

# Strengthening of Human Resources Based on Local Strength Through Current Mushroom Culture from Waste Processing Results Citarum River, West Java Province

H Hendriana<sup>1</sup>, W Hidayat<sup>2</sup>, G Dani S R<sup>3</sup> and D Mulyono<sup>4</sup>

<sup>1, 2, 3, 4</sup>IKIP Siliwangi, Indonesia

<sup>1</sup>herishen@stkipsiliwangi.ac.id, <sup>4</sup>dinno@ikipsiliwangi.ac.id

**Abstract.** This study aims to improve local strength-based human resources (HR) in the Citarum River Basin, namely Cihampelas Village, West Bandung. This research is based on the problems in the area such as the community only as a garbage collector and waste processing has not been maximized and is based on the potential that exists in the Cihampelas Village such as the social aspects of the community which has a strong value of mutual cooperation and ecologically many local strengths such as waste organic and inorganic. Oyster mushroom cultivation is one of the efforts to improve the quality of human resources by processing water hyacinth waste as baglog and briquettes used as fuel. The research method used in this research is qualitative and the instruments used for this research are interviews, observations, and documentation. The results of this study obtained a profile of the people who have the value of mutual cooperation and lack of understanding of the processing of waste, especially water hyacinth for the cultivation of oyster mushrooms, after the training began to maximize waste management using water hyacinth waste for baglog and steaming fuel, and the emergence of attitude creativity, discipline and responsibility in developing the economy.

## 1. Introduction

Increasing human resources (HR) is currently the focus of government attention. Increased human resources are considered important because natural resources (SDA) are abundant when there are human resources that are less productive, so that these natural resources cannot be utilized optimally. Increased human resources can be done through various ways, either through formal, non-formal or informal education..

The importance of increasing human human resources goes from the problems that arise in Indonesia such as the number of unemployed, low income per capita society and there are indications that the utilization of natural resources in Indonesia is not optimal. These problems are in line with what was stated by the Central Statistics Agency of the Republic of Indonesia (2015), namely the number of unemployed Indonesians in 2015 reached 114.6 million people. located at 3,600 US dollars. The per capita income figure is still lagging behind neighboring countries, such as Singapore and Malaysia, which respectively reach 52,900 and 9,300 US dollars. The above problems when left unchecked will be a protracted problem and will have an impact on other fields. One effort to improve human resources can be done through training on understanding the use of natural resources or local wisdom in the surrounding environment.

In this study, human resource improvement was carried out through training in utilizing local potential in the Citarum river environment. Local potential used in this research is the condition of the citarum river which is the mouth of waste disposal and the habits of the community in utilizing the waste. The target community groups in Strengthening Local Strength Based Human Resources through Oyster Mushroom Cultivation from the Results of Citarum River Waste Processing in West Java Province is located in RT 04 RW 06 Cihampelas Village, Cihampelas District, West Bandung Regency, West Java Province. The target community in RT 04 has a total of 112 households.

Improving the quality of Human Resources in the Village of Cihampelas Kec. Cihampelas Kab. West Bandung is based on several factors: Quantitatively the portraits and profiles of the target communities described in the table above show that most of the target people work as traders, laborers, builders, and do not work. This proves that the potential of the target community groups to strengthen local strength-based human resources through the development of creative industries in cultivating Citarum River oyster mushrooms in West Java Province has excellent value potential. Physically the target community groups are very deficient in terms of infrastructure and facilities for the development of creative industries cultivating oyster mushrooms from the results of this waste processing. While socially, the creative industrial activities of the cultivation of oyster mushrooms are well known in the target group and outside the target group area and the community still has a close tradition of mutual cooperation.

The aim of this program is to improve the ability of the community to process waste in the cultivation of better oyster mushrooms in Cihampelas Village, Cihampelas District, West Bandung Regency, West Java Province. Specifically, the objectives of this program are, the establishment of waste sorting and processing facilities especially from water hyacinth for use in the cultivation of oyster mushrooms which are more representative in order to increase mushroom production, both in quantity and quality for the development of the people of West Java, the availability of all sorting support devices. and adequate waste processing that can be used as a place of learning for the people of West Java, and the availability of additional waste production materials that can be used to make baglog (mushroom planting media) or fuel which is then used for the cultivation of oyster mushrooms that are better in quantity and quality to meet the needs of the market around Bandung Barat and West Java Regencies widely.

## 2. Theoretical Review

### 2.1. *Improving Human Resources*

Human resources (HR) are the basic capital in national development, therefore the quality of human resources needs to be developed and directed so that they can achieve the expected development goals. Human resources can actually be seen from two aspects, namely, the first aspect of quantity includes the amount of human resources available in an area or place. Second, the quality aspect includes the ability of human resources both physically and non-physically and mentally in carrying out development. From this concept, it can be understood that the large quantity of human resources without adequate quality support will become the overall development burden of society..

