THE ENTREPRENEURSHIP DEVELOPMENT IN GEOTHERMAL TOURISM AREA: BEFORE AND DURING PANDEMIC ERA

Intan Noviantari Manyoe[1)], Siti Suhartini S. Napu[2)] Tiggi Choanji[3)]
[1)] Geological Engineering, Universitas Negeri Gorontalo
intan.manyoe@ung.ac.id
[2)] SNVT for Housing Provision of Gorontalo Province,
Balai P2P Wilayah Sulawesi I
sitinapu4@gmail.com
[3)] Geological Engineering, Universitas Islam Riau
tiggich@eng.uir.ac.id

A. Introduction

Geothermal is a renewable energy resource that is being actively developed in all regions of the world. Geothermal can be used and developed in various fields. Geothermal can be developed to fulfill a country's source of electrical energy. In other fields, geothermal can be developed in agriculture, tourism and health.

Unlike other energy sources such as coal, oil, and natural gas, geothermal have many advantages. Compared to coal, oil, and natural gas, geothermal have the lowest production of CO_2 emissions. In fact, binary geothermal power plants produce absolutely no CO_2 emissions (Armannsson, 2003; Blodgett and Slack, 2009; Rybach, 2010). The use of geothermal as a source of electrical energy can replace the role of fossil energy, which produces more CO_2 emissions.

Geothermal is generally formed because of the geothermal fluid and heat sources. Geothermal fluid is water, which can always be available through a hydrological process. The heat source is at the subsurface. The heat source heats groundwater through a convection process. The heat transfer process in the subsurface occurs by conduction and convection (Glassley, 2014).

Geothermal is a non-transferable source of energy such as coal, oil and natural gas. After the exploitation stage, fossil energy sources such as coal, oil and natural gas can be exported to other countries. Therefore, the domestic consumption may not be fulfilled in the producting country. In contrast to geothermal, which is a source of energy that cannot be transferred to other countries. Domestic consumption in the form of electricity and all the benefits that can be obtained through geothermal is only enjoyed by the country or production area.

Geothermal is not only positive for environmental sustainability, but also has implications for improving the country's economy and the welfare of local communities. This paper will discuss entrepreneurship that developments in the geothermal tourism area in Gorontalo before the pandemic era. In addition, this paper will discuss the development of geothermal entrepreneurship during a pandemic era.

B. Discussion

1. The Entrepreneurship Development in Gorontalo Geothermal Tourism Areas Before the Pandemic Era

Gorontalo is an area located in the North Arm of Sulawesi, Indonesia. Gorontalo has geothermal potential that stretches from the eastern part of the area till the western part. Areas with geothermal potential in Gorontalo are Lombongo, Pangi, Libungo, Tulabolo Timur, Hungayono, Pentadio, Bongongoayu (Diloniyohu), Talumopatu, Kwandang, Nantu, Dulangeya and Pohuwato.

Various research has been carried out in geothermal areas in Gorontalo. Geological research has been carried out by Manyoe and Bahutala (2017), Manyoe (2019), and Tolodo et al (2019). Geophysical research has been carried out by Manyoe (2015), Manyoe (2016), Manyoe et al (2020), and Manyoe and Hutagalung (2020). Geochemical research has been carried out by Napu (2019) and Tolodo et al (2020). Lineaments research has been carried out by Manyoe and Hutagalung (2020). Geotourism research has been carried out by Manyoe et al (2020). Integrated geothermal research has been carried out by Direktorat Panas Bumi (2017) (Figure 1).

Gorontalo geothermal research shows that Gorontalo geothermal has a speculative resource potential of 79 Mwe, a hypothetical resource potential of 15 Mwe, installed capacity and the development plan for generating unit I in 2024 is 20 Mwe. Gorontalo geothermal research shows the surface and subsurface conditions of Gorontalo geothermal areas as well as an assessment of the geodiversity of geothermal areas for geotourism purposes.

