Input-Output Analysis of The Central Java Forestry Sector

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Abstract. The forestry sector and forestry industry play an important role in Central Java, but the growth of the forestry sector tends to be low. On the contrary, the forestry industry sector is higher. This study aims to analyze the impact of government spending on the forestry sector and household demand for the forestry industry. The economic impact is calculated using the Central Java Input-Output Table 2016. Secondary data used: Central Java Input-Output Table 2016, Central Java GRDP at constant basic prices, and investment realization data for the Central Java forestry sector. The backward and forward linkages of the forestry sector and the wood processing industry were analyzed to accommodate the research objectives. Furthermore, calculations were made on the scenario of government fund allocation policies for the forestry sector and household demand for the wood processing industry. The study results found that government spending on the forestry sector and the forestry industry have forward and backward linkages.

Keywords: Forestry, Forest Industry, Input-Output, Economic Impact.

1   Introduction

The forestry sector's role is important for the development of the economy and ecosystem [1] [2]. The forest becomes a source of income and materials standard industry, creating fieldwork and opportunities for work [3]. Existence forests are important in the short and long term: they meet the needs of humans, guard the ecosystem, and support and accommodate water supply [4] [5]. More carry-on area forests can create opportunities to reduce poverty [6]. Problems faced by forestry in the form of illegal logging, deforestation, and degradation of forests [7] [8].

The number of house ladder business forestry in Central Java reached 1,750,183, which is the largest on the island of Java [9]. Activity House ladder business forestry covers cultivation plant forestry, nursery plant forestry, breeding wild plants, captive

bred wildlife, gleaning results forest, and catching animals [10]. Distribution sector of forestry, the GDP of Central Java is relatively small, only 0.48%, and the industry processing wood is 1.78% [11]. Table 1 shows growth in each primary agricultural sub-sector in Central Java.

Table 1. Growth of Agricultural Sub-Sub Sectors

Sector	2018	2019	2020	2021	2022	2023
Agriculture, Livestock, Hunting and Agricultural Services	2.68	1.21	2.23	1.04	2.87	0.05
Forestry and Logging	1.38	-2.39	2.07	0.05	-3.79	2.42
Fishery	2.44	4.42	4.73	-2.30	6.43	4.91
Agriculture, Forestry and Fisheries	2.62	1.31	2.40	0.76	2.91	0.49

Source: BPS, 2023 [11].

Industry processing wood becomes sector downstream sector forestry, especially wood round. This sector's role in the absorption of power Works is up to 6.45% of the total power Work industry, large and medium, in Central Java [12]. Opportunity processing wood is very dependent on land management (logging/managed forests) and management source power forest itself [13]. This article counts the impact sector forestry and industry processing wood use Input-Output analysis. Analysis of the study includes: (1) Analysis linkages to back and to front sector forestry and industry processing wood, (2) Analysis scenario policy allocation of funds by the government to the sector forestry and demand Household in industry processing wood.

2   Method

Secondary data used : (1) Central Java Input-Output Table 2016, (2) Upper Central Java GDP base price constant, (3) Realization data investment sector Central Java forestry 2016 Central Java Input-Output Table consists of over 52 sectors. Forestry and logging sectors wood given Code I-05. Industry processing wood enters sector code I-17 (wood, goods from wood and cork, and stuff webbing from bamboo rattan and the like).

Scenario of changes made there are two, namely: (1) policy budget Central Java government in the sector of forestry , (2) Change request: Households are in the wood processing industry.

Equality to accommodate both scenarios uses the equality matrix (1). Where ΔX is a vector of changes in final demand, and ΔY is a vector of changes in output [14].

$$\Delta X = (IA)^{-1} \Delta Y \qquad (1)$$

3   Results and Analysis

3.1   Analysis linkages sectoral to back and to front

Analysis linkages sectoral to behind

Table 1. Top 10 Numbers of Backward Linkages Sectoral

Rank	Sector	Total Sectoral Backward Linkage Figures
1	Electricity	1.88
2	Industry Food and Drink	1.81
3	Rubber Industry, Rubber and Plastic Products	1.77
4	Provision of Food and Drink	1.77
5	Industry Paper and Goods from Paper, Printing and Reproduction of Recorded Media	1.76
6	Industry Base Metal	1.76
7	Chemical, Pharmaceutical and Traditional Medicine Industries	1.75
8	Industry Furniture	1.74
9	Leather, Leather Goods and Footwear Industry	1.73
10	Industry Wood Processing	1.73

The linkage figure behind it shows how a sector can influence a sector upstream source supplier's input. Table 1 lists the data sector economy in the 2016 Central Java Input Output Table, which is in the top 10 number linkages behind sectoral totals. The number of linkages behind sectoral totals reached 76.42 and an average of 1.46. The industrial sector of processing wood occupies rank 10 (1.73), and the forestry sector, rank 47 (1.19). Interpretation number the is increase of 1 million rupiah in output in the sector forestry will increase request the input amounting to 1.19 million rupiah and 1.73 million rupiah in industry processing wood.

