
Assessing the Potential of Davao Oriental Province Waterfalls (Governor Denorosas's Cagamisan Falls, San Isidro's Cawa-Cawa and Lupon's Pangyan Falls)

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Abstract

This research is a deep analysis and assessment of the potential of three waterfalls of Davao Oriental province namely Cagamisan Falls (found in the municipality of Governor Generoso), Cawa-Cawa Falls (found in the municipality of San Isidro) and Pangyan Falls (found in the municipality of Lupon). Philippine waterfalls a major or prime tourist attractions using purposive research and survey method in describing the profile of the survey participants.

As a group, we assess the potential of Cagamisan Falls, Cawa-Cawa Falls and Pangyan Falls in terms of service, tangibles and sustainability. In addition, we ascertain the views of the survey participants regarding to the facilities and service rendered as a feature of the said waterfalls to increase their potentials as a tourist attractions. The participants in the research include 60 individuals (combined 28 participant from local officials and 32 participants from local residents. Those 28 municipal officials are involved in their

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tourism development of their respective towns. Data gathered based on survey questionnaire answered by the participants.

The overall assessment by the local official and local resident showed that the tangibles of Cagamisan, Cawa-cawa and Pangyan Falls gain the lowest rating among the three areas which suggests that this features needed much improvement to increase the potential of the falls as tourist attraction of the town. The highest rating assessment belongs to the service features of the Cagamisan, Cawa-Cawa and Pangyan Falls and followed by the sustainability features. It means that local officials and local residents felt that the service characteristics of the waterfalls were maintained and natural endowments of the sites are intact and not exploited.

Lastly, as a result of rigid and through analysis, facilities and amenities such as shower rooms, souvenir shops, maps & travel catalogues, improved paved roads, refreshment and retail store, comport rooms, picnic tables & rooms are more needed in the said falls for it to really become a prime tourist attractions of the province and of the country.

Key words: Davao Oriental Province Waterfalls, Governor Denorosas's Cagamisan Falls, San Isidro's Cawa-Cawa and Lupon's Pangyan Falls

INTRODUCTION

Cagamisan falls of Governor Generoso, Cawa-Cawa (Kawa-Kawa) Falls of San Isidro, and Pangyan Falls of Lupon, are fantastic waterfalls with enough area for swimming activities. The view of the three falls is spectacular and awesome because of its rock formations. It is an ideal getaway for mountaineering, adventures, and family outing the falls can be reached with 1-2 hours trekking only.

The rivers pathways and access leading to the falls are breathtaking as well. The researchers believe that these three

falls really have the potential of becoming a dominant, integral and major tourist attraction of the province.



The three waterfalls, Lupon's Pangyan falls are better known to the local people compare to Cawa-Cawa (Kawa-Kawa) falls and Cagamisan falls. Though, to date, those three waterfalls are not yet known in the country to its invisibility in the internet and media.

Assessing the potentials of the three waterfalls as a tourist attraction will enable municipal officials and local residents to adopt policies and ordinances for its sustainability programs to preserve its beauty.

This study aims to assess and review the potential of Cagamisan, Cawa-Cawa (Kawa-Kawa), and Pangyan falls as major tourist attractions so that not only local government officials of Governor Generoso, San Isidro, and Lupon could provide insights on improvement needed but as well as the entire Department of Tourism of the Philippines. There is a

need to increase awareness of its potential as a tourist attraction of the entire Philippines.

This study can serve as a landmark or bench mark basis for the development of the facilities, amenities, and services that would improve the present conditions of the site and make it more attractive, impressive and a tourism base worthy to look for.

THEORETICAL FRAMEWORK

The purpose of this research is to assess the potential of the three different falls in Davao, Oriental and to determine the possible facilities that can add to the features of the falls as potential tourism destination.

Karaman (1996) defines sustainability as “a community, ecosystem or interruption of the operation of any system that has continuity, corruption, excessive depletion from of the ability to sustain without overloading the main source bond vital system”. Social sustainability are dealt with in three different stages, including economic and ecological dimension (OECD, 2005; Özyol, 2013)

Socio-cultural Size: benefits of “Improving the Quality of Life” to them next generations should be explained to people with continuous training programs. It was defined as to meet People’s cultural, material and spiritual needs.

Economic Dimension: every resource on earth is limited. Therefore, whatever resources we have, it should be a way how these resources in a way that improves the quality of human life could deploy the fair. Costs are described in the ensuring of self-sufficiency without exceeding revenues. The economic dimension of the activities and factors of production refers to the sustainable use.

Environment (Ecological) Dimension: whether or not the rotation back, all natural resources should be aimed to provide

continuity of use. By supporting ecosystem means the provision of long-term competence. Ensuring the sustainable use of natural resources, it should be provided future generation using this resources as current generations. Ecological (environmental) as a sustainable system refers the system which can sustainable source resources with avoiding the excessive use of renewable resources.

CONCEPTUAL FRAMEWORK

This section sets out the conceptual framework of the research; it shows the flow Input-Process-Output model in order to study the problem.

