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## **Study on Appropriate Technology–Based Local Economic Development in Biak Regency, Papua Province, Indonesia**

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### **Abstract**

This research is conducted in Biak Regency under the following objectives: (1) to find out the economic performance of Biak Regency with Regencies/ Cities in Papua viewed from economic growth aspect and the contribution of regional economic sector, (2) to identify potential sectors in the economy of Biak Regency, and (3) to analyze the leading sector in the economy of Biak Regency viewed from the economic structure of Papua Province. This research uses primary and secondary data. The primary data is obtained from the result of interview with BPS staffs of Papua Province and Biak Regency concerning PDRB. Meanwhile, the secondary data is collected from any documents related to the Analytical Tools used in this research, namely Analysis of Klassen Typology, Location Quotient (LQ) and Shift Share. The result of this research shows that there are economic potentials based on appropriate technology which can be developed in Biak Regency, and one of them is sea fishery. The fish production which mainly produced is tuna fish and cekalang fish. The center of capture fisheries in Biak Regency is located in the District of Biak Utara, Timur, Barat, and Biak Kota.

**Keywords:** PDRB; Klassen Typology; Location Quotient (LQ); Shift Share.

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## 1. Introduction

Papua Province is included in one of the Provinces whose poor people is relatively high, which is 40.78% in 2012, going beyond Indonesia's average poverty level in the same year, namely 16.58%. In the meantime, this Province has a largest region in Indonesia, namely 309,934.4 km<sup>2</sup> or including 16.66% of the entire regions in Indonesia (BPS 2012), as compared to East Kalimantan as the second largest province as much as 194,849.08 km<sup>2</sup> (10.47%), and East Java with 46,689.4 km<sup>2</sup> (2.51%).

Seeing such large region, obviously, there are much potential of resources hidden in it. But, one question may arise, though: why the poverty level in this region is high? Perhaps, the existing potentials in this region have not been maximally utilized. In order to increase the people's welfare, it is necessary to encourage the growth of its economic rate. This can be done by utilizing any potentials available in that region more efficiently. However, the problems may still be found, such as in how to determine which potentials that are necessarily prioritized in its development, how to utilize those potentials, and how to distribute the results obtained.

Local economic potential is something that is possible and feasible to be developed until it will be growing sustainably to be the source of living for local people, as well as it will be able to encourage the development of regional economy. Regional potential can develop when there are efforts conducted, either by the government, private institution, and local people. Like a ball that stays still at a corner, it will never move if there is nothing to it. If there is no power touching it, the said ball will be still in its place. The problem is how we can read the potential. First of all, we have to do observation on data. For example, region A has potential for producing salt, because its geographical location is in the middle of the ocean. Region B has its potential for producing oil, because it has so many oil contents in its region. Economic potentials can be seen from the content of natural resources, regional topography, climate, population number, geographical location, and so on.

If the potentials have been able to be described, the next step is selecting potential sectors that necessarily to be prioritized for its development, so it can increase the people's welfare. In order to select which sectors that will be prioritized, it requires an economic analysis concerning the impacts upon value-added, revenue, job opportunity, environment and its sustainability. The economic development can be achieved more quickly by tracing any sources of development existing in related region. Those are sectors that show its excellence of having better prospect for development and expected to be able to encourage the development of other sectors. There are some analytical tools which can be used for determining the relative potentials of economy in a region, such as *location quotient* (LQ) and *shift-share* analysis. After determining the leading sectors, the next step is reviewing on the management of those sectors; how to gain its inputs, equipment, production and marketing methods, as well as how to process the production results.

In order to reduce poverty and to improve welfare for the majority of people in Papua Province, the local potentials, mainly in villages, need to be explored and developed. This development will be more efficient if it is supported with the use of appropriate technology, namely a technology that is suitable with the condition of each region; not only measuring the manufacturer's economic rationality individually, but also taking the interest of entire community members into account.

