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The Exchange Rate Analysis of Fishery Product Processors in Bandung Regency, Indonesia

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This study is about the analysis of the exchange rate of fishery product processors (NTPI) in Bandung Regency. This study aims to analyze the NTPI in Bandung Regency and analyze the price index of processed fishery products in Bandung Regency to find out the level of welfare. The method used in this study is a survey method with interview techniques using questionnaire, the types of data collected include primary data and secondary data. The research data were analyzed using quantitative descriptive analysis methods. Based on the results of the research that has been carried out, it can be concluded that the NTPI in Bandung Regency as a whole, both processing bloater, shredded fish, and fish balls has an NTPI > 100 which indicates that fishery processors in Bandung Regency are at a prosperous level and prices increase in the base year and 2021 only occurred in processed fish floss and fish balls although they were not large, while in the processed bloater there was no price increase at all from the base year until 2021.

Keywords: Welfare; NTPI; price index; fishery product processor; bandung regency.

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1. INTRODUCTION

Bandung Regency is one of the areas in West Java that has high potential to promote the production of fishery products. One of its potentials is that Bandung Regency has potential human resources by winning fish processing championships at the national level. This potential is not supported by the awareness of residents to participate in utilizing this potential and advancing together.

This research is intended for fishery product processors because the welfare of fishery product processors depends on the level of community consumption of fish, so making processed fish is one way to increase that level of consumption. The level of fish consumption in Indonesia is relatively low compared to the potential of its fishery resources. The low consumption of fish is caused by a lack of public understanding about the benefits of consuming fish, the lack of smooth distribution of fish, not yet optimal facilities and infrastructure, and myths that develop in the community [1].

The NTPI is obtained from the comparison of the price index of the products sold by fishermen/fish cultivators (It) to the price index of the operational costs of production of fishermen/fish cultivators (Ib). The exchange rate also shows the terms of trade (terms of trade) of fishery products with the goods and services consumed as well as for production costs. The higher the NTPI of Fishery Processors, the relatively stronger the level of ability/purchasing power of fishermen/fish cultivators [2].

Data regarding the NTPI, especially in Bandung Regency is not yet known, so under this, by using the NTPI method of Fisheries Processors, it is necessary to research analyzing the income and expenditure of fishery processors, especially in Bandung Regency to know the level of welfare that is more sustainable.

2. METHODS

This research will be conducted on a fishery processing group in Bandung Regency. This research was conducted in October 2020 – June 2021. The sources of data collected in this research consist of primary data and secondary data. Primary data and secondary data is a grouping of data based on data sources. Primary data is data collected or obtained directly in the field by people who do research or who need it [3]. Primary data were obtained directly by observing and recording the results of observations, interviews, and active participation.

Secondary data is data or information obtained indirectly from public research objects [4]. Secondary data from this research is data obtained from the Department of Maritime Affairs and Fisheries of Bandung Regency, which include data from the Department of Maritime Affairs and Fisheries of West Java Province, data from the Department of Animal Husbandry and Fisheries in Bandung Regency, data from the Central Statistics Agency (CSA), and data from journals related.

2.1 Data Collection Technique

The data in this research were collected using a survey method. Survey research is research conducted to obtain facts from existing symptoms and seek factual information about social, economic or political institutions of a group or individual [5]. The survey technique is used in this research because data has been obtained from the Livestock and Fisheries Service of Bandung Regency which states that there are 30 fishery processors spread across various areas in Bandung Regency, so this research will be carried out by collecting data from these 30 fishery processors.

2.2 Data Analysis

The analytical method used in this research is quantitative descriptive analysis. Quantitative descriptive analysis is a method used to describe or explain an event or an event that is happening at present in the form of meaningful numbers. In this research, descriptive analysis is used to determine the level of welfare and quantitative descriptive analysis is used to obtain the exchange rate.

