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Livelihood Structures and Household Access to Drinking Water Sources in West Ungaran Sub-District Semarang Regency Central Java Province Indonesia

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Abstract: Population on planet earth is more and more, limited natural resources, and development process run continuously. This study aims to assess the livelihood structure of the population, and access to household drinking water sources. This study uses secondary data, its source from several agencies. Data analysis using descriptive analysis percentage, presented in table and picture. The results showed that in the Sub-District of West Ungaran, the structure of livelihood shifted from the agricultural sector to non-agricultural. Population working in the non-agricultural sector reached 88.69 percent. The dominant occupations of the dominant population are in industry, trade and services sectors. The population livelihood structure varies spatially. In the Village of Ungaran, the number of people working in non-agricultural sectors the most, which is 99.14 percent. Meanwhile, there are 2.92 percent of households using primary sources of drinking water from unprotected springs. In addition, households that use bottled water for drinking water needs tend to increase in number.

Keywords: Livelihood Structure, Agriculture, Non-agricultural, Household Access, Drinking Water Sources.

INTRODUCTION

Development is essentially a continuous process between the various dimensions, which aims to improve the welfare of the population. Development is a series of efforts to build, improve, and improve and develop and sustain. The development is carried out directed and gradually to realize the national and regional development. Development is a sustainable development.

Indonesia's long-term development direction is set for the full development of Indonesian people and the development of all Indonesians. Population factor becomes one of capital in national development. Population become object and subject of development. The results of development should be enjoyed by all residents. The population is the human capital can influence the effectiveness of monitoring the role of

the board of commissioners (Makaryanawati, 2016). Human Capital will influence board of commissioner activity when experience and skills influence cognition and decision one makes (Johnson, Schnatterly, & Hill, 2013). Population-oriented development becomes one of the aspects in realizing sustainable development

Sustainable development is a continuation of the millennium development that ends in 2015. Sustainable development or sustainable development goals is abbreviated as SDGs, beginning in 2016 and ending in 2030. The goals of sustainable development mandate development for all, universally (Kutesa, 2015).

By the end of 2030 the world population is predicted to reach 8 billion, and most are in developing countries. Meanwhile, limited resources result in limited access. By 2015, the world population is 7.35 billion (Central Bureau Statistics, 2015). Developed countries have less than a third, and consume resources more than two-thirds of the available resources. Meanwhile, in developing countries, with a population of more than two-thirds of the world's population, consumes less than one-third of the available resources.

Millennium development results show that there are still a number of residents unable to access development results. The results of development is still an imbalance, both spatial. There is a dichotomy between developed and developing countries, between cities and villages, centers and peripheries, and between rich and poor.

Household access to improved drinking water sources continues to increase, but there is substantial regional disparity. In some areas, access to viable drinking water sources associated with the provision of drinking water infrastructure has not been able to keep pace with population growth. The growing number of people has led to increased consumption of drinking water. As many as 25 percent of the world's population suffers from drinking water shortages. By 2025 it is predicted that around 2.7 billion people or 30.33 percent of the world's population will experience water shortages (Director General of Water Resources at: [www.http://sda.pu.go.id](http://sda.pu.go.id), accessed, April 17, 2017).

A description of access to drinking water in a narrower area may be assessed at the sub-district level. This article aims to examine the livelihood structure of the population and access to household drinking water in some villages in West Ungaran Sub-District, Semarang Regency Central Java Province Indonesia.

LITERATURE REVIEW

Livelihood Structure

Livelihood is the main activity of the inhabitants in seeking for nahkah. Livelihoods are work activities undertaken by members of the working group, looking for work and employment, with the aim of earning income, in an effort to meet the needs of life, at least one week before the data of enumeration time (Central Bureau of Statistics, 2015).

Manpower is anyone who can do the work to produce goods and or services both to meet the needs and the community itself. Manpower is all citizens who are considered capable of working and able to work if there are work demands. Those who are members of the workforce are people aged 15-64 years (Mantra, 2003; Sukamndi, 2007). Based on demographic variables (gender, age, marital status, qualification, occupation, family type, ethic group, family and individual income) as sources of onformation for making financial investment decision (Desai and Hemantkumar P.B, 2016).

The livelihood is also called the main job or business field. Central Bureau of Statistics (2015), distinguishes main business fields into sectors, namely agriculture, mining, industry, electricity and gas, construction, trade, hotel and restaurant, transportation and warehousing, information and communications, finance and insurance, Others. The division of business field into 5 (Central Bureau Statistics, 2015) is agriculture, industry, trade, services, and others. The classification of the last major field of business is perceived as simpler and easier to analyze, so it is often used.