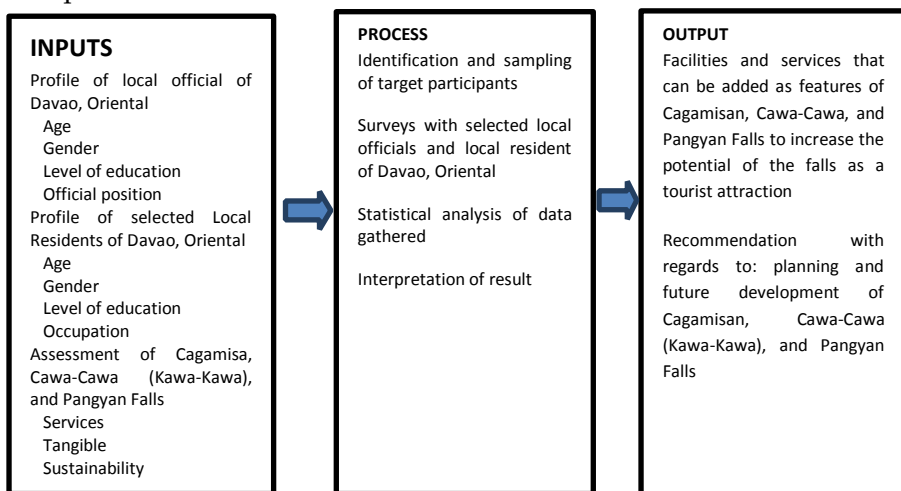


Figure 1 the Conceptual Paradigm of the Study

As shown in Figure 1, the INPUT for the research includes: (1) the profile of selected local official of Davao, Oriental involved in tourism development of the town; (2) the profile local residents in the selected barangay in Davao, Oriental and (3) the assessment by local official and local residents regarding the services, tangibles, and sustainability of Cagamisan, Cawa-Cawa(Kawa-Kawa), and Pangyan Falls.

The PROCESS is composed of the methods used to answer the objectives of this research such as (1) identification and sampling of target respondents; (2) surveys with selected local officials and local residents of Davao, Oriental; (3) statistical analysis of data gathered; and (4) interpretation of result.

The OUTPUT of this research is the desired end-goal of the study work itself, namely; (1) facilities and services that can be added as features of Cagamisan, Cawa-Cawa (Kawa-Kawa), and Pangyan Falls.

Statement of the Problem

This study attempted to assess the potential of the three waterfalls falls in Davao, Oriental in terms of: Services, Sustainability, and Tangible.

It sought to answer the following sub-problems:

1. What is the profile of selected local officials of Davao, Oriental involved in tourism development of the town in terms of:
 - 1.1 Age
 - 1.2 Gender
 - 1.3 Level of education, and
 - 1.4 Official position?
2. What is the profile of local residents in selected barangays in Davao, Oriental in terms of:
 - 2.1 Age
 - 2.2 Gender
 - 2.3 Level of education, and
 - 2.4 Occupation?
3. What is the assessment by local official local residents of the services, tangibles, and sustainability of Cagamisan, Cawa-Cawa, and Pangyan Falls?
4. What are the views of local official and local residents with regard to the facilities and services that could be added as features of Cagamisan, Cawa-Cawa, and

Pangyan Falls to increase the potential of the falls as tourism attraction?

Scope and Limitation of the Study

This study dealt with the assessment of the potential of three waterfalls in the Davao, Oriental. The researchers conducted a survey, involved two sets of participants. The twenty-eight (28) local officials of Davao Oriental and Thirty-two (32) local residents of Davao Oriental living within the vicinity of Cagamisan Falls, Cawa-Cawa (Kawa-Kawa) Falls, and Pangyan Falls.

Significance of the Study

The result of the study is significant and beneficial to the following:

Local residents. The analysis of the tourism potential of Cagamisan, Cawa-Cawa (Kawa-Kawa), and Pangyan Falls could serve as basis to promote the involvement of local community of Davao, Oriental in providing tourists with services like township experiences, hospitality traditional culture, and festivity. This would also support the tourism-local residents relationship by strengthening their cooperation and relation to foster the development in Davao, Oriental.

Local Government official of Davao, Oriental. The could provide local government officials insights and feedback on what visitors and tourists expect from Cagamisan, Cawa-Cawa (Kawa-Kawa), and Pangyan Falls. This could serve for the development of facilities and services to improve conditions of the sites in order to attract more tourists to visit the three waterfalls

Future Researchers. This study could help them evaluate the potential of waterfalls for tourism development and can be used as additional knowledge to provide on their towns.

Managements. This study could help them support their employees as what the survey answered most of them and can be served as an evaluation for the management.

Tourist. Tourist visiting Cagamisan, Cawa-Cawa (Kawa-Kawa), and Pangyan Falls could use the result of this study by promoting and present an appeal for the public to create a positive and enhancing relationship with the residents.

Tourism Students. This study would expand tourism students' knowledge of what constitutes a quality tourist attraction. Besides, students gain appreciation in three different waterfalls and learning about cultures' that broaden life experiences.