Planning in the development of human resources is a systematic process used to predict future demand and supply of human resources. With the existence of measurable human resource planning, it is expected to be able to estimate the number and type of labor needed in each period so that it can assist the human resources in developing recruitment, selection, education and training planning. "Human resource planning is the process of analyzing and identifying the availability and needs of human resources so that the organization can achieve its goals", Mathis and Jackson and Sikula [1], [2]. George Milkovich and Nystrom [3] suggested that human resource planning is defined as the process of determining human resource needs and facilitating those needs so that their implementation is in line with existing plans.

Benefits of human resource development planning will provide positive values for a society. But planning alone cannot build the program as a whole, but there needs to be a balance between the human resource planning function and other functions so that the goal is achieved as a whole. In particular, states that the type of human resource development is divided into two, namely, first, informal development, namely personnel for their own desires and efforts to train and develop themselves by studying literature books or other sources relevant to the work or his position and human resource development [4]. Second, the process of resource development is formally, namely employees assigned by agencies or institutions to attend education and training, both carried out by companies and organized by training institutions. This formal development is carried out because of the demands of the work or because of current or future needs. HR development is formally carried

out through higher education programs and other training programs that are in line with the needs of employee career development..

## 2.2. *Local Strength*

Local strength in this research is the availability of natural resources both biological and non-biological as well as local wisdom in Cihampelas Village, Cihampelas District, West Bandung Regency. Local wisdom is a norm, rule or custom that applies to a place that emerges from a long period together between the community and its environment and is able to overcome various problems that arise in its life [5].

Local strength in the area of Cihampelas Village, Cihampelas District, West Bandung Regency, namely the existence of the Citarum River, in which very much organic or inorganic waste and local wisdom in the Village are the habits of the villagers in taking fish in the Citarum river environment and picking up garbage in the river so that there is an assumption that the citarum river is a place to find food or livelihood for some residents there. Thus, Citarum is considered to be a potential source of life for the community around Cihampelas Village, Cihampelas District, West Bandung Regency.

## 2.3. *Oyster Mushroom Cultivation*

Oyster mushroom cultivation is currently the type of business that is in demand by most citizens in Indonesia. This is due to the cultivation of oyster mushrooms suitable in environments with weather, such as in Indonesia, especially the mountains, does not require extensive land, and the age of harvest is relatively fast and easy in marketing. Oyster mushrooms are called because the shape of the canopy (hood) resembles a semicircular white oyster skin. In oyster mushroom cultivation, of course there are things that must be considered such as making kumbung, planting media, maintenance and harvesting. The hardest part is making baglog or planting media that has been inoculated with fungus seeds, this is because the failure rate is very high. The two main activities in the cultivation of oyster mushrooms are making the planting medium and inoculating the fungus seeds into the growing medium and growing the mycelium into a fruiting body.

The room where mushroom cultivation or better known as kumbung is a mushroom cultivation room as a place to store the planting medium so that the growth of fungi can grow well and produce fresh mushrooms with high quality and economic value (both in terms of weight and shape). Kumbung is better made from ingredients that are easily found in the environment around the place where the cultivation is carried out. This is done in order to save more on the process of making the kumbung, for example from bamboo materials for poles (construction), while the walls can use gedek (woven bamboo) and the roof uses tiles from clay. Roof cover using clay tile so that the room remains moist. Making the lower floor is plastered only on the road section to make it easier for the maintenance and harvesting process, but on the shelf part of the plant let the ground partially or even partially use sand.

Selection of planting media for cultivation of oyster mushroom cultivation must be thoroughly prepared. In this study the making of planting media is using pots made from water hyacinth waste. In the process of making planting media, it is necessary to ensure that the water hyacinth to be woven is completely sterile. In addition to water hyacinth as a pot medium, other media are sawdust, bran, and lime. After all the ingredients are available, ingredients such as saw powder, bran and lime are stirred evenly, sterilized by steaming and the last is put into the planting medium in the form of a pot of water hyacinth plait, p. The last process is the selection of fungus seeds that are good to plant. The thing to consider in choosing a good oyster mushroom seed is to avoid buying large amounts of seeds, pay attention to the expiration date, pay attention to the value of the Biological Efficiency Ratio (BER), open the cover and look for the best seed provider.

The treatment of oyster mushroom cultivation requires proper handling, so that it can develop in accordance with expectations. This will affect the quantity of oyster mushroom products produced by farmers, and in turn will have an impact on increasing farmers' income. In other cases the treatment of oyster mushrooms is easily difficult. This is because oyster mushrooms are a strong fungus against various disease attacks that might interfere with the cultivation process itself. However, erroneous

handling, especially in air circulation, excessive humidity or excessive sunlight will affect the quality of oyster mushroom products produced later when harvesting is carried out.