Changes in the structure of the main business field, can be used to analyze the basis of regional development and zone area. Region zones are classified into 4 (Yunus, 2001; Hardati, 2011), based on the livelihood structure of the population, ie urban fringe, ural fringe, rurban fringe, and rural fringe.

Livelihood is an outcome of a livelihood. Good livelihood is a sustainable livelihood (Chambers & Conway, 1991). One strategy to achieve sustainable livelihoods can be done by diversification, intensification and mobility (Ellis, 2000, Rijanta, 2008). Livelihoods can be done by diversifying livelihoods, intensifying livelihoods, or mobilizing or moving. Livelihood changes are one of the population's responses to change, trends, seasons, and pressures (Ashley *et al*, 2003). Livelihood changes are done with the aim of getting out of limitations and poverty.

Industrialization development requires an educated and trained workforce It is intended for industrial purposes and the smoothness of the industrialization process. An educated workforce is a workforce that has a skill or expertise in a particular field by way of school or formal and nonformal education. A trained workforce is a workforce skilled in a particular field through work experience.

The development process can be characterized by changes or shifts in demand and supply structure, population structure and labor (Hidayat, 2013). The development process can lead to structural transformation, namely the process of growth of the production sector from the primary sector to the secondary sector. Changes in the composition of the workforce from the original prime livelihood in the agricultural sector, shifted to industrial sectors, trade and services (Hardati, 2012, Hardati, 2014).

Household Access to Drinking Water Sources and Sustainable Development Goals

Development is a mandatory thing that must be done by every region, both developed and behind. Development is a continuous and continuous renewal process of a particular situation to a situation that is considered better (Suryono, 2010). Means that development never ends, from one generation to the next.

Sustainable development is a paradigm of development, which has a primary focus on realizing balance in development (Hadi, 2001). Sustainable development is a very simple concept, however complex, not only concerned about the value of intergenerational justice, but there are also values that cause different emphases on things to be maintained and should be developed, such as freedom, equality, solidarity, tolerance, Respect for nature, and shared responsibility (Roehrl, 2013).

Sustainable development that is a joint commitment is called the goal of sustainable development goals (SDGs). SDGs are a continuation of the MDGs that have ended in 2015. The objectives of sustainable development are implemented in the period 2016-2030. The goal of sustainable development has 17 goals and 169 targets, more than 300 indicators (Hoelman, 2015).

The aim of the sixth SDGs is to ensure the availability and management of sustainable water supply and sanitation for all. In indicator 6.1 it is explained that by 2030, achieving universal and fair access to safe and affordable drinking water for all. This means all have the right to gain access to safe drinking water (Kutesa, 2015).

Indonesia, in the document of the evaluation of the development of the late 2015, still has 4 indicators that have not been successful, one indicator that has not been successful is the coverage to drinking water (Hoelman, et al, 2015; Hardati, 2016). Indicators of access to drinking water, remains one of the agendas in sustainable development objectives (Kutesa, 2015).

Water is a object thing and can not be viewed as something that has no value. Clean water is water that is used for daily purposes whose quality meets health requirements and can be drunk after cooking. Drinking water is water that through the processing or without processing that meet health requirements and can be directly drunk (Health Ministerial Decree No. 907 of 2002, on Bappenas, 2003).

RESEARCH METHODE

The approach method used is quantitative descriptive method. This research was conducted in West Ungaran Sub-district, Semarang Regency, Central Java Province. This region is one of the relatively new districts, since 2005, Ungaran Sub-district is divided into two area, namely Sub-district West Ungaran and Sub-district East Ungaran.

The variables used are livelihood structure and type of household drinking water source. Data analysis used descriptive percentage. Percentages are generated from the bundles with the following formula.

$$P = (n : N) \times 100$$

$$P = \text{percentage (\%)}$$

$$n = \text{aggregate value of each component}$$

$$N = \text{total aggregate amount of each component}$$

$$100 = \text{konstante}$$

Livelihoods analysis is done by calculating the percentage of people working in agriculture and non-agricultural sectors. Comparative analysis, to assess livelihood structures and access to household drinking water sources. This analysis is used to examine the interrelationships between variables used in the study (Hardati, 2014).