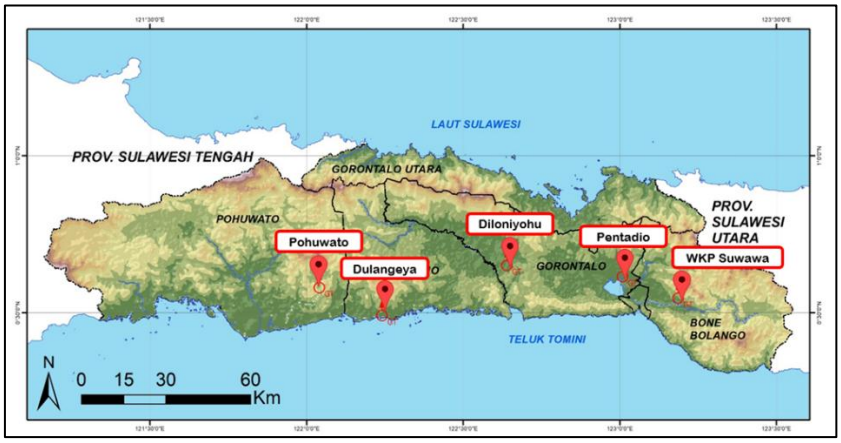

Figure 1 Some of geothermal potential areas in Gorontalo

Gorontalo geothermal areas that have been developed into tourist destinations are Lombongo, Pangi, Libungo, Pentadio, Bongongoayu (Diloniyohu), and Talumopatu. The geothermal areas of Gorontalo with the largest management are Lombongo and Pentadio. Lombongo offers hot spring baths and nature tours around the geothermal area. Pentadio offers tours of hot springs, saunas and nature tours around the geothermal area.

The development of geothermal areas as tourist destinations is able to revive small and medium industries. The development of geothermal areas in Gorontalo as a tourist destination revives the food and souvenir industries in Gorontalo. Residents around geothermal areas, especially get the impact of the development of geothermal areas as tourist destinations.

The food industry in Gorontalo offers special Gorontalo foods and snacks such as *binthe biluhuta, ilabulo, bilendango, iloni, nike cakes, sagela, woku, popolu,* and *sabongi*. The souvenir industry offers distinctive souvenirs such as *karawo* and *upiya karanji*. Gorontalo food and souvenirs are managed by small, medium and household industries. The development of geothermal areas as tourist destinations to revive entrepreneurship in the community so that it has implications for the welfare of the community.

2. Entrepreneurship Development in Gorontalo Geothermal Tourism Areas During the Pandemic Era

The pandemic era paralyzed various sectors including the manufacturing sector, the economic sector, the transportation sector, the food sector and the social sector. The tourism sector has also felt the impact due to the pandemic. Various tourist destinations are closed and do not operate to reduce the number of Covid-19 transmissions (Figure 2).

The closure of tourist locations has implications for the sustainability of entrepreneurial products. The food and souvenir industry due to the closure of tourist destinations also received its impact. The entrepreneurship built by the community around the geothermal location has not been able to operate due to the closure of the geothermal tourism location.

However, community entrepreneurship must continue to run even during a pandemic because the necessities of life must still be fulfilled. Therefore, a new marketing strategy for entrepreneurial products is needed during the pandemic. Entrepreneurs can do marketing through digital platforms. Entrepreneurial products can be marketed to consumers through digital platforms, so that even during a pandemic, entrepreneurship can still operate and survive.


Figure 2 Condition of the Talumopatu geothermal tourism location during the pandemic era

The readiness needed in marketing entrepreneurial products through digital platforms, according to Hendarsyah (2020), is the readiness of human resources. Human resources as brainware in product marketing must be able to master the use of digital platforms. For people who are not familiar with digital platforms for marketing, they need a community service program. Community service programs can increase the readiness of human resources in terms of marketing entrepreneurial products. The acquired skills can continue to be used after the pandemic.

