

## Geothermal Health Tourism Assessment of Negros Island, Philippines

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### ABSTRACT

The island of Negros in the central part of the Philippines is very rich in geothermal resources. In fact, the geothermal power plants in Negros Island produce as much as 300 Megawatts of electricity, which is used to supply the island's power demand and the neighboring provinces and islands. Geothermal manifestations such as hot springs, steam vents, and mud pools are very visible in parts of the province. Some of the hot springs in the province, such as Mambukal Mountain Resort in Murcia, Negros Occidental and Red Rock Hot Spring and Ocean 24, both in Valencia, Negros Oriental, have been utilized as health spas. The recreational use of geothermal springs in resorts together with access to medical thermalism significantly adds to the standard attractions offered by many holiday destinations on the island. This paper provides the results of a study that comprehensively catalogs the numerous geothermal manifestations of Negros Island that have been or are currently being utilized for health tourism purposes and highlights possible sites for future development as well as other approaches that could further enhance the value of these resources. In addition to this, a historical review of direct use for balneology purposes in Negros Island will also be provided. Finally, this study will provide a general assessment of how the direct use of geothermal energy for health tourism purposes has benefited Negros Island and its people.

### 1. INTRODUCTION

It has been known since the ancient time that hot springs are widely used by our ancestors in their daily lives. These geothermal springs were even classified as sacred places with images where humans prayed and make offerings to their gods millions of years ago. Nowadays, this practice still exists in some areas in which several communities/tribes still believe the divine connection of this natural wonder.

As time goes by, numerous hot springs have been discovered and utilized worldwide. Several countries such as Iceland, Japan, Canada, Turkey, Greece, England, New Zealand, the United States of America, and the Philippines have these attractions that fascinate millions of tourists from all over the world. Since the Philippines is very rich in geothermal resources, the island of Negros in the central part of the country is blessed to have lots of geothermal surface manifestations. Hot springs are scattered in different parts of the island which developed into spas and resorts. The most popular is Mambukal Mountain Resort located in Barangay Minoyan, Murcia, Negros Occidental. In the eastern part of the island, which is Negros Oriental, there is Red Rock Hot Spring, Ocean 24 Swimming Pool, and Lo' Kadyos Hot Pool and Cold Pool and Café wherein they are the prevalent hot spring resorts in the town of Valencia. Moving towards the south, in the municipality of Dauin which also nestled several hot spring resorts such as Baslay Twin Hot Spring, Dauin Hot Spring Resort and Munting Paraiso, to name a few.

These geothermal springs in the island allure thousands of local and foreign tourists for its relaxing feature. The breathtaking ambiance of the place also magnet travelers to include this in their bucket list. In addition to that, balneology is a great recommendation by physicians, especially to their patients with lumbar problems Huang, et al. (2018). Hence, thermal bathing is not only relaxing yet great therapy as well.

### 2. BACKGROUND AND HISTORY

The use of hot springs and geothermal spas has been known worldwide, even in the earliest civilization. Every region and its community exploit their hot spring in such a way that it would harmonize with their necessities. Several countries such as Japan, New Zealand, France, Spain, Portugal, Greece, Tunisia, Italy, Germany, and Iceland are popular in their hot spring facilities for balneology and hydrotherapy (thermalism) Erfurt-Cooper (2010). Studies in Japan, the Middle East and Europe have indicated that immersing in sulfur water can help kill germs and viruses on the skin even psoriasis, dermatitis, and fungal infections. The Philippines also has several hot spring facilities, but they are well known in their thermalism and balneology feature. It is more admired by its stunning beaches and dive sites. However, nowadays hot spring resorts are sprouting like mushrooms all over the country. Especially in the island of Negros where a 300MW geothermal plant is operating, geothermal surface manifestations like the steaming ground, mud pools, hot springs and the like are very visible in the area. These features make Negros Island more attractive to tourists worldwide.

#### 2.1 Mambukal Mountain Resort

Mambukal Mountain Resort which lies 1,200 feet above sea level is located in the northern part of Negros Island was developed by a Japanese architect Kokichi Paul Ishiwata in 1927 Dacumos (2015). The Ishiwata bathhouse was then built as a weekend getaway for the government officials of Negros Occidental and its guests. It is a gateway to Mt. Kanlaon Natural Park which served as a sanctuary for the locals and their guests. It was only on June 22, 1957, that former President Carlos P. Garcia signed the Republic Act No. 1964 stating that the provincial government of Negros Occidental has full administration and management of Mambukal and the resort facilities (Figure 1). This date also commemorates the Annual Mudpack Festival, which was inspired by the

abundance of medicinal sulfuric mud in the area Mambukal Resort (2016). It was only in the '90s that the place was fully developed into a full swing highland resort and spa.