RESULTS AND DISCUSSION

Condition of West Ungaran Sub-district

West Ungaran Sub-district is one of the districts in Semarang Regency which is the youngest. Started in 2005, Ungaran subdistrict is divided into two districts, namely Ungaran Barat and East Ungaran Subdistrict. West Ungaran Sub-District has 11 villages, and East Ungaran Sub-Ddistrict has 10 villages.

The location of the area is on the northern slope of Mount Ungaran, stretching from north to south. The area is passed by the Surakarta highway to Semarang city, and the freeway (TOL) of Semarang-Bawen

segment. In the north bordering the city of Semarang, the western borders with Kendal regency, the East and the South bordering the East Ungaran and Bergas Sub-district. Absolute, the location lies between 7°11'01" – 7°16'81" South Latitude and 110°36'04"- 110° 41'25" East Longitude.

Morphologically, the region is bumpy, with an altitude between 321 - 573 meters above sea level. The highest area in Kalisidi Village with an altitude of 573 m above sea level, topography slope. The lowest area in Ungaran Village, with a height of 321 m above sea level, the topography is relatively flat. The morphology of the region owned by West Ungaran Sub-District is a very interesting natural physical potential, and a characteristic of the region.

Table 1
Land Use in West Ungaran Sub-district 2015

| <i>Villages</i> | <i>Land Use</i> | |
|---------------------------|--------------------|------------------------|
| | <i>Agriculture</i> | <i>Non-agriculture</i> |
| Gogik | 71,01 | 28,99 |
| Langensari | 29,63 | 70,37 |
| Candirejo | 59,34 | 40,66 |
| Nyatnyono | 63,59 | 36,41 |
| Genuk | 36,33 | 63,67 |
| Ungaran | 30,01 | 69,91 |
| Bandarjo | 15,56 | 84,44 |
| Lerep | 70,66 | 29,34 |
| Keji | 80,06 | 20,94 |
| Kalisidi | 81,89 | 18,11 |
| Branjang | 87,36 | 12,64 |
| West Ungaran Sub district | 65,32 | 34,68 |

Source: Department of Agriculture of Plantation and Forestry in the CBS of Semarang Regency, 2016

Total area of West Ungaran Sub-District, 3,596.03 hectares. The land is used for agricultural and non-agricultural activities. The use of agricultural land reaches 65.32 percent, and the rest 34.68 percent for non-agricultural activities. The use of more agricultural land for dryland farming, reaches 39.94 percent of the total area, or 61.15 percent of agricultural land, and only 38.85 percent is used for paddy fields.

The area of agricultural land spread in 11 villages / kelurahan. Villages with agricultural land more than 65 percent of the total area are in the villages of Gogik, Nyatnyono, Lerep, Keji, Kalisidi and Branjang. In contrast, villages with a land area of less than 35 percent are Langensari, Candirejo, Genuk, Ungaran and Bandarjo villages. The village of Branjang has the most extensive agricultural land, while Bandarjo urban village has the most narrow farmland.

Non-agricultural land tends to increase. In 2011, non-agricultural land area of 34.68 percent. By 2015, the non-agricultural land area will be 35.69 percent. The increase of non-agricultural land during 2011-2015 is about 1.01 percent. In contrast, the area of agricultural land is declining. During 2011-2015, the area of agricultural land was reduced by 1.01 percent. The reduction of agricultural land occurs in 2012-2013, this is related to the construction of expressways in Semarang-Bawen road.

Table 2
Area and Land Use in Sub District West Ungaran Year 2011 - 2015

| Years | Land Use (%) | | Change (%) |
|-----------|--------------|-----------------|------------|
| | Agricultural | Non-agriculture | |
| 2011 | 65,32 | 34,68 | |
| 2012 | 65,32 | 34,68 | 0 |
| 2013 | 64,31 | 35,69 | 1,01 |
| 2014 | 64,31 | 35,69 | 0 |
| 2015 | 64,31 | 35,69 | 0 |
| 2011-2015 | 1,01 | | |

Source: BPS Kabupaten Semarang, 2006, 2011, 2016 and Analysis

Livelihood Structure

In West Ungaran sub-district, there was a shift in livelihood structures, from employment in the agricultural sector to non-agricultural sectors. During the period 2000-2015, livelihoods in the agricultural sector decreased by 7.41 percent, from 18.72 percent to 11.31 percent. Meanwhile, the field of business in the non-agricultural sector rose from 81.28 percent to 88.69 percent.