C. Conclusion

Entrepreneurship development in the geothermal tourism area of Gorontalo includes entrepreneurship in the small, medium and household industries that are engaged in the food and souvenir industry. Geothermal entrepreneurship development during a pandemic can be done by utilizing digital platforms for marketing entrepreneurial products. Entrepreneurship development in the geothermal field must be carried out and developed in line with the advancement of times, technology and innovation for the welfare of society and the improvement of a country's economy.

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Glosarium

Geothermal:	The energy source that comes from the subsurface is generally formed due to the heating of groundwater by a heat source in the form of magma. Other geothermal systems exist that are fluidless such as hot dry rock.
Coal:	The source of fossil energy which is formed through the process of inkolen of organic sediment, is mainly plant remains.
Oil:	A solid material that is stored in the sediment layer below the earth's surface. Oil when heated can produce crude oil containing hydrocarbon compounds.
Natural Gas:	Natural Gas is one of the fossil fuels found in subsurface sediment reports and is generally found above oil.
Emission:	Exhaust gas, which is the result of combustion of carbon-containing compounds.
Entrepreneurship:	A process of developing ideas and innovating in managing a business.

Biography

Intan Noviantari Manyoe

Born in Limboto, Gorontalo. Intan holds a bachelor's degree in Geophysics and a master's degree in Geological Engineering from Hasanuddin University. Intan is a lecturer in the Geological Engineering major, Universitas Negeri Gorontalo and Head of the Geological Engineering Laboratory. The main focus of her research is geothermal, geotourism, geophysics and geological hazard.

Intan participated in a young lecturer apprenticeship program carried out by the Directorate General of Higher Education at Universitas Gadjah Mada in 2009. She participated in geothermal trainings conducted by the Ministry of Energy and Mineral Resources, UGM, ITB, Utrecht University, The Netherlands Organization for Applied Scientific Research and Geothermal Capacity Building Indonesia-Netherland in 2017. She joined in international collaborative research in the field of eco-geotourism with the Research Institute for Humanity and Nature, Kyoto, Japan and joined in geothermal scientific writing with lecturers at the Institute Technology of Petronas (ITP), Malaysia.

Intan received several awards, including a certificate of commendations from three Japanese professors; Dean of FMIPA, Rector of UNG; Directorate General of Higher Education; and the President of the Republic of Indonesia. Communication with Intan via email intan.manyoe@ung.ac.id or website http://www.intanmanyoe.com/.

Siti Suhartini S. Napu

Born in Kabila, Gorontalo. Siti earned a bachelor's degree in Geological Engineering from Universitas Negeri Gorontalo at 2019. Active in the organization, including the general secretary of the Student Council of SMP Negeri 1 Kabila, the Board of Supervisors of the PERHIMAGI (Indonesian Geology Student Association) UNG Commissariat, members of the SM-IAGI (Student Section of the Indonesian Geological Association) UNG Commissariat, and the general secretary of Geological Engineering Student Association (HMTG) UNG.

Work experience as an assistant coordinator for the Geological Engineering Lab, a geopark young researcher funded by BAPPEDA Gorontalo Province, The Department of Energy and Mineral Resources of Gorontalo Province and Research Institute for Humanity and Nature, Kyoto, Japan. Siti is an individual consultant and assistant expert at the SNVT for Housing Provision of Gorontalo Province, Balai P2P Wilayah Sulawesi I, Ministry of PUPR. Siti is an award winner in the field of scientific writing at UNG. Siti is an author of journal article and speaker at the international conferences. Communication with Siti via email sitinapu4@gmail.com or blog http://sitinapu.blogspot.com/.

Tiggi Choanji

Tiggi Choanji is a lecturer in Geological Engineering at Universitas Islam Riau. Tiggi completed his education at Geological Engineering, Universitas Padjajaran and Masters in Geological Engineering, Institut Teknologi Bandung. He is currently a PhD student at Université de Lausanne, Switzerland. Tiggi's research focus is Petroleum Geology. Communication with Tiggi can be via email tiggich@eng.uir.ac.id.