Based on above description, it is necessarily to do a study regarding the way the local society develops their economy on the basis of appropriate technology in Biak Regency as to increase the community's living standard.

## 2. Literature Review

### Concept of Development

A development can be understood in three important elements [12], namely: first, a development is meant to be a process of change; second, a development is a form of an effort; third, a development grows sustainably in a long term. The success of a development is determined by the community's welfare. In the conceptual approach, a development is not only measuring on the revenue, but it is also considering the quality of life as a description and "civilization improvement" of human species, as the ruler and preserver of the universe. As stated by Sen in Berenger and [1], the people welfare can be seen from their social and economic capability. It means that the prosperity is a realization of freedom and human right. Then, the question is: for whom such individual human right is designated? Socio-economic transformation that brings social entity to social change of the higher level of progress can be done through two methods [4]. namely (1) revolutionary method which tends to unfriendly and resulting in many unexpected effects; and (2) more evolutionary method through a staging that takes a longer time. Modernization in the style of westernization (*western developmentalism*) means a process of development that takes any forms or patterns, as well as normative standards and orientation of cultural values, from the western countries as the parameter of single "progress" [7]. The phenomenon of *cultural-shock* borne by local people as a result of the introduction of western values is a plural picture which often becomes the main claim on Western approach in the development. Such cultural shock occurs in three realms [4] which are: the realm of "thinking pattern or the realm of ideas"; "attitude pattern or the realm of attitude"; and facility pattern on the realm of "*social supporting system*" (technology, institution, law, economic system, political system, and many others). In the field of socio-economy, the concept of Western-style modernization gets a critical criticism from unsatisfied community. The said dissatisfaction is rooted in some facts: first, a development patterned on Western-style modernization has apparently set aside the economic position of local people, known as *the development of underdevelopment* [9]. Secondly, Western-style modernization denies the existence of socio-cultural system within local community, thus it is not resulted in its progress, but its stagnation instead. In this case, the scholars call it as *modernization without development* [1]. Thirdly, Western-style modernization is very beneficial for the capital growth and expansion, as well as for the capital accumulation process of Western and Global economy [6]. Fourth, Western-style modernization is in fact triggering the processes of social disintegration within the developing community where the spirit of collectivity (for example: mutual aid) as the essential sociological character is dramatically decaying (missing) [5].

### Human Development

Human capital with high productivity and supported by physical capital with high technical efficiency will be able to enhance the economic output. Through equitable economic system, the output will be distributed evenly

according to the contribution of human capital. Furthermore, through a number of policies, the government will distribute to groups of individuals or some other communities. However, according to the government's obligation to provide access for business and people's right to get a reasonable work for a decent life, the government is responsible for guaranteeing the fairness system of business as the foundation in achieving social guarantee [10].

In economic development, human is acting as the subject which means that the goal of development must be focused on improving the quality of human life. Although this standard is not the same at first, but people in the world then agree on the universal value and standard of prosperity. World Bank (UNDP) in its report in 1990 introduced *human development index* (HDI). This HDI is then translated into Indonesian language to be *Indeks Pembangunan Manusia* (IPM). IPM is developed from three components, namely: length of life as measured with life expectation when firstly born; education level as measured with the combination between literacy rate within population aged in 15 years old or over (by the weight of 2/3) and average school length (by weight of 1/3); and a decent life level as measured by expenditure per capita which has been adjusted with *purchasing power parity* (PPP rupiah).

A successful human development can improve the life quality, which can be indicated from health and education aspect. Reference [4] have proven that literacy rate, infant mortality, poverty and inequality can influence economic development in East Asia and Southeast Asia. In addition, human development is also relating to social and political development. High literacy rate, good health, and equality in opportunity allow community's participation in political process and in building a consensus or goals of development. Participative democracy can enhance social and political stability, thus it improves the efficiency in selecting investment and service provision.