In the business world of planting oyster mushrooms, there are several things that need to be considered, one of them is the process of harvesting good oyster mushrooms. What kind of harvest can be called a successful / fair / many harvest. In the process of harvesting oyster mushrooms, there are several things that must be considered, including the tools and materials for harvesting.

#### *2.4. Increasing HR through Cultivation of Local Strength-Based Oyster Mushrooms*

In this study, efforts to improve human resources were carried out through the cultivation of oyster mushrooms based on Local Strength. The local power referred to in this study is the availability of natural resources and local wisdom such as the habits of residents in taking waste and other things in the Citarum river in the village of Cihampelas, Kec. Cihampelas kab. West Bandung.

Oyster mushroom cultivation conducted in this study is the cultivation of oyster mushrooms that utilize citarum river waste waste, namely water hyacinth plants. This large water hyacinth plant is used as a planting medium as baglog and fuel in steaming oyster mushroom planting media. The use of water hyacinth in the making of baglog and fuel media is explained to the community through counseling to the community in the village of Cihampelas so that the community can be maximized in utilizing the water hyacinth waste. Other benefits besides this, people who will do the cultivation of oyster mushrooms can save more money in the burning process and making baglog which usually uses plastic media.

### **3. Research Methods**

The research approach used is a qualitative research approach. This is because in this study it is expected to show the quality of community life development in full in the context of community capacity building in Bangkit Bersama Cooperative, Cihampelas Village, Cihampelas District, West Bandung Regency. In addition, this is expected to be a tool to be able to understand new concepts and theories in the context of the cultural settings of the people under study, especially those relating to the context of life and cultural characteristics of the communities around the Bangkit Bersama Cooperative.

The instruments used in this study are interview guidelines that are used to analyze the problems and attitudes of some respondents who are participants in the life skills skills management program, observations are used to understand the trends and attitudinal patterns shown by the community / participants in the community empowerment program in development of program management life skills related to the skills built by this training, and documentation studies are carried out to find supporting data in skills programs related to improving the quality of life of the community carried out by the Bangkit Bersama Cooperative in order to utilize environmental potential based on the period of development carried out.

Data analysis techniques are used, in accordance with the opinion of Miles analysis activities consist of three activities that occur simultaneously, namely data reduction, data presentation and conclusion drawing/ verification [6]. Occurring simultaneously means data reduction, data presentation and conclusions / verification as something that is interconnected with each other so that it becomes a cycle and interaction at the time before, during and after collecting data in parallel form that builds a general insight called analysis [7]. In this study data analysis techniques carried out included transcripts from interviews, data reduction, analysis, data interpretation and triangulation. From the results of data collection obtained, the research conclusions can be drawn. The interviews were conducted with the participants of the activities involved in the community empowerment program around the Citarum river area. Of the 30 participants, a sample of 10 respondents was taken. Whereas for the observation itself carried out continuously by involving the researcher itself as the main instrument of research.



## 4. Result and Discussion

### 4.1. Result

This research was developed based on the collaboration carried out with the Bangkit Bersama cooperative. This cooperative was founded in 2009 by Indra Darmawan, 11 years since he started the waste management business. When the initial members were established, only 20 people and now has grown to 100 people. The work area for waste management is carried out in three villages, namely Cipatik Village, Citapen Village and Cihampelas Village. All three are in Cihampelas Subdistrict. Within one month, the total waste collected through scavengers reaches 80 tons or an average of 2-3 tons of plastic waste per day. But not all can be processed, especially styrofoam and aluminum foil. Besides managing waste, this cooperative also manages water hyacinth plants. Based on the research activities obtained the following description:

First, Profile of human resources strengthening in Cihampelas Village, Kec. Cihampelas Kab. West Bandung, namely the geographical condition of the village in the citarum river flow, the presence of local strength in the form of natural resources that are still abundant in the citarum river flow such as the growth of various plants, one of which is water hyacinth, the amount of inorganic waste, the condition of people who have strong mutual cooperation. and waste processing habits that have become hereditary professions.

Second, Before being given training, there are still a lot of garbage collectors who only take garbage and sell it directly to collectors so that the economic value obtained is still low. Third, After being given training, it was shown that the community, especially those who were members of the Bangkit Bersama Cooperative, showed changes in attitude in waste management, which initially only took and sold garbage to the collectors to be able to process waste, one of which used it in the cultivation of oyster mushrooms, so that the economic value obtained by the community is increasing.

Fourth, A change in attitude towards the people of Cihampelas Village, Cihampelas, West Bandung includes a more creative attitude in processing waste, especially using it in the cultivation of oyster mushrooms and the emergence of new entrepreneurial desires, one of which is the cultivation of oyster mushrooms. This affects the economic level of the community, which initially has not been maximally maximized.