FOREIGN LITERATURE

The Concepts of Sustainability and Sustainable Tourism

According to Ertan et al. (2010: 143) and Sezgin and Karaman (2008: 429), sustainability concept constitutes one of the most important issues of 20th century; and constitutes one of the trend topics of all relevant subjects since 1990s (Godfrey, 1998: 213). Sustainability is described as the sustainability of a certain ecosystem or any other system having sustainability without interruption or ruining and consuming due to overuse and overloading to the main resources (Kaypak, 2010: 98). Kaya (1997: 2) summarizes the sustainability as providing the continuance of a resource being included in the economy without any reduction in the amount. This concept means long-term thinking and long-term protection and expresses not only

the protection but finding balance between protection and usage (Hacıoğlu, Girgin & Tetik, 2011: 374).

The description of sustainability as, "meeting today's needs without endangering the resources which will provide meeting the next generation's needs" has been adapted to tourism by tourism entrepreneurs, planners and researchers (Hinch, 1996: 95). In this sense, while sustainable tourism is being described by Kahraman and Türkay (2006: 96) as "using tourism resources without consuming, polluting and destroying to allow to be used by the next generations", it is explained by Butler (1999: 7) and Budeanu (2005: 92) as "ensuring the sustainability of any kind of tourism, in any place and at any time". In the description made by Liu (2003: 460), it has been emphasized that there are three critical factors to provide the sustainability as protecting the standards of the local people, providing the tourist satisfaction and protecting the natural resources. In the descriptions made, although there is not a full agreement in academic sense, (Hornagold, 2004: 75), as mentioned by Sarkım (2007: 85); protecting the environment and providing the next generations to make use of tourism activities come to the forefront as common points in the descriptions for this concept.

On the basis of sustainability understanding, there is living by human beings in order not to exceed the carrying capacity to support the environment (Güneş, 2008: 172). In this sense, sustainable tourism can be said to have three dimensions as economic, ecological and socio-cultural. Economic sustainability can be described as using economical resources as efficiently and allowing transferring to the next generations; ecological sustainability is performed by protecting the ecological diversity and resources and socio-cultural sustainability is strengthening the social identity by protecting the compliance of people with their own value and cultures and providing the sustainability (Timur & Getz, 2009: 221 – 222).

With all of these dimensions, for applying sustainable tourism, it is very important for different interest groups to act together and in the conscious of protection and usage (Emekli, 2004:417).

Sustainable Tourism Development

Sustainable tourism development (STD) has emerged as a result of the growth of tourism sector intemperately and being affected by natural and social resources negatively (Greenwood, 2006: 17) and it expresses the compliance between the protection of the environment and economic benefit (Güneş, 2004: 500). According to this opinion, tourism types must be provided to be satisfied with both the efficiency of today's resources and being able to be satisfied with the needs and desires of the future generations at maximum level no matter which region it develops or not (Tosun, 1998: 596; Tosun, 2001: 290; Michalena & Trip Anagnostopoulos, 2010: 668). Besides, since STD economic development policy has been the subject of some variables such as environmental subjects, social factors and international tourism system, it is a wide and multi-disciplinary concept (Tosun, 2001: 291).

STD is a concept moving around the axis of the development and constituting an important dimension of sustainable development. In this sense, a tourism concept based on the sustainable development will be able to reach to the level of assigning the development direction of the region. But the important point is the matter that a tourism movement which has caught development momentum on social, economic and environmental basis does not give harm to its own development dynamics. In this sense, the tourism development is required not to leave a negative and continuous effect on today's and next generations' vital values (Çalışkan & Tosun, 2014: 1277).

The Relationship between Tourism and Destination

Destination is among the most essential factors of the tourism concept (Ekici, 2013: 5). Since all tourism activities are carried out within tourism destinations by the nature of the tourism sector (Doğan, 2013: 2). Therefore, it is known that tourism and destination are two important factors which are interrelated and have an impact on the development of each other. A well-preserved destination is important for the refreshment and development of the tourism, and similarly tourism is also rather important for the development and promotion of the destination (Keskin, 2012: 35).

A visitor wants to be engaged in many activities in the place he/she has gone and wants to live different experiences such as accommodation, food & beverage, entertainment, sightseeing new places, learning different cultures. Hence, the visitors prefer the destinations which can provide some of the tourism activities all together such as sea-sand-sun, shopping, culture, sports, history, faith etc. During the vacation, the visitors evaluate the quality of the total service they have been provided, and they have an overall satisfaction opinion satisfaction upon these evaluations at the end of the vacation (Cabael, 2011: 16). Therefore, a success of a tourism destination lays on considering thoroughly how the visitors that have tendency for travelling can be affected and/or how the visitors coming to that place can be retracted. In this period, it has great importance to develop strategies in the matters of determining the factors that have effect upon the destination preferences of the tourists, knowing the features of the destination well, knowing how to use and manage the existing potential of the destinations (Cabael, 2011: 16). Thus, the destinations which can meet the demands of the changing visitors, and which can enhance the quality of service and product range will gain advantage in today's fierce competition conditions (Cabael, 2011: 16).

