a key factor in enhancing household economic welfare.

The differences in income contributions among the three types of productive enterprises—fish selling, reyeng making, and smoked fish processing—are primarily

influenced by the availability and utilization of production factors. These include natural resources (fish catches), labor, capital, skills, and simple technologies used in the business process. Variation in the mastery and availability of production factors results in different scales and added value for each enterprise, directly impacting household income levels. This aligns with Soekartawi (2003), who asserts that the success of an agribusiness enterprise depends on the optimal combination of available production factors.

In fish selling, relatively high income is due to easy access to raw materials, i.e., fresh fish from fishermen. This activity has rapid capital turnover as products are easily sold without further processing. Hence, key production factors are raw material availability and marketing networks. Despite relatively low profit margins per transaction, high sales volume contributes significantly to household income. Conversely, reyeng making yields lower income due to its low selling price (Rp.300–Rp.500/unit) and small-scale household operations dependent on fish seasonality. During abundant seasons, reyeng makers meet high demand from village fish processing businesses, but capacity decreases during lean periods. Production capacity is limited to household capabilities, resulting in smaller economies of scale and lower added value, though the product maintains a niche market. According to Todaro and Smith (2015), low production capacity in the informal sector is often influenced by limited capital and low access to technology that enhances efficiency.

Meanwhile, smoked fish processing contributes the highest income due to significant added value through preservation and processing. Dominant production factors include smoking skills and use of simple equipment, allowing product differentiation with higher selling prices than fresh fish. Smoked fish products are relatively durable, enabling wider market distribution and less time-bound sales. This aligns with production economics theory, which states that higher mastery of technology and skills generates greater added value (Mankiw, 2020). Therefore, variation in income contribution from the three productive enterprises is closely related to the combination of production factors utilized. Greater ability in utilizing production factors, especially skills, capital, and simple technologies, results in higher added value and contribution to household economic welfare.

CONCLUSION

The wives of handline fishermen also play a role in productive activities in the fisheries sector by running businesses such as fish sellers, reyeng makers, and smoked fish businesses, with most still in their productive age. Of these three types of businesses, the largest amount of work time comes from the smoked fish business, reaching 135 days per year. This is because smoking is carried out almost year-round, unlike selling fish or making reyeng, which only occur during the fishing season. The economic contribution of fishermen's wives also varies, with the highest coming from the smoked fish business, which accounts for 63% of the total household income of Rp 327,494,410/year. The productive role of fishermen's wives has proven significant in increasing family income and supporting the economic well-being of fishing households. Therefore, more attention is needed, such as support for business capital, training in smoking technology, and development of other skills that support business sustainability.

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