2.3 NTPI Calculation Technique

In simple terms, the NTPI calculation is a comparison between the entire value of goods and services received (income) by fishery and non-fishery processors with the value issued (expenditures) by fishery processors to obtain the goods and services they need, both for fishery businesses and household consumption. Referring to the method used by the Ministry of Agriculture to calculate NTPI as the ratio of the price received to the price paid by farmers [6],

the techniques for calculating the NT for Fisheries Processors are:

NT = × 100

Descriptions:

NT = Exchange Rate Index
It = Income Index
Ib = Expenditure Index

2.4 Price Index Calculation Technique

The Price Index is one of the important economic indicators that can provide information on the development of prices for goods and services (commodities) paid by producers [4]. The calculation of the aggregate price index (price received and price paid) is calculated from the Laspeyres index which was developed as follows:

× 100 %

Descriptions:

IH: Price Index
Pn: Price in year n (year to be calculated)
P0: Price in base year

3. RESULTS AND DISCUSSION

3.1 Characteristics of Respondents

Respondents in this study were 30 fishery product processors in Bandung Regency whose data had been collected by the Bandung Regency Food and Fisheries Service which included the names of small and medium enterprises, addresses, types of processing, and products produced, and business scale. The identity of the respondents in this study included age, education level, number of dependents in the family, and length of business.

3.1.1 Age

Age is considered as a measure of the productivity of a processor in carrying out his business. Based on data obtained from direct interviews with Fisheries Processors in Bandung Regency, it can be seen that the ages of Fisheries Processors in Bandung Regency are as follows:

Based on data obtained from fishery processors in Bandung Regency, as many as 33% of the fishery processors of the total respondents aged 21 to 40 years old, 50% of the fishery processors of the total respondents aged 41 to 60 years old, and 17% of the fishery processors. fisheries of the total respondents aged over 61 years old. These results indicate that most of the fishery processors in Bandung Regency are in the productive age range and can work. This is following the productive age standard applied by the Central Statistics Agency, namely the productive age population is the population between the ages of 15 to 64 years old, while the population aged under 15 years old and 65 years old and over are classified as unproductive age [7].

Age can affect a person's income. Usually, income initially increases with age, peaks at the productive age level because increasing age will affect a person's work productivity, and then decreases again towards retirement age. As long as they are of productive age, the older the processors, the greater the responsibility to their families, this encourages fishery product processors in Bandung Regency to work in order to earn income, but the income of processors in their old age tends to decrease due to reduced physical ability to work [8].

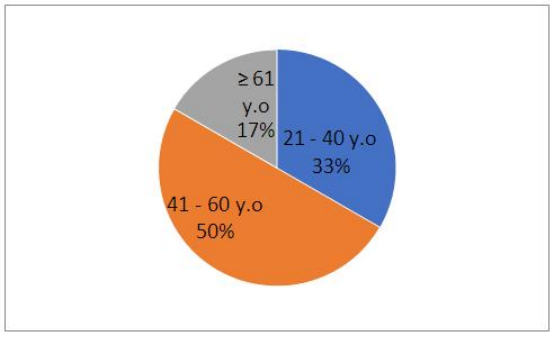

Fig. 1. Age of respondents

3.2 Level of Education

Education is considered as a means to obtain quality human resources because education is considered capable of influencing the quality of the workforce, mindset, and ways of acting. In processing the primary data from the research that has been done, the respondents are grouped based on the last education level. Based on data obtained from direct interviews with Fisheries Processors in Bandung Regency, it can be seen that the education level of Fisheries Processors in Bandung Regency is as follows:

Based on the results of primary data processing above, it is found that the education completed by most of the respondents only reached the elementary and high school levels, only a few respondents had education levels up to S1. This shows that most respondents immediately look for work when they finish elementary and high school to help their family's economy in the past and the lack of money to continue school is one of the barriers for fishery processors to continue their education to a higher level. Only 17% of fishery business owners out of the total respondents have studied up to S1. With a limited educational background, it can affect the limitations of business productivity. This is due to the lack of skills and knowledge of fishery business owners, especially to develop businesses that have been undertaken [9].

3.3 Business Experience

The influence of business experience can affect his professional ability. Based on data obtained from direct interviews with fisheries processors in Bandung Regency, it can be seen that the business experiences of fisheries processors in Bandung Regency are as follows:

Based on the results of primary data processing above, it was found that fishery processors with 1-15 years of business experience were 61% of the total respondents, fisheries processors who had 16-30 years of business experience were 28% of the total respondents, and fishery processors who had 16-30 years of business experience. have more than 30 years of business experience as many as 11% of the total respondents. This shows that most fishery processors in Bandung Regency have business experience under 15 years, even though this index is the smallest, but in terms of numbers, they still have quite a long experience and can be said to be experienced.