**Figure 1: (a) The famous Ishiwata bathhouse built-in 1927. (b) Dipping Pool at Mambukal Resort with temperature ranging from 38 - 43°C. Mambukal Mountain Resort in Negros Occidental.**

On the eastern side of the island lies the province of Negros Oriental which is very rich in geothermal resources. Surface manifestations are found in many areas, and there are numerous hot springs found. The most popular is the Red Rock Hot Spring, which is located in the Municipality of Valencia, Barangay Caidiocan with an elevation of about 1,000 feet above sea level. This is privately owned by a local resident in the place. Because his land has hot spring flowing out in a hillside boulder, he decided to make a small swimming pool the family to have a warm bath, especially during weekends. His knowledge about balneology pushed him more to open it for public use with a minimal entrance fee since 2009. Because Mambukal is relatively far to visit for a warm relaxing bath and spas in the city are quite costly, locals can now enjoy one that is affordably near. Having located in the “pulangbato” area where the soil and rock formation are highly sulfuric and ferric in nature, the owner simply names the resort Red Rock Hot Spring. ([www.facebook.com/pg/redrockhotspring/about/](http://www.facebook.com/pg/redrockhotspring/about/)). Up to these days, it draws about 5,000 guests every month. Pair (2019).

### 2.3 Ocean 24 Swimming Pool

A year after Red Rocks has been into business, another hot spring resort was opened for the public. Ocean 24 Swimming Pool, given by figure 2, which is also located in Barangay Caidiocan of Valencia, Negros Oriental is just about half a kilometer up west of Red Rock. It has three adult swimming pools and one kiddie pool having free-flowing water from a hot spring nearby that has a temperature of about 34°C. The owner who is also a local resident in the area had likewise turned his unproductive land into an enticing hot spring resort. Locals love to flock here especially during the weekend to have a warm and relaxing bath. Even kids like it here because the water is not cold and sulfuric. It welcomes to as much as 6,000 guests in a month and even more during holiday breaks.



**Figure 2: (a) One of the swimming pools in Ocean 24 using a natural hot spring. (b) Lo' Kadyos Hot Pool with temperature ranging from 40 - 47°C. Valencia, Negros Oriental.**