### **Local Economic Development (Pengembangan Ekonomi Lokal/ PEL)**

The concept of economic development or improvement must be distinguished strictly from economic growth. According to [13], economic growth which generally measured with gross domestic product (*produk domestik bruto/ PDB*) or gross national product (*produk nasional bruto/PNB*) can be defined as an increase in long-term capacity and the related state must provide various economic goods for its people. Technology development is believed to be the basis for *sustainable economic growth*. In order to realize the potential of growth contained in a new technology, it must have an "adjustment" regarding the institution, behavior and ideology [5]. Institution is made as a facility for behaving and thinking, which refers to community's organization or some of its parts, and to the behavior of person related with economic-and non-economic activities. Institution with technology of production refers to the capability to integrate many resources for producing certain goods [9]. Local economic development (PEL) is not only a new rhetoric, but it represents a fundamental change on the actor and activity related to economic development, as it is defined below:

*Local Economic Development is the process by which actors within cities and towns - "our communities" - work collectively with public, business and non-governmental sector partners to create better conditions for economic growth and employment generation. Through this process they establish and maintain a dynamic*

*entrepreneurial culture and create new community and business wealth in order to enhance the quality of life for all in the community [14].*

In formulating the pattern of regional economic development policy, it needs to conduct an analysis about economic sectors which are reliable for accelerating regional economic development as the basis of consideration. The products resulted in this sector are products with comparative excellences, either from the side of its supply or demand [4]. Meanwhile, from the side of its demand, a leading product is characterized by its strong demand from the region itself or from other regions [11].

In order to recognize any sectors that produce excellent product, it can use a basic theory model. This theory distinguishes economic activity into two items, namely basic and non-basic activity. Due to its nature which only fulfills local needs, this sector is then bonded to the economic condition of local people, and it cannot grow beyond regional economic growth. In another side, basic activity results in more products for consumption outside the region (exported). [3]. Thus, its growth is not constrained by local economic growth. This sector can give contribution to regional income, in which through 'multiplier effect', it can expand the work opportunity and local economic growth as illustrated below:

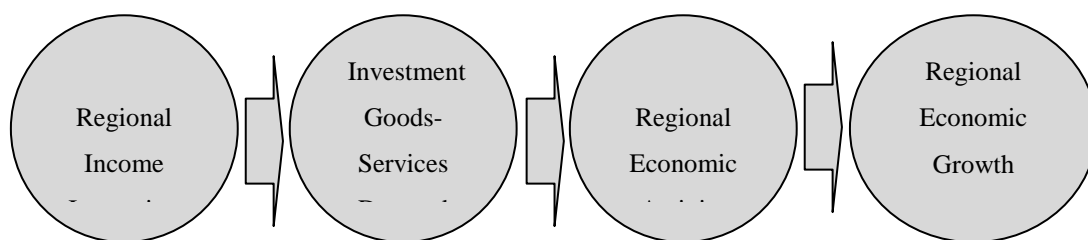
**Multiplier Effect of Basic Sector upon Regional Income**



**Figure 1**

An increasing income will support people's consumption. For villages/ sub-urban, the increasing demand tends to occur more often on local goods and services. Therefore, it will increase local economic activity and encourage local economic growth as illustrated below.