The length of an effort can lead to a business experience, where experience can affect the level of observation of a person is behaving. In other words, the longer a business person engages in the trading business, the knowledge about consumer behavior and market behavior will also increase [10]. The length of time for fishery processors to pursue their business can affect their productivity and expertise and tend to increase efficiency and be able to reduce production costs lower than sales results. In addition, trading skills are increasing and more and more business relationships and customers have been successfully captured [11]. The longer you are in the business field, the more knowledge about consumer tastes or behavior [12].

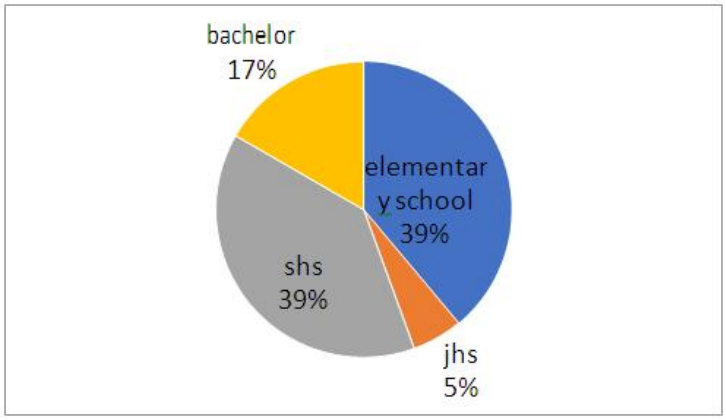

Fig. 2. Education Level of Respondents

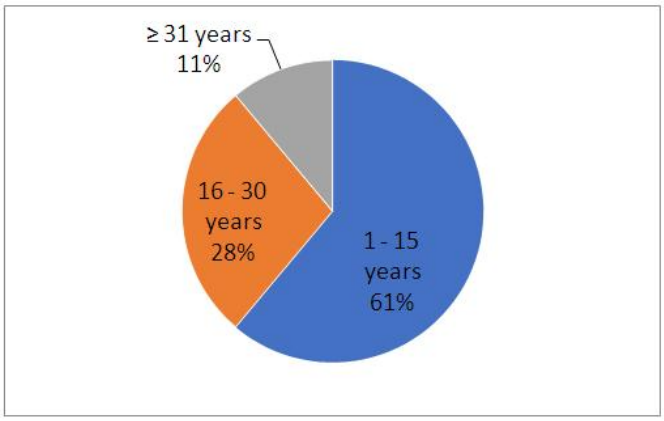

Fig. 3. Respondents' Business Experience

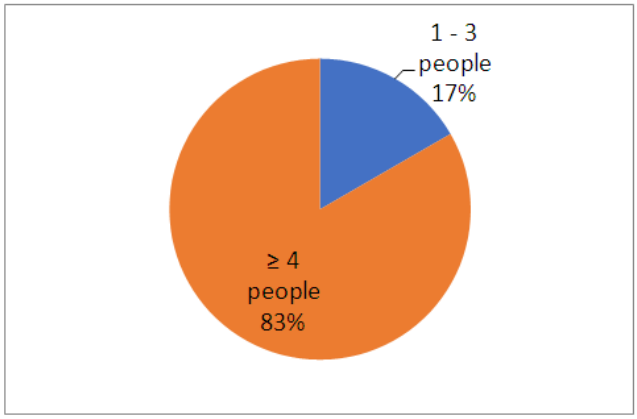

Fig. 4. Number of Respondents' Family burdens

3.4 Number of Family Burdens

The number of dependents of the family is the number of family members borne by the head of the family, be it his wife, children, or other people who live with them. Based on data obtained from direct interviews with fisheries processors in Bandung Regency, it can be seen that the number of dependents of fisheries processors in Bandung Regency is as follows:

Based on data obtained from fishery processors in Bandung Regency, as many as 83% of fishery processors have more than 4 family burdens, while only 17% of fishery processors have 1-3 family burdens. The number of burdens in the family will determine the number of family needs. The more family members means the more the number of family needs that must be met, and vice versa, the fewer family members means the fewer needs that must be met

From the data above, it can be seen that the majority of fishery processors in Bandung Regency have family burdens of more than 4 people. Fishery processors who have more burdens will spend their money to buy food, clothing, housing, education, and health needs for their families whose total expenditure is of course in a larger nominal than fishery processors who have fewer burdens. So that the economy borne by families who have a large number of burdens will be even more severe, this condition will make a person work harder to meet the needs of his family [8].