PARAMETER 1: REDUCED IMPACT ON ENVIRONMENT AND ENVIRONMENTAL SUSTAINABILITY

The most important parameter when judging an ecotourism attraction must be its impact on the environment. Tourism that impacts negatively on the natural environment should not be termed ecotourism, whatever its intentions or other qualities. Having no impact is almost impossible. From nature's point of view, no tourism is probably the ideal tourism option. For this reason, there are many parks and reserve areas where no tourists are allowed. Of the seven magnificent waterfalls of the White River in the Rio Grande Valley in Jamaica, only the first two are open to the public. Having a low impact on the environment can be equated with environmental sustainability. Oddly enough, some of the least environmental types of tourism may have the lowest impact. Most of the all-inclusive hotels on the North coast of Jamaica have hardly any impact on the local environment, except for the little stretch of beach in front of the hotel. This is simply because the visitors don't leave the property. Of course that doesn't make them ecotourism products. Low environmental impact or environmental sustainability therefore must be part of the equation, but cannot be the only criterion by which to judge whether a particular tourism product may be called ecotourism.

PARAMETER 2: INTERACTION WITH NATURE

It is generally accepted that ecotourism involves some form of physical activity in a natural surrounding. Hiking, scuba diving, cycling, or other forms of physical interaction with nature are an important element of ecotourism. Visiting Reich Waterfalls in Eastern Jamaica by bus should be ranked lower on the ecotourism scale than hiking for two hours toward the same waterfall. Interaction with nature is not, however, an essential element of ecotourism. If that same bus trip to the waterfall includes environmental education, if proceeds are partly used for environmental purposes, or if the waterfall is a

community-based enterprise, the overall evaluation may still be quite positive. By definition interaction means impact. Increased interaction also means (the risk of) more impact. If hundreds of visitors used the trails of Valley Hikes daily, measures to limit the environmental impact would have to be stepped up and special paths would have to be constructed. Some of the ecotourism destinations of Costa Rica and Dominica are paved to let them carry many visitors without the risk of erosion and provide some form of railing to keep people from straying off the track.

PARAMETER 3: COMMUNITY INVOLVEMENT AND INTERACTION WITH PEOPLE

Both community involvement and, to a lesser extent, interaction with people are aspects of ecotourism often considered essential or at least important. The experience of Valley Hikes is that many hikers start off saying they like hiking on their own, without a guide. By the end of the hike, comments are usually just the opposite. Visitors say they like the guides, because they explained things, showed them things they would not have discovered, assisted them in crossing a river or in climbing a steep part of the trail. Most importantly, the trail guides give visitors a chance to get to know a pleasant, rural Jamaican. In the case of Valley Hikes, the rural Jamaicans and their culture are very much a part of the environment shown to and experienced by visitors. Community involvement in hiking and similar ecotourism activities provides a unique form of interaction between visitors and the local people. Visitors should appreciate the local people as their host by both enjoying being a guest and by not transgressing on the rules that normally apply to guests. In the Rio Grande Valley, the local people allow the Valley Hikes visitors to walk on their land and drink from a coconut or pick a grapefruit, mango, stinking toe, or sweet cup, to mention a few of the many

fruits freely available. A few members of the community get a bit of income from working as trail guides or from selling something to visitors. Interaction with local people is very important and increases the value of the tourism product. But it is not a necessary element.

PARAMETER 4: ENVIRONMENTAL ACTIVITIES

The definition of ecotourism recently adopted by the Jamaican Government stipulates that part of the proceeds from a tourism attraction must be used for nature conservation in order to qualify as ecotourism. As mentioned before, Valley Hikes may then be the only ecotourism attraction in the whole of Jamaica. Together with other organizations, Valley Hikes organizes workshops on environmentally friendly pest management for farmers in the Rio Grande Valley. Also, Valley Hikes has a tree sponsorship programme and it sets up signs to remind people to Reduce, Reuse, and Recycle. All its trail guides are also game wardens. It provides guidance to and seeks sponsorship for a community-based, handmade paper industry. Valley Hikes will soon start building a Maroon museum. (Maroons are descendants of runaway slaves). So far Valley Hikes does most of this with funds provided by sponsors, but it plans to continue such environmental activities with the proceeds from hiking and craft sales as soon as the operation becomes more profitable. An ecotourism organization which actively tries to reverse environmental degradation should get a higher score on ecotourism. On the other hand, this is not a necessary condition for calling a venture ecotourism. There are many commendable ecotourism attractions that have no specific environmental program.

PARAMETER 5: ECONOMIC SUSTAINABILITY

Environmental concerns are not normally the concerns of the

industry and all too often environmentalists fail to think in economic and business terms.

Of course there are exceptions. Dutch tobacco plantations in Eastern Sumatra (Indonesia) introduced a reforestation programme 100 years ago in order to grow tobacco on a sustainable basis. Investment in nature can make good economic sense for a company. The reverse is also true. It makes good environmental sense to ensure that environmental activities are based on a continuous flow of income. The income can be from donations, but few sponsors are prepared to subsidize organizations on a long term basis. The other option is to generate income by selling something at a profit. What Valley Hikes tries to do is make enough money from hiking and related activities to continue its environmental and other programmes before the present flow of donor money dries up. This has many consequences. Primarily it means that Valley Hikes must operate like a company, maximizing its profits and minimizing its costs. The result is that Valley Hikes charges a fairly high price, at least in the eyes of many young people. The charge for a regular hike is US\$10 or US\$15 for a foreigner, and half that amount for Jamaicans. Prospective clients of Valley Hikes have said that nature is free and no charge should be levied for walking in the forest. This notion is reinforced by the fact that many governments, including the Jamaican government, are creating and maintaining trails, with expensive pavings and signs, which allow visitors to walk through for free. They do it with the idea that more people will stay at a local hotel, eat at a local restaurant, buy souvenirs, and otherwise boost the local and national economies. But it reinforces the absurd notion that nature itself has no economic value. For Valley Hikes, becoming economically sustainable also means that a great deal of money has to be spent on marketing and promotion. What Valley Hikes has spent already on marketing would require at least a year of operation to