**Multiplier Effect of Basic Sector upon Regional Economic Growth**



**Figure 2**

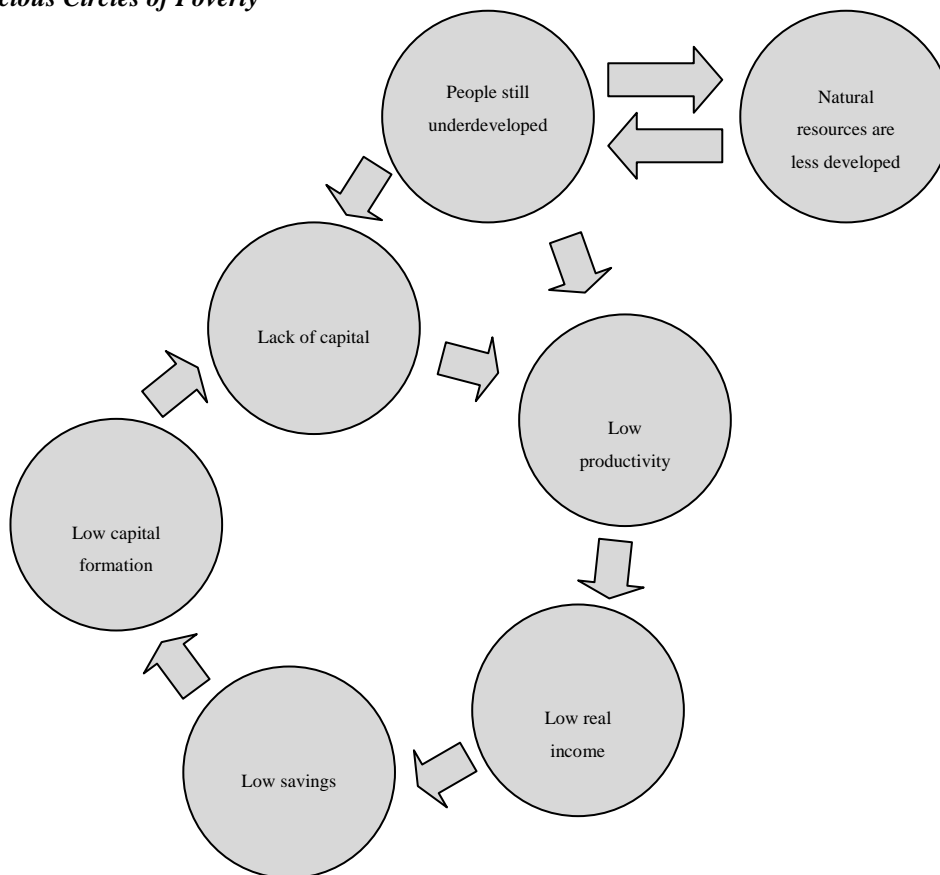
The determination of basic sector which can be used as regional economic growth machine will be in the future conducted with *location quotient* (LQ) and *shift-share* (SS) methods.

### Poverty and Productivity

In most developing countries, including Indonesia, poverty has become a major issue in economic development. Mostly, poor people lives in villages. The consequences from poverty are the absence of choices for poor people (*poverty giving most people no option*) to access basic needs, such as the need of (1) education; (2) health; and (3) economy, limited ownership of production tools, less mastering on technology and lack of skills [2].

Such conditions cause a set of strength that influences each other, in such a way, until it triggers a condition where a country will live in poverty and experience any difficulties to reach a higher development level [12] states that *a country is poor because it is poor*. He explained it with a concept in ‘vicious’ circles of poverty as illustrated in Figure 3.

### Vicious Circles of Poverty



**Figure 3**

A statement said that “*a country is poor because it is poor*” is really depressing. It is a statement without ending, stating that he or she is poor because he or she does not have anything, and due to not having anything, he or she suffers from poverty.

There are several solutions offered by a number of experts in order to “cut” the vicious circle of poverty. They

are:

1. Exploring the potentials of natural resources;
2. Encouraging people to save;
3. Providing loan for business capital;
4. Enhancing the work productivity.

### 3. Research Methods

#### Research Approach

According to the most of technical objectives and for this activity, it applies quantitative approach (*positivist*) in order to achieve those objectives. The analytical tools used in this approach are descriptive statistic, *location quotient* (LQ), and *shift-share* (SS).