3.5 NTPI Analysis

The importance of the processing business sector in the development of the national

fishery industry, Marine and Fisheries Ministry annually calculates the NTPI starting in 2015 to see the level of success of the program that has been carried out by the Marine and Fisheries Ministry as well as to monitor the national processing business. Calculation of the NTPI can be one way to see the level of welfare of fishery processing households. Mathematically this calculation is a comparison between the price index received by the fish processing household (It) and the price index paid by the fish processing household (Ib).

NTPI shows the exchange power of processed fish products with goods and services consumed as well as costs incurred for processing fish. Based on the Marine and Fisheries Ministry data in 2019, the NTPI for fisheries processors achievement value was 103.53 or reached 100.03% of the set target of 103.50. When compared to the 2018 achievement value, there was an increase of 0.40%, while when compared to the final target of the 2015-2019 Marine and Fisheries Ministry Strategic Plan, it had reached 100.03%.

An NTPI of more than 100 indicates that the increase in production prices is greater than the increase in consumption prices, meaning that the income of fishery product processors increases more than their expenditures or is a surplus. This shows that government assistance in the field of processing and marketing fishery products including cold storage and integrated cold storage, refrigerated vehicles, ice flake machines and other facilities has succeeded in becoming one of the economic stimulants causing more effective upstream and downstream production. strong, efficient production costs and help maintain the quality of raw materials and final products so that the price of the final product becomes higher. The 2019 NTPI is a national value calculated through sampling in 40 regencies/cities spread over 5 provinces. In the future, Marine and Fisheries Ministry will calculate NTPHP in all provinces in Indonesia [13].

Meaning of NTPI Value:

1. NTPI > 100

Fishery product processors have a surplus. Production prices rose more than the increase in consumption prices.

2. NTPI = 100

Fishery product processors break even. The increase or decrease in the price of production is equal to the percentage increase in the decrease in the price of consumer goods.

3. NTPI < 100

Fishery product processors are experiencing a deficit. The increase in production prices was relatively smaller than the increase in the prices of consumer goods. Processors' income is down, less than their expenses.

The following is the result of the calculation of NTPI in Bandung Regency by sub-district:

The grouping of Micro, Small, and Medium Enterprises (MSMEs) in fishery processors in Bandung Regency is carried out according to Regulation of Indonesia No. 20 the Year 2008 concerning MSMEs. Based on that regulation, the criteria for micro-enterprises are to have annual sales of a maximum of Rp. 300,000,000 (three hundred million rupiahs); the criteria for a small business are to have annual sales of more than Rp. 300,000,000 (three hundred million rupiahs) up to a maximum of Rp. 2,500,000,000.00 (two billion five hundred million rupiahs); and the criteria for medium-sized businesses are to have annual sales of more than Rp. 2,500,000,000.00 (two billion five hundred million rupiahs) up to a maximum of Rp. 50,000,000,000.00 (fifty billion rupiahs). The data above indicates that NTPI based on MSMEs in Bandung Regency, all are above 100. This indicates that fishery product processors in Bandung Regency have a surplus, so that overall MSMEs, the increase in production prices is greater than the increase in consumption prices.

The following is the result of the calculation of NTPI in Bandung Regency by sub-district.

In Fig. 6, the Bandung Regency NTPI Index has the highest index in Cileunyi Sub- District at 139%, followed by Ciparay at 137%. The difference in the value of the NTPI calculation between sub-districts in Bandung Regency is not too significant and still exceeds the index that should be 100%. However, there is one Sub-District that is below the index that should