The reduced number of agricultural workers is in crop and plantation agriculture. Populations working in the non-agricultural sector that are increasing are the industrial and service sectors. During the period of 2000-2015, workers in the industrial sector rose 8.52 percent, and workers in the service sector rose 12.75 percent. Non-agricultural sectors that experienced a decline were trade (6.73 percent) and others (7.09 percent).

Tabel 3
Structure of Employment in West Ungaran Subdistrict 2000-2015

| Employment | 2000 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|-------------|--------|--------|--------|--------|--------|--------|--------|
| Agriculture | 18,72 | 11,14 | 11,20 | 11,25 | 11,29 | 11,33 | 11,31 |
| Industry | 17,60 | 26,14 | 26,18 | 26,19 | 26,19 | 26,18 | 26,12 |
| Trade | 22,09 | 15,39 | 15,37 | 15,36 | 15,34 | 15,32 | 15,36 |
| Service | 10,53 | 23,38 | 23,31 | 23,26 | 23,22 | 23,19 | 23,28 |
| Other | 31,02 | 23,94 | 23,94 | 23,94 | 23,92 | 23,91 | 23,93 |
| Total | 100,00 | 100,00 | 100,00 | 100,00 | 100,00 | 100,00 | 100,00 |

Source: CBS Semarang District and Analyse

The people who work in the industrial sector are mostly industrial workers. This is related to the location of villages in Sub-district of West Ungaran bordering villages that become big industrial sites. The regency of Semarang has more than 100 large and medium industries. The largest non-agricultural sector is the service sector. The service sector is indispensable in every region that is central to the development of large industries. The most preferred sectors of services are community services (community services, government and individuals), by 2015 the number is 22.65 percent of the total number of workers. This is

in line with what happened in India (Desai, 2016), that the people who work in the service sector are the highest, reaching 55.5 percent.

The livelihood structure of the population in West Ungaran Sub-district, varies spatially. Villages located on the west side of the Highway, and on the slopes of Mount Ungaran, some residents are livelihoods in the non-agricultural sector, ranging from 65 to 85 percent. While the area with kelurahan status, its location stretches in the North and East. Most of the population work in non-agricultural sector more than 95 percent, namely in Ungaran, Bandarjo, Genuk, and Langensari.

Kelurahan is an area headed by a Lurah, and they are assigned by the government, a civil servant (PNS), paid by the government. While the village is an area headed by a village head. They are directly elected by the people, and are not paid in the form of money, but the salary in the form of cash or crooked land.

The four urban villages (Ungaran, Bandarjo, Genuk, and Langensari) are the centers of different activities of non-agricultural activities. Ungaran village became the central government of Semarang regency. Bandarjo became the center of commerce, Genuk and Langensari into a large industrial area. This is in accordance with the research results Hardati (2014) that in the region of Semarang Regency diversified rural economy.

Household Access to Drinking Water Resources

Source of drinking water is one indicator of sustainable development goals. Drinking water sources from unprotected springs are not recommended for use. In Sub-district of West Ungaran, there are still households that use drinking water source from unprotected water source. Households using unprotected drinking water sources increased. In 2011, it only ranged between 2.90 percent and in 2015 to 2.92 percent. Viewed from the percentage, small, only 2.92 percent, and increased only 0.02 percent, but in absolute terms, the number of 569 households. On average each household has 3.66 household members, meaning that there are about 2,083 people using unprotected drinking water sources. In fact, the goal of sustainable development that will end in 2030 requires all citizens served by clean water is healthy.

At the same time, there was a shift in access to drinking water sources. During the period of 2011-2015, households using bottled water experienced an increase of about 0.31 percent. In 2011 there were

Table 4
Quality of House Building and Access household to Source of Drinking Water

| Years | No Permanent House Building (%) | Access Household to Drinking Water Source (%) | |
|-------|---------------------------------|-----------------------------------------------|---------------------|
| | | Water Parking | Unprotected Springs |
| 2011 | 8,46 | 10,29 | 2,90 |
| 2012 | 8,51 | 8,44 | 2,92 |
| 2013 | 8,52 | 10,26 | 2,91 |
| 2014 | 8,54 | 10,23 | 2,91 |
| 2015 | 8,50 | 10,60 | 2,92 |

Source: CBS Semarang District and Analyse

only 10.29 percent, and by 2015 to 10.60 percent. In the preceding ten years, in 2000, no households had used bottled water. Means for 15 years there are 10 percent. If the growth of households using bottled water is similar to that period, it is feared that in 135 years all households will use the bottled drinking water source. Bottled water is traded, so water becomes commodity goods. In fact, in West Ungaran District has several springs (Hardati, 2015).