#### Analysis Methods

##### 1. Location Quotient (LQ) Analysis

By means of this *Location Quotient* (LQ) analysis, it can be found out about the leading regional economic sub-sectors and sector in Biak Regency from the contribution of PQRB, compared to the contribution of same economic sub-sectors and sectors in Papua Province. The formulation from this analytical tool is as follow:

$$LQ_{(x)} \text{ Regency/ City} = \frac{q_{(x)} \text{ Biak Regency} / \text{PDRB Biak Regency}}{Q_{(x)} \text{ Papua} / \text{PDRB Papua}}$$

From the result of Q calculation, it can be known that if:

1. LQ of a sector is > 1, it can be said as leading sector
2. LQ of a sector is < 1, it can be said as non-leading sector
3. LQ of a sector is = 1, it can be said as the same level with provincial sector

#### Shift-share analysis

By using *shift-share* analysis, it will know the changes of regional economic structure in Jayapura Regency, as compared it with Papua. From the result of said comparison, it can find how much the economic performance in Biak Regency is based on the excellence of competitive sector in a region. This research is using modification of notation as used by [9]. The formulation of classical model is as follow.

$$D_{ij} = R_{ij} + M_{ij} + C_{ij} \dots\dots\dots (1)$$

$$D_{ij} = Y^*_{ij} - Y_{ij} \dots\dots\dots (2)$$

$$R_{ij} = Y_{ij} - r_R \dots\dots\dots (3)$$

$$M_{ij} = Y_{ij} (r_{iR} - r_R) \dots\dots\dots (4)$$

$$C_{ij} = Y_{ij} (r_{ij} - r_{iR}) \dots\dots\dots (5)$$

In which  $r_{ij}$ ,  $r_{iR}$  and  $r_R$  represent the regional growth rate as defined each as follow:

$$r_{ij} = (Y_{ij}^* - Y_{ij}) / Y_{ij} \dots\dots\dots (6)$$

$$r_{iR} = (Y_{iR}^* - Y_{iR}) / Y_{iR} \dots\dots\dots (7)$$

$$r_R = (Y_R^* - Y_R) / Y_R \dots\dots\dots (8)$$

Afterwards, from the modification of Estaban – Marquillas (E-M), it calculates the influence of its formulation allocation as follow:

$$Y'_{ij} = Y_j (Y_{iR} - Y_R) \dots\dots\dots (9)$$

$$C'_{ij} = Y'_{ij} (r_{ij} - r_{iR}) \dots\dots\dots (10)$$

$$A_{ij} = (Y_{ij} - Y'_{ij}) (r_{ij} - r_{iR}) \dots\dots\dots (11)$$

$$D_{ij} = Y_{ij} (r_R) + Y_{ij} (r_{ij} - r_{iR}) + Y'_{ij} - r_{iR} = (Y_{ij} - Y'_{ij}) (r_{ij} - r_{iR}) \dots\dots\dots (12)$$

Meanwhile, from modification of notation by Arcelus that distinguishes the influence of regional economic growth, the formulation will be as follow:

$$K_{ij} = Y'_{ij} (r_j - r_R) = (Y_{ij} - Y'_{ij}) (r_j - r_R) \dots\dots\dots (13)$$

And the diffusion component of regional industry is formulated below:

$$KI_{ij} = Y'_{ij} / (r_{ij} - r_j) - (r_{iR} - r_R) = (Y_{ij} - Y'_{ij}) / (r_{ij} - r_j) - (r_{iR} - r_R) \dots\dots\dots (14)$$

Notes:

$D_{ij}$  = PDRB Growth Changes of Sector I in Biak Regency

$R_{ij}$  = PDRB Growth Changes of Sector I in Papua

$M_{ij}$  = PDRB Growth Changes of Sector I in Biak Regency that influences diffusion of regional industry

$C_{ij}$  = Competitive Excellence of Sector I that influenced by the growth rate in Biak Regency