Table 1. NTPI for fisheries processor 2016-2021

Year	NTPI
2016	102,90
2017	102,67
2018	103,12
2019	103,53
2020	103,95

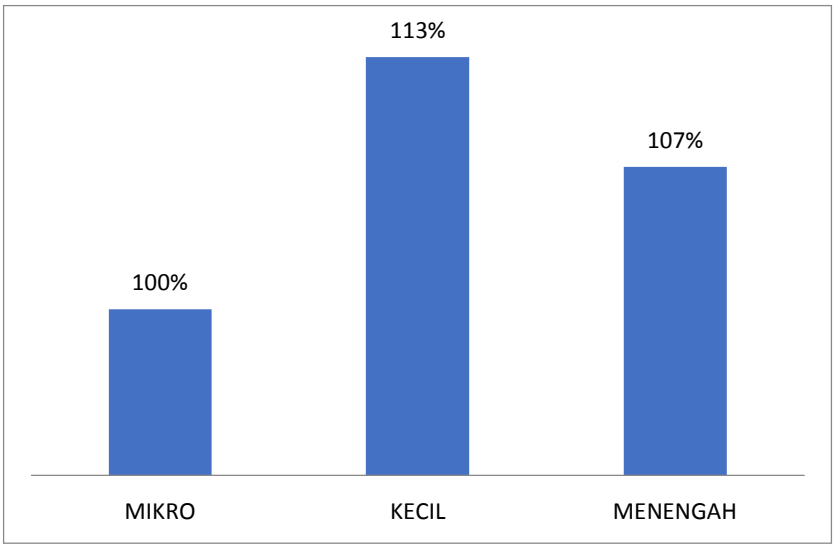

Fig. 5. NTPI Index graph based on MSMEs

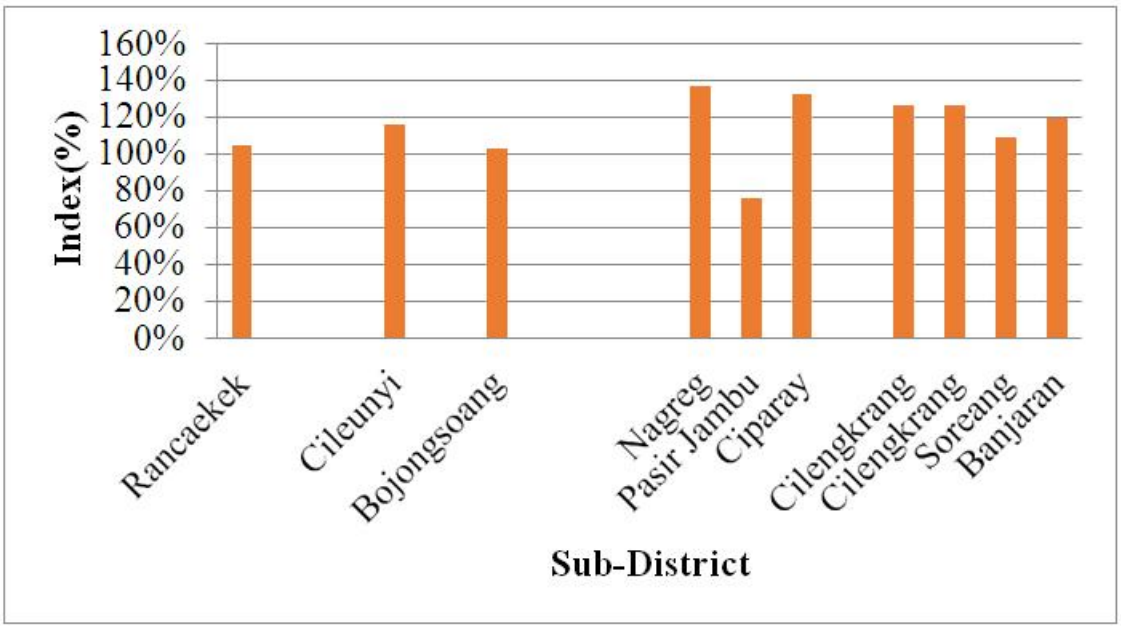

Fig. 6. Graph of NTPI Index based on sub-district

Table 2. Price comparison of the fisheries product in bandung regency

No	Products	Base YearPrice (IDR)	Price in 2021(IDR)	Quantity
1	Bloater	7.000	7.000	1 pcs
2	Shredded Fish	32.500	35.000	100 gr
3	Fish Ball	500	700	1 pcs

Table 3. Price index of the fisheries product in bandung regency

No	Products	Price Index (%)
1	Bloater	100
2	Shredded FIsh	108
3	Fish Ball	140

be, that is Pasir Jambu Sub-District. Pasirjambu Sub-District has an index value of 76% which is an index far below the index that should be 100%. This indicates that the Sub-District of Pasirjambu has a deficit. The increase in production prices was relatively smaller than the increase in the prices of consumer goods. Processors' income is down, less than their expenses.