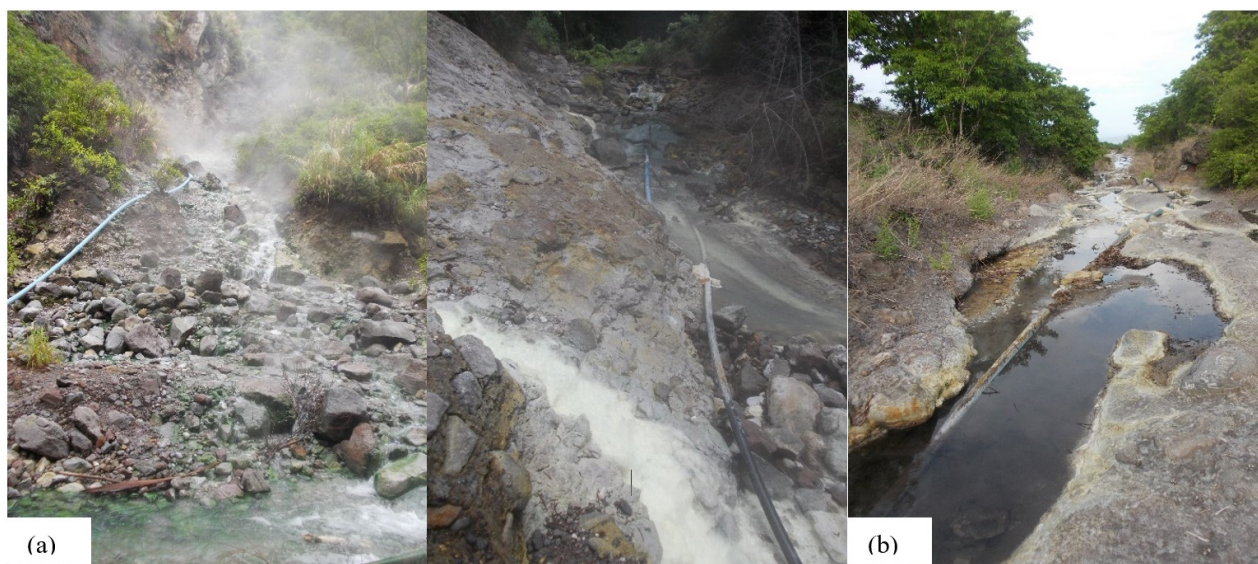


## 2.4 Lo' Kadyos Hot and Cool Pool and Cafe

In the mid of 2015, another hot spring resort was developed for business about two kilometers downhill of Red Rock Hot Spring. Located in Barangay Cambucad, this is privately owned by a certain resident in the area who is popularly known as "Lolo Kadyo" by the locals. Lolo Kadyo is a regular guest of Red Rocks who loves to dip in its steaming sulfuric water. He got an idea to turn the parcel of his land where he is residing in a hot spring resort. He built two hot pools with temperature ranging from 43°C to 48°C from the warm spring flowing in his land and two cold swimming pools with water freely flowing from the cold spring flooding nearby. Like Red Rock Hot Spring and Ocean 24 Swimming Pool, this place also magnets thousands of guests in a month. From then on, Lolo Kadyo and his family can enjoy the benefits of a natural warm bath at their doorstep at no cost.

## 2.5 Baslay Twin Hot Springs

At about 19 kilometers from Dumaguete City (the capital of Negros Oriental) is the Municipality of Dauin. This place is very popular for its marine sanctuary and the world's famous Apo Island. This town is also well-known for its several hot springs that are naturally flowing in different barangays. Barangay Baslay, which is located about 2,700 feet above sea level has been flocked by thousands of tourists every month since 2010 because of Baslay Twin Hot Springs (Figure 3). This resort was developed by the local government of Dauin and is open to the public for free. The hot springs there are highly sulfuric making the place more inviting. Because it's a protected area, it is also a home of beautiful flora and fauna, especially the native coffee which is the main product of the local farmers. Although quite far, the beautiful scenery of the place is much worth to visit.



**Figure 3: (a) The Baslay Twin Hot Springs which are highly sulfuric that supply water to the swimming pools. (b) Mainit Hot Spring in Bulak, Dauin that benefits the students of Negros Oriental State University for their project study. Dauin, Negros Oriental.**

## 2.6 Dauin Hot Spring Resort and Munting Paraiso

Another hot spring resort in the municipality of Dauin is Dauin Hot Spring Resort which located in Barangay Bulak. Before this resort was open for business in 2016, it was a family beach house of a certain Mr. Bravo. After a long week of hard work, he loves to bathe in the hot pool of this rest house. This routine gave him the idea of opening this place to the public considering that Baslay Hot Spring Resort is quite afar. What makes his place more attractive is its beachfront location wherein guests can enjoy swimming in the sea and soaking in a natural hot puddle. To serve more guests, in that same year he opened a bigger resort having a four-star accommodation. It is only 200 meters away from Dauin Hot Spring Resort. Still along the beach and with bubbling warm swimming pool from the hot spring. Though it's quite expensive for the locals, yet it's very much affordable by foreign tourists especially to scuba divers. The presence of a hot pool in Munting Paraiso is an edge compared to other dive resorts. Divers would love to soak in the hot pool after a long day's drive to have a more relaxing sleep in this secluded paradise.

## 2.7 Mainit Hot Spring

Flowing from the upper part of Bulak, Dauin is a stream of hot springs and steaming ground rich in sulfur. The place is merely untouched. This is not yet commercially developed by the local government of Dauin. This geothermal resource is the primary spot for the Bachelor of Science in Geothermal Engineering students of Negros Oriental State University for their project study. Students flock here for the direct use of this geothermal feature. Water from the hot springs is used for drying fish, fruits, and crops. It is also utilized for processing embryonated duck or "balut" (a very delicious Filipino delicacy). Another student also exploited the hot spring to pasteurize fresh cow's milk, which is the main produce of the farmers in the locality. Negrenses and many tourists would also enjoy a relaxing bath in some parts of the stream. The abundance of sulfur in the hot springs can also treat several skin ailments. Because the temperature of the hot springs varies from 40°C to 85°C, it broadens its applications and wider scope of development.