- $Y_{ij}$  = PDRB Sector I of Biak Regency in the beginning year of analysis
- $Y^*_{ij}$  = PDRB Sector I of Biak Regency in the last year of analysis
- $Y_r$  = Total PDRB in Papua in the year (t)
- $r_{iR}$  = Sector I Growth Rate of PDRB in Papua
- $r_R$  = Growth Rate of PDRB in Papua
- $r_{ij}$  = Sector I Growth Rate of PDRB in Biak Regency
- $r_j$  = PDRB Growth Rate in Biak Regency
- $Y'_{ij}$  = PDRB in Biak Regency if the growth rate is equalized with the growth rate in Papua
- $C'_{ij}$  = Competitive Excellence of Sector I that is influenced by growth rate in Papua = Specialization level in Biak Regency for each sector
- $K_{ij}$  = Achievement of sector I that is influenced by the difference of growth in the city and province
- $KI_{ij}$  = Achievement of Sector I that is influenced by industrial diffusion in Biak Regency, PDRB growth of sector I in Biak Regency

#### 4. Result

##### *Location Quotient (LQ) Analysis*

**Table 1:** LQ in Biak Regency (2010-2012)

<b>BUSINESS FIELD</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
<b>1. AGRICULTURE</b>	<b>0.55</b>	<b>0.55</b>	<b>0.59</b>
1.1. Food crops	0.02	0.29	0.30
1.2. Plantation	0.01	0.41	0.39
1.3. Animal Husbandry	0.42	1.14	1.13
1.4. Forestry	0.02	0.23	0.25
1.5. Fishery	0.03	1.08	1.23
<b>2. MINING AND EXCAVATION</b>	<b>1.28</b>	<b>1.23</b>	<b>1.13</b>
2.1. Oil and Natural Gas	0.00	0.00	0.00
2.2. Non-Oil and Gas Mining	0.00	0.00	0.00
2.3. Excavation	1.28	1.23	1.13
<b>3. PROCESSING INDUSTRY</b>	<b>1.60</b>	<b>1.58</b>	<b>1.69</b>

3.1. Large/ Medium Industry	1.70	1.68	1.83
3.2. Small Industry of Household Crafts	1.17	1.18	1.18
3.3. Petroleum Refining Industry	0.00	0.00	0.00
<b>4. ELECTRICITY AND CLEAN WATER</b>	<b>3.18</b>	<b>3.28</b>	<b>3.35</b>
4.1. Electricity	3.83	3.94	4.03
4.2. Clean Water	1.64	1.64	1.65
<b>5. BUILDING</b>	<b>1.06</b>	<b>1.01</b>	<b>0.94</b>
<b>6. TRADE, HOTEL, AND RESTAURANT</b>	<b>1.14</b>	<b>1.16</b>	<b>1.19</b>
6.1. Trade	1.06	1.09	1.13
6.2. Hotel	2.02	1.92	1.85
6.3. Restaurant	1.56	1.54	1.50
<b>7. TRANSPORTATION AND COMMUNICATION</b>	<b>1.46</b>	<b>1.51</b>	<b>1.46</b>
7.1. Road Transportation	1.86	1.93	1.98
7.2. Sea Transportation	2.92	3.12	3.29
7.3. River Transportation	3.37	3.23	3.05
7.4. Air Transportation	1.42	1.63	1.59
7.5. Supporting Service of Transportation	2.22	2.21	2.16
7.6. Communication	0.57	0.57	0.52
<b>8. FINANCE, RENT, AND COMPANY SERVICE</b>	<b>2.07</b>	<b>1.82</b>	<b>1.42</b>
8.1. Bank	2.25	1.64	1.04
8.2. Non-Bank Financial Institution	3.94	4.07	4.16
8.3. Building Rent	1.32	1.30	1.26
8.4. Company Service	1.83	1.90	1.92
<b>9. SERVICES</b>	<b>1.12</b>	<b>1.07</b>	<b>1.02</b>
9.1. General Government	1.12	1.07	1.02
9.2. Societal Service	1.35	1.41	1.45
9.3. Entertainment and Recreation Service	0.61	0.63	0.64
9.4. Individual and Household Service	0.96	0.94	0.91