The highest non-agricultural employment (99.14 percent) in Ungaran Village, and the lowest (65.05 percent) in Kalisidi Village. All villages in Sub-district of Ungaran west, the population work in non-agricultural sector more than 65 percent. So it can be explained that the area of West Ungaran District is an area that includes a suburb or zobikot area or urban frange (Yunus, 2001 in Hardati, 2011).

Its inhabitants mostly work in non-agricultural sectors. Although it is an agricultural area (mostly dry land), and has abundant springs. But there are households using drinking water from unprotected springs, and there is a trend in the number of households Using increased bottled water. Households that use drinking water sources from unprotected springs, most are in Lerep Village.

Table 5
Employment Field Structure, Land Use and Household Access to Drinking Water Resources

| <i>Villages</i> | <i>Employment</i> | <i>Land Used</i> | <i>Household Access to Drinking Water</i> | |
|-----------------|------------------------|------------------------|-------------------------------------------|------------------------------|
| | <i>Non-agriculture</i> | <i>Non-agriculture</i> | <i>Unprotected Springs</i> | <i>Battle/ Parking Water</i> |
| Gogik | 73,96 | 28,99 | 0,75 | 0,00 |
| Langensari | 97,34 | 70,37 | 0,00 | 15,86 |
| Candirejo | 88,32 | 40,66 | 2,43 | 12,01 |
| Nyatnyono | 82,64 | 36,41 | 1,87 | 0,43 |
| Genuk | 96,79 | 63,67 | 0,19 | 42,23 |
| Ungaran | 99,14 | 69,91 | 0,57 | 15,38 |
| Bandarjo | 98,41 | 84,44 | 0,00 | 11,63 |
| Lerep | 82,80 | 29,34 | 60,49 | 2,04 |
| Keji | 85,65 | 20,94 | 26,40 | 0,19 |
| Kalisidi | 65,08 | 18,11 | 6,36 | 0,23 |
| Branjang | 67,83 | 12,64 | 0,94 | 0,00 |
| West Ungaran | 65,32 | 34,68 | 2,92 | 10,60 |

Source: CBS Semarang District and Analyse

In general, dominant villages are employed in the non-agricultural sector and are central to non-farm activities, some households use bottled water from bottled water. In villages where the population is working in the non-agricultural sector, it is not a center for non-agricultural activities, and still has agricultural land, so households that use bottled water are few and in some villages do not exist, as in the villages of Gogik and Branjang. Households that use the most bottled water are in Genuk. This village is one of the main industrial centers.

West Ungaran District is one of the areas in Semarang Regency, which is one of the water sources. Water extracted from springs in West Ungaran is distributed to various areas of Central Java, using water

tanks, in addition to emerging ait sellers or refill drinking water outlets (Hardati, 2015). Estimated every year increases, and in the future it is estimated that the number of water-taking sites increases.

Ironically, the western Ungaran sub-district, which has several water sources, still finds households using drinking water sources with unprotected springs. Meanwhile, households that use the bottled drinking water sources are increasing. The state of disparity also occurs in Thailand, where for some time development follows this approach, it further underlines the power and socio economic disparity (Taotawin and Buapan, 2017).

CONCLUSION

The livelihood structure of the population is shifting, from agriculture to non-agricultural. Population working in the non-agricultural sector is growing in number, and occurs almost evenly in all villages / kelurahan. The manufacturing sector becomes one of the most popular jobs. Most of the people working in the industrial sector become industrial laborers. In addition to the industrial sector, the service sector also increased during the same period.

In villages with wider agricultural land, there are fewer people working in the agricultural sector, and on the contrary the number of people working in the non-agricultural sector is increasing. Household access to drinking water sources is included, but households still use drinking water sources from unprotected springs. The objective of sustainable development to be evaluated by the end of 2030 is to expect that all households can access the drinking water recommended by the Indonesian republic health service.

The abundant water source in a region has not always been able to guarantee its inhabitants can access the water. In West Ungaran District has several springs used for water resources, but there are still households using drinking water sources from unprotected springs, and households' tendency to use drinking water sources is increasing.

SUGGESTION

Population working in the non-agricultural sector, having a steady income each month, is advised to access drinking water from a protected source. Non-agricultural based villages or the majority of the population work in non-agricultural sectors, and still have agricultural land, are expected to pay attention to the agricultural sector, by planting various crops on their own land, to help maintain the availability of water catchment areas, To support the realization of sustainable development.

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