The massive crisis triggered by COVID-19 in 2020 greatly affected the welfare level of fishery processors. The Bandung Regency NTPI index tends to decrease compared to the previous year due to consumption and production expenditures that continue to increase but the income they receive is not so large. The Ministry of Maritime Affairs and Fisheries said the price of fish and shrimp feed in the field rose in the midst of the corona virus outbreak. The Marine and Fisheries Ministry stated that the price increase occurred due to the recent weakening of the rupiah exchange rate [14].

3.6 Price Index

Price is the most important thing in trading activities because an item being sold must be priced in advance so that all parties can benefit and get satisfactory results with an agreed price setting. Price is an exchange rate of goods or services in the form of a sum of money for an item or service that must be paid by consumers to obtain or have an item or service [15]. Price is also the amount of money charged for a product or service or the amount of value that consumers exchange for the benefits of having or using the product or service.

The Central Statistics Agency uses a new base year for calculating inflation, namely the base year 2018 from the previous base year 2012 [16]. CSA stated that the change in the base year is to accommodate and find out the latest public consumption patterns and this change is usually done every 5 years. The following is a list of prices for the three processed products derived from interviewing fish processors and surveys to e-commerce:

From the data above, it can be seen that the price increase in the base year and 2021 only occurred in shredded fish and fish balls, although it's not that large, while in the processed bloater there was no price increase at all from the base year to 2021. The following is the result of the index calculation the price of the three processed products:

Based on the explanation of the fish processors above as respondents, especially those for bloater processors, the price of processed products is difficult to increase, even though the price of fish raw materials is uncertain and tends to increase over time. From the results of the feasibility analysis that has been described, it can be seen that the business is feasible to be developed. However, according to information from fishery processors in Bandung Regency, their profits are decreasing due to the increasing cost of production while the selling price is relatively constant. In addition, the decreasing number of fish catches and the number of sales of fresh fish also affect the amount of fish they process.

If the purchasing power of fish processors is less than the increase in the price of goods purchased due to the income received from the increase in the price of fishery production, this indicates that the processor's power and ability or the income level of the processor are decreasing, and vice versa. Measuring purchasing power of fish processors at a glance can show the level of welfare formulated in the

form of NTPI which is formed by the complex interrelationships of a price-forming system, both the price received and the price paid by the fish processor.

4. CONCLUSION

Based on the research results, the following conclusions are obtained:

1. The results of the NTPI in Bandung Regency as a whole, both processing bloater, shredded fish, and fish balls have NTPI > 100 which indicates that fishery processors in Bandung Regency are at a prosperous level. The average NTPI based on MSMEs in Bandung Regency with the micro-business category has an NTPI value of 100, the small business category has an NTPI value of 113, while the medium business category has an NTPI of 107. This indicates that fishery product processors in Bandung Regency have a surplus so that overall MSMEs are at a prosperous level. The average NTPI based on sub-districts in Bandung Regency has the highest index in Cileunyi Sub-District at 139%, followed by Ciparay at 137%. The difference in the value of the NTPI calculation between sub-districts in Bandung Regency is not too significant and still exceeds the index that should be 100%. However, there is one sub-district that is below the index that should be, namely Pasirjambu Sub-District. Pasirjambu Sub-District has an index value of 76% which is an index that is far below the index it should be. The massive crisis triggered by COVID-19 in 2020 greatly affected the welfare level of fishery processors. The Bandung Regency NTPI index tends to decrease compared to the previous year due to consumption and production expenditures that continue to increase but the income received by fishery processors is not so large.

2. The results of the calculation of the price index of fishery processors in Bandung Regency show that the price increase in the base year and 2021 only occurred in processed fish floss and fish balls, although not large, while for bloater processed there was no price increase at all from the base year to 2015. 2021. From the results of the feasibility analysis that have been described, it can be seen that fishery processing businesses in Bandung Regency are feasible to develop, however, according to information from fishery processors in Bandung Regency, their profits can decrease due to the increasing production costs while the selling price is relatively fixed.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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