### 4.2. Discussion

Based on the results of the research carried out, it can be obtained several research subjects as follows:

#### 4.2.1. Profile of Local Strength Based Human Resources Strengthening through Waste Management and Oyster Mushroom Cultivation.

Strengthening human resources based on local strength is one of the main objectives in development development which is included in Sustainable Development Goal's. Local power is not only in the form of social resources, but with the addition of ecological resources. Provides a definition of ecological development [8]. According to him, development affects and is influenced by the environment. The interaction between the development of human resources or the potential of other living creatures and the environment forms an ecological system called ecosystem. Waste processing and mushroom cultivation is one of the efforts to exploit the ecological potential in improving the quality of life that is a challenge for today's community development. With this development, it becomes one of the ways to build and increase the economic capacity of the community to grow and develop for the better, so that it can encourage the strengthening of personal capacity and social competencies in Cihampelas Village, Cihampelas District, West Bandung Regency.

This is shown by the increasing number of Bangkit Bersama Cooperatives members who at the beginning of the establishment only numbered 8 people now become 120 people and show the existence of a greater and more advanced strength character for people's lives after becoming a member of the cooperative.

#### 4.2.2. *Improvement of Local Strength-Based Human Resources Ability through Processing Waste in Cultivating Oyster Mushrooms before Training*

Improving the capacity of human resources before the training was given has not shown significant changes in the capacity of community life. This can be seen from the economic conditions of the people who are still experiencing obstacles, where people still depend their lives on collecting garbage directly from the Citarum river. And only sold in complete physical form, has not undergone a process of processing, people still have difficulty in building the quality of the products produced, people do not know mushroom cultivation, and water hyacinth is just thrown away along the watershed. Therefore, the economic value of people's lives is still one of the obstacles that make people's lives still unable to develop independently.

#### 4.2.3. *Improvement of Local Strength-based HR Capabilities Through Processing Waste in Cultivating Oyster Mushrooms After Training*

Human resource capacity building Better waste processing is done by optimizing derivative products from waste management so as to be able to bring huge economic benefits to the implementers, members and the surrounding community. The cultivation of oyster mushrooms by utilizing the potential generated from water hyacinth waste is one of the solutions to improve the quality of community life, especially for scavengers. Now besides earning income from scavenging also earns income from the sale of its own production mushrooms. Independence also began to be developed, where the existing staff focused on their respective fields. So that it can be more utilized to make the budget and time more efficient to achieve the goals of cooperatives and capital for production. The use of woven water hyacinth as a medium of media (baglog) cultivation of mushroom plants is one in efficiency while prioritizing ecological approaches that complement each other. Not by using plastic which will only add to the existing problems. In addition, the use of briquettes from water hyacinth as a fuel in the sterilization process in preparation of planting media for oyster mushrooms is also a distinct advantage that is expected to increase budget efficiency in the process of cultivating oyster mushrooms.

#### 4.2.4. *Changes in Community Attitudes in the Community Environment Target of Local Strength Based Human Resource Ability Improvement Program through Waste Management in Oyster Mushroom Cultivation*

Changes in the attitudes of the community in the vicinity of the Bangkit Bersama Cooperative seem to change significantly, so it can initiate various activities with events from inside and outside the island of Java, as well as inviting several university components to be able to provide support in the form of training activities, mentoring and coaching to improve the quality of community life itself. This change in attitude can be seen from the emergence of discipline, determination and responsibility in managing some of the ecological potential found in Cihampelas Village, Cihampelas District, West Bandung Regency. The processing of ecological potential such as the processing of local strength used is processing water hyacinth as a baglog of herbal medicine and eceng is used as briquettes when steaming the planting media of oyster mushrooms and delta citarum river deposits become the favorite agricultural area during the dry season.

## 5. Conclusion

Based on the data from the research that has been carried out, it can be concluded several things, including the following: *First*, profile of human resources strengthening in Cihampelas Village, Kec. Cihampelas Kab. West Bandung, namely the geographical condition of the village in the citarum river flow, the presence of local strength in the form of natural resources that are still abundant in the citarum river flow such as the growth of various plants, one of which is water hyacinth, the amount of inorganic waste, the condition of people who have strong mutual cooperation. and waste processing habits that have become hereditary professions. *Second*, before being given training, there are still

many people who collect garbage that only picks up trash and immediately sells it to collectors so that the economic value obtained is still low.

*Third*, after being given training, it was shown that the community, especially those who were members of the Bangkit Bersama Cooperative, showed changes in attitude in waste management, which initially only took and sold garbage to the collectors to be able to process waste, one of which used it in the cultivation of oyster mushrooms, so that the economic value obtained by the community is increasing.

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