recuperate, but without marketing Valley Hikes would not be able to attract enough visitors to cover operational costs. Judging or measuring an ecotourism operation must include an evaluation of its economic sustainability. Will the operation be able to continue or is it a short lived idea? Like environmental sustainability, economic sustainability is a necessary condition to be met. It is hard to see how a tourism operation can be called a success if it cannot survive.

LOCAL LITERATURE

Government Tourism Policies

Official interest in tourism is long standing and various development initiatives have been launched since the 1970s (Choy, 1991; Richter, 1982, 1999; Nanthakumar et al, 2008). However, the exploitation of tourism for personal and political gain during the Marcos dictatorship proved to be a striking illustration of its political uses and abuses, resulting in grandiose and inappropriate projects. Some advances were made in integrated planning encompassing tourism after his downfall, but changes in government and the political stresses outlined above hampered achievements (Richter, 1999).

Nevertheless, tourism is recognized as an economic sector of significance which has excellent prospects. It is a core component of the Medium Term Philippine Development Plan (MTDP) 2004-2010, dedicated to fighting 'poverty by building prosperity for the greatest number of the Filipino people' (NEDA, 2004, p. 1), and presented in the document as a top priority because of its many social and economic advantages. Some analysts claim that tourism has already helped certain of the poorest rural areas to improve living standards (Euromonitor, 2008).

The Department of Tourism (DOT) oversees the industry and is charged with promoting it as a 'major socio-economic activity to generate foreign currency and employment and to spread the benefits of tourism to both the public and private sector'. A Tourism Planning, Product Development and Coordination Sector deals with the 'formulation and updating of the Tourism Master Plan' and a Tourism Promotions Sector handles domestic and international marketing (DOT, 2009b). The Philippine Tourism Authority was created in 1973 as the DOT's 'implementing arm' with a mission 'to develop identified priority areas; to operate, maintain and promote facilities in pioneering capacity; to provide technical and financial assistance to qualified tourism projects; and to generate revenues to fund national and corporate development undertakings' (PTA, 2009).

International Accessibility, Domestic Transport and Accommodation

Most tourists enter by air and the Philippines has 85 airports, eight of which are international (EIU, 2009). Manila is the prime gateway and used by about 30 airlines. Mactan airport in Cebu has scheduled flights from Australia, Japan and Singapore and receives charters from Hong Kong, the USA and elsewhere. Services connect Davao with Indonesia and Singapore, Laoag with Macau and Taiwan and charters from various points fly into Diosdado and Subic (DOT, 2009d).

The national airline of PAL flies to 31 international and 30 domestic destinations, but went into official receivership in 1998 when its fleet and route networks were drastically cut. It was released from receivership in 2007 and now concentrates on the Asia Pacific region with some flights to the Middle East and North American west coast (PAL, 2009). Another six airlines mainly adhere to the budget carrier model and ply domestic routes, although Cebu Pacific Air serves 15 Asian

cities and is seeking to add more to its timetable (Cebu Pacific, 2009).

The government is investing heavily in airport infrastructure in response to optimistic traffic forecasts (Euromonitor, 2006), but the absence of direct international flights into airports at popular destinations is a hindrance to visitors (TTG Asia, 2008). Those from North America and Europe especially may be faced with long and comparatively difficult journeys (Mintel, 2004; Rastegar, 2010). The decision by United States authorities in early 2008 to scrutinize Philippines air operations more closely because of an alleged failure to comply with International Civil Aviation Organization specifications is a further complication. It prevents any increase in flights between the two countries and has aggravated existing worries about passenger safety (The Straits Times, 2008).

Attractions, Promotion and Other Considerations

The Philippines has a rich and diverse array of tourist attractions derived from its natural and cultural heritage, yet not all are fully recognised or exploited. Official promotion showcases the coast and long sandy beaches on both South China Sea and Pacific shores, the four kilometre White Beach on Boracay Island portrayed as one of the best in the world (DOT, 2009e). In addition to relaxing coastal vacations, usually at self-contained integrated resorts, opportunities are advertised for reef, scuba and wreck diving as well as snorkelling, surfing, sailing and swimming with whales. Terrestrial ecosystems, flora and fauna and mountainous landscapes support non-marine ecotourism and adventure tourism of various sorts. The Puerto-Princesa Subterranean River National Park and Tubbataha Reef Marine Park are natural World Heritage Sites (UNESCO, 2009) and touted as prime assets. Festivals and fiestas, tribal communities,

churches and Intramuros (sixteenth century walled towns) are all marketed as socio-cultural sights. The Spanish built baroque churches, historic town of Vigan and aforementioned rice terraces are cultural World Heritage Sites and the Ifugao chanted epic has been designated a masterpiece of oral heritage. The UNESCO appellation is employed as a promotional tool, but its retention is not guaranteed as suggested earlier and those responsible have sometimes struggled to meet the obligations attendant on the award (UNESCO, 2009).