An empirical study conducted upon Biak Regency, in Numfor, has proven that in 2010, almost all sectors are more excellent than the provincial average, except agricultural sector. LQ value for entire agriculture was only 0.55 in 2010, 0.55 in 2011, and 0.59 in 2012. However, sub-sectors of animal husbandry and fishery which were not leading in 2010 had developed in such way until it successfully exceeded the provincial average. This is shown by LQ rising in these sub-sectors, which were 0.42 for animal husbandry and 0.03 for fishery in 2010, and then increased to 1.14 in 2011 and 1.13 in 2012 for animal husbandry, followed by 1.08 in 2011 and 1.23 in 2012 for fishery sub-sector. In 2012, LQ value for fishery was higher, which meant that this sub-sector had been more competitive.

**Shift Share Analysis (SSA)****Table 2: Shift Share in Biak Regency (2010-2012)**

BUSINESS FIELD	PGS	IMS	LS	LS
<b>1. AGRICULTURE</b>	<b>24,485.70</b>	<b>(15,674.70)</b>	<b>7,902.89</b>	<b>16,713.90</b>
1.1. Food crops	400.40	(171.47)	34,348.40	34,577.33
1.2. Plantation	11.40	0.85	4,353.63	4,365.88
1.3. Animal Husbandry	1,122.15	(337.50)	11,277.35	12,062.01
1.4. Forestry	118.03	(130.27)	8,844.80	8,832.56
1.5. Fishery	343.89	(313.86)	78,846.09	78,876.12
<b>2. MINING AND EXCAVATION</b>	<b>1,507.32</b>	<b>1,194.48</b>	<b>(1,395.29)</b>	<b>1,306.51</b>
2.1. Oil and Natural Gas	-	-	-	-
2.2. Non-Oil and Gas Mining	-	-	-	-
2.3. Excavation	1,507.32	1,194.48	(1,395.29)	1,306.51
<b>3. PROCESSING INDUSTRY</b>	<b>10,572.45</b>	<b>(7,392.11)</b>	<b>2,540.67</b>	<b>5,721.01</b>
3.1. Large/ Medium Industry	9,045.18	(7,805.76)	3,013.18	4,252.60
3.2. Small Industry of Household Crafts	1,527.28	(53.61)	(5.26)	1,468.41
3.3. Petroleum Refining Industry	-	-	-	-
<b>4. ELECTRICITY AND CLEAN WATER</b>	<b>1,788.85</b>	<b>(309.59)</b>	<b>429.47</b>	<b>1,,908.72</b>
4.1. Electricity	1,513.10	(89.24)	351.23	1,775.09
4.2. Clean Water	275.75	(121.88)	(20.23)	133.63
<b>5. BUILDING</b>	<b>14,581.73</b>	<b>9,272.06</b>	<b>(13,741.70)</b>	<b>10,112.09</b>
<b>6. TRADE, HOTEL, AND RESTAURANT</b>	<b>17,055.20</b>	<b>1,680.23</b>	<b>3,046.27</b>	<b>21,781.70</b>
6.1. Trade	14,018.88	1,363.34	4,497.33	19,879.55
6.2. Hotel	1,662.35	324.63	(1,050.58)	936.40
6.3. Restaurant	1,373.98	37.11	(445.34)	965.75
<b>7. TRANSPORTATION AND COMMUNICATION</b>	<b>19,076.80</b>	<b>13,383.76</b>	<b>(2,679.94)</b>	<b>29,780.62</b>
7.1. Road Transportation	5,206.78	185.80	1,723.67	7,116.25
7.2. Sea Transportation	5,065.92	199.87	3,551.93	8,817.72
7.3. River Transportation	942.03	(104.63)	(644.71)	192.68
7.4. Air Transportation	3,658.56	868.98	2,500.90	7,028.44
7.5. Supporting Service of Transportation	1,333.96	149.65	(353.20)	1,130.41
7.6. Communication	2,869.55	4,736.50	(2,110.92)	5,495.12
<b>8. FINANCE, RENT, AND COMPANY SERVICE</b>	<b>7,317.21</b>	<b>25,815.56</b>	<b>(23,695.39)</b>	<b>9,437.38</b>
8.1. Bank	3,033.89	27,424.75	(25,674.29)	4,784.35
8.2. Non-Bank Financial Institution	1,897.82	201.16	498.12	2,597.11
8.3. Building Rent	1,887.03	226.92	(760.91)	1,353.04