### 3. THE USE OF GEOTHERMAL SPRINGS IN NEGROS

Balneology is the method of treating aching muscles, joint pain and skin ailments through bathing. Merriam-Webster (2019). This method had been used in ancient times and up to the present, worldwide. To countries that have abundant hot springs, such a method of treatment is very popular and even part of the day-to-day living, like the Blue Lagoon in Iceland that has been attracting millions of locals and tourists for its healing power and relaxing benefits.

Even if hot springs in the Philippines are not widely held worldwide compared to those in Iceland and Japan, plenty of those were already developed into enticing resorts decades ago. Patronized mostly by the locals and some foreign tourists, these havens were flocked primarily for its therapeutic features. Leslie, et al. (2004), Yulo (2019), & Yonson (2019). Considering that the water is rich in minerals and the green vegetation of the surroundings makes your stay more unwinding.

Sulfur is a mineral naturally occurring near hot springs and volcanic craters. The 'rotten egg' smell is caused by hydrogen sulfide gas escaping into the air. Sulfur has been used medicinally since ancient times. Soaking in Mambukal's sulfur waters is an effective way to relieve pain and itching. The waters contain mineral like calcium, magnesium and sulfur compounds which go right through the skin to soothe aching muscles, ease joint pain, arthritis, ligament damage and improve blood circulation in the body. These hot spring waters are 'fountain of youth' and are legendary when it comes to stories and healing.

Several posters are hanging around the resort that states: "Mambukal Resort is classified as primary hot spring since it is a geothermally heated mineral groundwater from the Earth's crust, where direct volcanic activity from Mt. Kanla-on plays a great role in the process of the hot spring formation. The water source has the temperature of tepid to almost boiling.

The pools at Ocean 24 Swimming Pool and at Red Rocks Hot Spring, is packed with people from all over the world douse in the pools to relax and unwind to experience its medical benefits. The waters here are less sulfuric and would not stain making it more favorable to the public. The ocean 24 has plenty of tiled swimming pools and a divided kiddie pool that the young children love and enjoy safely which is perfect for family bonding. Since the water in the pools is flowing from the hot springs, it still carries the same features that benefit all its guests.

Moreover, the exploitation of hot springs in Valencia is quite influential. The Lo Kadyos Hot and Cool Pool and Café is another famous resort that can be found just before reaching Red Rocks Hot Spring. Like the swimming pools of the other two resorts, its pool also has been filled with the geothermal springs that are innate in the area. So, its guests can also enjoy the same benefits that the hot spring can offer.

Another popular hot spring on the island is Baslay Twin Hot Spring. Although quite far, but the breathtaking location of the highly dense vegetation and naturally sulfuric waters make this sanctuary wholly fulfilling. The hot springs in Baslay have the same benefits as the springs in Valencia. This is also the main reason that tourists love to visit this place especially those who are fond of adventure.

Negros Island is naturally rich in geothermal resources wherein numerous hot springs and other manifestations are surfacing in several locations. In some parts like Dauin, hot springs are abundantly sprouting and are utilized privately and publicly. Two of the well-known beach resorts that utilized this natural geothermal spring in their facilities are Dauin Hot Spring Resort and Munting Paraiso. Both are great hideaway for those who love the beach and the bubbling Jacuzzi that is heated naturally by the free-flowing hot springs.

Furthermore, the island of Negros has still more to offer in terms of thermal bathing. There are several hot springs and steaming grounds that need to be developed to attract more and more tourists. Because traveling is also the same as unwinding and escaping from our daily routine, thermal bathe in a natural environment is a great alternative.

### 4. CONCLUSION AND RECOMMENDATION

Although there are already several hot spring resorts that are operating successfully in the Philippines, this paper focuses only on those that are found in Negros Island. Nowadays that renewable energy is widely promoted, geothermal is a prime. The 300 MW power generation that has been serving the entire island and to its neighboring provinces is a piece of great evidence that geothermal resources have been utilized correctly. Developing the geothermal springs into therapeutic resorts is using its energy directly. The hot springs' main purpose has been clearly justified. Some geothermal manifestations certainly attract local and international tourists, as well. Further development of geothermal resources especially in its direct use is highly recommended. Expounding more natural spas is positively promising to attract more tourists and making the place to be popularly known worldwide in terms of geothermal applications.

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