METHODOLOGY

Research Design

Purposive research design was utilized in this study. According to Bernard (2002), Lewis & Shepard (2006), purposive sampling technique, also called judgment sampling, is the deliberate choice of an informant possesses simply put. The researcher decides what needs to be known and sets out to find people who are willing to provide the information by virtue of knowledge or experience.

Participants of the study

This study involved two sets of participants. The twenty-eight (28) local officials of Davao Oriental and thirty-two (32) local residents of Davao Oriental living within the vicinity of Cagamisan Falls, Cawa-Cawa Falls, and Pangyan Falls.

Data Analysis

The assessment of the services, tangibles, and sustainability of Cagamisan Falls, Cawa-cawa Falls, and Pangyan Falls by the participants were analyzed using the following parameters:

Table 1

WEIGHTED MEAN RANCE	SCALE	ADJECTIVAL INTERPRETATION
4.20-5.00	5 = Strongly Agree	Very Good
3.40-4.19	4 = Agree	Good
2.60-3.39	3 = Neither Agree or Disagree	Fair
1.80-2.59	2 = Disagree	Poor
1.00-1.79	1 = Strongly Disagree	Very Poor

Statistical Analysis of Data

Percentage (%) was used to present the participant's profile and the assessment of participants with regards to services, tangibles, and sustainability of Cagamisan Falls, Cawa-cawa Falls, and Pangyan Falls.

$$\% = f / n \times 100$$

Where:

f = Class frequency

n = sample size

Weighted mean was used to present the participant's profile and the assessment of participants with regards to services, tangibles, and sustainability of Cagamisan Falls, Cawa-cawa Falls, and Pangyan Falls.

$$X_w = \frac{\sum wx}{\sum w}$$

Where:

X_w = weighted mean

x = values of the items in distribution

w = weighted of the items in distribution

RESULT AND DISCUSSION

Profile of Selected Local Officials of Davao Oriental involved in Tourism Development of the Town

The age, gender, level of education and position of selected local officials in Davao Oriental involved in the tourism development of the town were considered in this study.

Table 2 Distribution of selected local officials by age

AGE (YEARS)	FREQUENCY	PERCENT
20-25	4	14.28
26-30	3	10.72
31-35	3	10.72
36-40	9	32.15
41-45	4	14.28
46-50	5	17.85
51-55	0	0
56 years or older	0	0
TOTAL	28	100

Age. As shown in **Table 2**, selected local officials belonged to age group 26 to 35 got the percentage of 10.72. Age 20-25 the youngest local officials got the percentage of 14.28; 36-40 got the most frequent with a percentage of 32.15 while 41-45 got the percentage of 14.28 and last age group 46-50 have a percentage of 17.85.

Table 3 Distribution of selected local officials by gender

GENDER	FREQUENCY	PERCENT
Male	12	42.86
Female	16	57.14
TOTAL	28	100

Gender. As shown in **Table 3**, the distribution of local official in terms of gender. 12 male have a 42.86% while 16 female have 57.14%.

Table 4 Distribution of selected local officials by level of education

EDUCATION	FREQUENCY	PERCENT
High school level/ graduate	1	3.57
Vocational/ technical graduate	4	14.29
College level/ graduate	22	78.57
Post graduate level/ degree	1	3.57
TOTAL	28	100

Level of education. In terms of educational attainment, most of the local officials were college graduate. About 78.75. 4% of local officials were vocational graduate and 1 local officials

graduated with an educational attainment of high school and post graduate.

Table 5 Distribution of selected local official by official position

POSITION	FREQUENCY	PERCENT
LGU Staffs	9	32.14
Tourism officer/ Staffs	3	10.71
Barangay Councilor	3	10.71
Admin Staffs	5	17.86
Municipal Councilor	8	28.57
TOTAL	28	100

Official position. As shown in Table 5, most selected officials (32.14%) involved in tourism development of Davao Oriental were LGU staff. The remaining participants have position as Tourism officer/ Staff (10.71%), Barangay councilor (10.71%), Admin Staffs (17.86%), and Municipal Councilor (28.57%)

Profile of Local Residents in selected Barangay in Davao Oriental

The profile of Local residents in selected barangay located within the vicinity of Cagamisan Falls, Cawa-Cawa Falls, and Pangyan Falls include age, gender, level of education, and occupation.

Table 6 Distribution of selected local residents by age

AGE (YEARS)	FREQUENCY	PERCENT
20-25	15	46.87
26-30	5	15.62
31-35	2	6.25
36-40	8	25
41-45	0	0
46-50	1	3.13
51-55	1	3.13
56 years or older	0	0
TOTAL	32	100

Age. As shown in Table 6, Almost of the age group belonged at 20-25 with a percentage of 46.87, followed by the age group of 26-30 with a percentage of 15.62. Age groups 31-35 have a percentage of 6.25 while age group 36-40 got a percentage of 25. And both 46-50 & 51-55 age groups got the percentage of 3.13.