8.4. Company Service	498.47	86.41	118.00	702.88
<b>9. SERVICES</b>	<b>19,927.99</b>	<b>811.73</b>	<b>(12,672.98)</b>	<b>8,066.74</b>
9.1. General Government	18,084.07	812.65	(12,904.11)	5,992.61
9.2. Societal Service	1,100.38	(7039)	364.23	1,394.22
9.3. Entertainment and Recreation Service	326.03	32.53	77.95	436.51
9.4. Individual and Household Service	417.51	3.53	(177.65)	243.40
<b>PDRB</b>	<b>116,313.26</b>	<b>28,781.43</b>	<b>(40,266.02)</b>	<b>104,828.67</b>

### **Shift Share Analysis in Biak Regency**

During 2010-2012, the economy in Papua Province seen from PDRB had developed amounting to 18.43%, whose largest development is in the sector of finance, rent, and company service. All sub-sectors in Papua Province experienced better development, except forestry. The decrease occurred in forestry sub-sector had hampered the development of agricultural sector. Therefore, its development was only 6.63% (the smallest in this province), although other sub-sectors were relatively higher. For example, the plantation had developed until 19.82%, animal husbandry had reached 12.89%, and food crops had gained 10.54%.

Unlike the development in Papua Province, the development of agricultural sector in Biak Regency is in fact the largest one compared to other sectors. The biggest development was shown in plantation, and then followed by fishery, food crops, forestry and animal husbandry.

### **Local Share in Biak Regency**

*Local share* shows the contribution of regional excellences itself toward sectoral growth in such region. If the value of *local share* is positive, such region has a leading location. Conversely, if LS is negative, such region does not have leading location. The result of LS calculation in Biak Regency shows that the negative LS is -40,266.02. It means that the economic growth experienced by Biak Regency is caused by the influence of provincial growth trend amounting to 116,313.26 and the sectoral diffusion of 28,781.43.

If seen per sector, the positive value of LS is shown in the sector of agriculture, processing industry, electricity and clean water, trade, hotel and restaurant. Those four sectors have comparative excellences due to the location factor. LS for agriculture is relatively high enough, namely as much as 7,902.89. It means that the development of this sector in Biak Regency is influenced by provincial economic growth and sectoral diffusion performance.

## **5. Conclusion And Recommendation**

### **5.1 Conclusion**

Based on the analysis described above, it can be concluded that economic potential based on appropriate technology that can be developed in Biak Regency is sea fishery. The fish production mostly produced is tuna

and cekalang. The center for capture fishery in Biak Regency is located in the District of Biak Utara Timur. Barat and Biak Kota.

## **5.2 Recommendation**

Appropriate capture technology done by fishermen in Biak is traditional capture by using nets and hooks, as not destructing the marine ecosystem. Thus, the sustainability of fish reproduction can be preserved. However, for optimizing their capture, they need large and strong nets and hooks, as well as basing on the information about weather forecasts and fish movements (it can be supplied by the government).

In order to be more optimizing the fishery production, the fishermen shall establish a group of fishermen, in which the capitalization can be put together in order to be bigger and more capable in providing stronger equipment and tools, such as bigger boat and having wider range.

The improvement of fish production, especially demersal fish, can be attempted by marine fish cultivation with floating net cage, as long as it fulfills technical requirements, such as its wave and wind condition is not too harsh, free of pollution, and other technical aspects.

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