Analysis linkages sectoral to front

Table 2. Top 10 Future Linkage Figures Sectoral

Rank	Sector	Total Sectoral Future Linkage Figures
1	Construction	7.35
2	Industry Food and Drink	5.09
3	Wholesale and Retail Trade , Not Cars and Motorbikes	3.52
4	Electricity	2.39

5	Industry Wood Processing	2.34
6	Industry Textiles and Apparel	2.26
7	Provision of Food and Drink	2.21
8	Chemical, Pharmaceutical and Traditional Medicine Industries	2.05
9	Industry Processing Tobacco	1.86
10	Information and Communication Services	1.84

Linkage figure forward sectoral show big impact something sector influence sector downstream recipient results the output.

Table 2 lists sector economy in the 2016 Central Java Input Output Table which is in the top 10 number linkages to front of sectoral totals. Amount number linkages to ahead of sectoral totals reached 84.9 and an average of 1.63. The industrial sector processing wood, occupies rank 5 (2.34), and the sector forestry rank 47 (1.04). That number means that the that an increase of 1 million rupiahs in output, it will increase the request for the input amounting to 1.04 million rupiahs in the forestry sector and 2.34 million rupiahs in the industry processing wood.

Table 3. Index Spread and Index Sensitivity
Forestry Sector and Industrial Sector Wood Processing

Information	Forestry Sector	Industrial Sector Wood Processing
Index Deployment	0.81	1.18
Index Sensitivity	0.82	1.15

Input-output tables can be used for determine Power spread and power sensitivity something sector. The sector with index sensitivity >1 has linkages to the front above-average degrees sensitivity all over the sector economy , and vice versa. Sector with index spread >1 has relatedness to back above average degrees spread all over sector economy, and vice versa. Index sensitivity and index spread sector forestry <1 so sector forestry low Power push nor Power pull it. Temporary sector industry processing wood Empower high push and pull because >1.

3.2   Analysis impact policy allocation of government funds to sectors forestry and impacts policy change request Household in industry processing wood

In input-output table operations, it is possible to count impact request final work carried out by the group perpetrator economy at a time sector. Scenario first thing to do is provide a policy shock budget Central Java government as stated in the realization data investment sector Central Java forestry. Whereas for sector shocks, industry processing wood obtained the average change request for households in sectors such as industry forestry.

Table 4. Scenario I:

Changes in Output Consequences Change Policy Budget Government
in the Forestry Sector

Rank	Sector	Output Change
1	Forestry and Logging	11,980.42
2	Construction	714.00
3	Coal and Refining Industry Oil and Gas	288.14
4	Wholesale and Retail Trade, Not Cars and Motorbikes	216.16
5	Car, Motorcycle and Repair Trading	145.06
6	Information and Communication Services	97.02
7	Land Transportation	83.04
8	Company Services	71.25
9	Financial Intermediary Services	68.05
10	Industry Wood Processing	53.06

Changes in output in sectors such as forestry will, in a way, impact the entire sector. Table 3 lists the data sectors that are in the top 10 affected as a result of the first scenario. Scenario change policy budget government in the sector forestry produce a change in total output of 14,184.37 million rupiahs. Change output in the forestry sector reached 84.46 percent (11,980.42 million rupiah) and 0.37 percent (53.06 million rupiah) in the wood processing industry.

Table 4. Scenario II:
Consequence Output Change Household Demand in the Industrial
Sector Wood Processing

Rank	Sector	Output Change
1	Industry Wood Processing	4,156,262.68
2	Wholesale and Retail Trad , Not Cars and Motorbikes	415,759.42
3	Forestry and Logging	337,760.81
4	Chemical, Pharmaceutical and Traditional Medicine Industries	190,325.55
5	Coal and Refining Industry Oil and Gas	110,129.48
6	Land Transportation	92,119.27
7	Information and Communication Services	84,685.41
8	Car, Motorcycle and Repair Trading	62,224.73
9	Intermediary Services Finance	47,785.08
10	Industry Food and Drink	41,456.22

Scenario second is change request Household in sectors industry processing wood which produces the total sector 5,872,388.42 million rupiah. The industrial sector processing wood produce a change in output of 4,156,262.68 million rupiahs (70.95 percent), and the sector forestry 337,760.81 million rupiahs (5.77 percent). The results of scenarios I and II inform us that the shock of change in the second sector will have a big impact because both of them are in the top 10 affected sectors.

4   Conclusion

Central Java's forestry sector has power sensitivity and low power spread. Lots of it House hanging ladder sector forestry make sector forestry potential For reduce poverty in the village around forest. Forests also have task-guard ecology and water resources. The condition needs attention to increase the market economy while still guarding sustainable forests.

The industrial sector processing wood own connection with sector forestry as an input provider. Sensitivity and power spread tall sector industry processing wood need maintained. This sector is strategic enough for development because it is capable of absorbing 6.45 percent of power work in industries large and medium in Central Java.

5   References

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