Table 7 Distribution of selected local resident by gender

GENDER	FREQUENCY	PERCENT
Male	11	34.37
Female	21	65.62
TOTAL	32	100

Gender. Table 6 shows that majority of the local resident was a female with a percentage of 65.62 while male participants have a percentage of 34.37.

Table 8 Distribution of selected local residents by level of education

EDUCATION	FREQUENCY	PERCENT
No formal schooling	0	0
Elementary level/ graduate	1	3.12
High School level/ graduate	4	12.5
Vocational/ technical graduate	1	3.12
College level/ graduate	24	75
Post graduate level/ degree	2	6.25
TOTAL	32	100

Level of education. Table 8 show the level of education of local residents. Most of the residents was college level/ graduate (75%) followed by high school level/ graduate (12.5%). The post graduate got 6.25%. Both elementary level/ graduate and vocational level/ graduate got 3.12%.

Table 9 Distribution of selected local residents by occupation

OCCUPATION	FREQUENCY	PERCENT
Student	13	40.62
Self- employed	3	9.38
Wage employed	13	40.62
Retired	0	0

Unemployed	3	9.38
TOTAL	32	100

Occupation. In terms of occupation of the local residents within the vicinity of the falls shows that both student and wage employed got a percentage of 40.62 while self-employed and unemployed was tied with a percentage of 9.38.

Assessment by Local Officials and Local residents with regards to Services, Tangibles, And Sustainability of Cagamisan, Cawa-Cawa, and Pangyan Falls:

Table 10 Assessment by local officials and local residents to service of Cagamisan, Cawa-cawa, and Pangyan Falls

SERVICE	LOCAL RESIDENTS MEAN	INTERPRETATION	LOCAL OFFICIALS	INTERPRETATION
1. Staffs of the falls provide prompt service.	4.06	Agree	3.82	Agree
2. Staffs are helpful and enthusiastic in providing service.	4.09	Agree	3.75	Agree
3. There is safety and security at the site.	3.75	Agree	3.71	Agree
4. Staffs are well-trained, competent and experienced.	3.59	Agree	3.57	Agree
OVERALL MEAN	3.87	Good	3.71	Good

Legend:

Mean Range	Scale	Adjectival Interpretation
4.2-5.00	5 = Strongly Agree	Very Good
3.40- 4.19	4 = Agree	Good
2.60- 3.39	3 = neither Agree or Disagree	Fair
1.80- 2.59	2 = Disagree	Poor
1.00- 1.79	1 = Strongly Disagree	Very Poor

Table 10 shown both the group of participants agreed on all four statements regarding in the services of Cagamisan, Cawa-Cawa, and Pangyan Falls. The highest mean rating of the local residents belonged in the staffs are helpful and enthusiastic in providing service with a mean of 4.09 while in the local officials the highest mean rating belonged to the staffs of the falls provide prompt service with a mean of 3.82. Both local

residents and local officials in the service category of staffs are well-trained, competent and experienced got the lowest mean.

Table 11 Assessment by local officials and local residents of the tangibles of Cagamisan, Cawa-Cawa, and Pangyan Falls

TANGIBLES	LOCAL RESIDENTS MEAN	INTERPRETATION	LOCAL OFFICIALS	INTERPRETATION
1. Visitor facilities are clean such as toilets and public shelters.	3.37	neither Agree or Disagree	3.57	Agree
2. The condition of the facilities is good.	3.37	neither Agree or Disagree	3.67	Agree
3. There is an inviting and pleasant atmosphere at the falls.	3.56	Agree	3.82	Agree
4. Public shelters are available.	3.37	neither Agree or Disagree	3.32	neither Agree or Disagree
5. Visitors have ease of accessing the Cagamisan, Cawa-Cawa, and Pangyan Falls.	3.43	Agree	3.85	Agree
6. There is a variety of good and drinks available at the site.	3.5	Agree	3.25	neither Agree or Disagree
7. There are many alternative activities available in the area aside from swimming.	3.46	Agree	3.21	Agree
8. There is a range of accommodation option for visitors	3.25	neither Agree or Disagree	3.17	neither Agree or Disagree
9. Picnic areas are clean and available.	3.62	Agree	3.35	Agree
10. Refreshment and retail outlets are available.	3.31	neither Agree or Disagree	3.42	Agree
OVERALL MEAN	3.42	Good	3.46	Good

Legend:

Mean Range	Scale	Adjectival Interpretation
4.2-5.00	5 = Strongly Agree	Very Good
3.40- 4.19	4 = Agree	Good
2.60- 3.39	3 = neither Agree or Disagree	Fair
1.80- 2.59	2 = Disagree	Poor
1.00- 1.79	1 = Strongly Disagree	Very Poor

Table 11 shown the tangible potential of the three waterfalls within the Davao Oriental, both local official and local resident got the same highest mean in the category of inviting and pleasant atmosphere at the falls. Followed by the category of

visitors have ease of accessing the Cagamisan, Cawa-Cawa at Pangyan falls. And the least category is public shelter availability with adjectival interpretation of "Fair".

Table 12 Assessment by local officials and local residents of the sustainability of Cagamisan, Cawa-Cawa, and Pangyan Falls

SUSTAINABILITY	LOCAL RESIDENTS MEAN	INTERPRETATION	LOCAL OFFICIALS	INTERPRETATION
1. The falls visually attractive and appealing natural attractions are maintained.	3.87	Agree	3.89	Agree
2. The area is not crowded and unspoiled.	3.81	Agree	3.82	Agree
3. There are minimal changes to existing landform and vegetation.	3.71	Agree	3.82	Agree
4. Tourism development at the falls is integrated with the local.	3.65	Agree	4.00	Agree
5. The falls make used of natural/ local resources as equipment and facilities.	3.59	Agree	3.82	Agree
6. The route passing is designed according to the natural slope of the water bed.	3.50	Agree	3.89	Agree
OVERALL MEAN	3.68	Good	Good	3.87

Legend:

Mean Range	Scale	Adjectival Interpretation
4.2-5.00	5 = Strongly Agree	Very Good
3.40- 4.19	4 = Agree	Good
2.60- 3.39	3 = neither Agree or Disagree	Fair
1.80- 2.59	2 = Disagree	Poor
1.00- 1.79	1 = Strongly Disagree	Very Poor

Table 12 shows the sustainability potentials of the Cagamisan, Cawa-Cawa and Pangyan falls. All of the categories got high mean, but the highest mean belong to the category that the falls are visually attractive and appealing natural attractions

are well maintained by the local official and local resident within the vicinity of the waterfalls.

Views of Local Officials and Local Residents with regard to the Facilities and Services that can be added as Features of Cagamisan, Cawa-Cawa, and Pangyan Falls to Increase the Potential of the Falls as a Tourist Attraction

Table 13 Facilities and Services that can be added as features of Cagamisan, Cawa-Cawa, and Pangyan Falls based on the views of local residents and local officials

FACILITIES AND SERVICES	FREQUENCY (n=32)	RANK	FREQUENCY (n=28)	RANK	OVERALL RANKING
Improved road facilities	23	1	21	2	1
More picnic sites	22	2.5	13	6	4
Travel directions	22	2.5	19	3	3
Refreshment and retail outlets	20	4	12	7	5
Showers rooms	19	5.5	23	1	2
Bird sanctuary	19	5.5	11	8.25	6
More accommodation	18	7	11	8.25	7
Souvenir shops	11	8	16	4.5	8
Camping sites	10	9	7	11	11
Entertainment areas	9	10.5	16	4.5	9
Photo and video shop	9	10.5	6	12	12
Delicacy store	8	12	11	8.25	10

The table 13 described the facilities and services that can be added as features of Cagamisan, Cawa-Cawa, and Pangyan falls based on the views of local officials and local residents. Both local officials and local residents agree that the most needed features that must include in this three different waterfalls within the vicinity of Davao, Oriental is improvement of road facilities going in the waterfalls. Followed by the shower rooms, travel directions, more picnic sites, refreshment and retail outlets, bird sanctuary, more accommodation, souvenir shops, entertainment areas, delicacy store, camping sites and the least needed in the waterfalls is photo and video shop.

CONCLUSION AND RECOMMENDATION

Conclusion

Based on the result of the study, the following conclusions were drawn:

The Davao, Oriental local officials involved in the tourism development of the falls and local residents are represented by different age group. The researcher believes that input from different age brackets will help the improvement of this research.

Local officials of Davao, Oriental involved in tourism development of the falls composed of 12 males and 16 female with a total number of 28. All local officials and local residents near at the vicinity of 3 different falls has a formal education. Most of the local residents living within the vicinity of 3 different falls were students and employees.

On the other hand local officials of Davao, Oriental have a varied position, concerned in the tourism development of the town which indicates the coordinated effort of the various agency of the town near at the falls.

The overall assessment by the local official and local resident showed that the tangibles of Cagamisan, Cawa-cawa and Pangyan Falls gain the lowest rating among the three areas which suggests that this features needed much improvement to increase the potential of the falls as tourist attraction of the town. The highest rating assessment belongs to the service features of the Cagamisan, Cawa-Cawa and Pangyan Falls and followed by the sustainability features. It means that local officials and local residents felt that the service characteristics of the waterfalls were maintained and natural endowments of the sites are intact and not exploited.

Lastly, the result suggest that the most important facilities and services for the Cagamisan, Cawa-Cawa and Pangyan Falls from the perspective of the local officials and

local residents were improvement of road facilities, showers rooms, travel directions, more picnic sites, refreshment and retail outlets, bird sanctuary, more accommodation, souvenir shops, entertainment areas, delicacy store, camping sites, and photo and video shops.

Recommendation

Based on the above conclusion, the following recommendations are proposed:

For local officials and tourism department of Cagamisan, Cawa-Cawa, and Pangyan Falls. Since the main objective of this research was to assess the potential of Cagamisan, Cawa-Cawa, and Pangyan Falls as a tourist attraction, major findings showed that the tangibles of the site are the areas that needed much improvement to increase its tourism potential. The tangibles that must be prioritized and should be enhanced at the falls include public shelters, variety of foods and drinks, alternative activities available in the area aside from swimming options for the visitors. These three areas are the lowest rated characteristics of the falls: hence, providing these tangibles would certainly enhance the potential of the falls as a tourist attraction.

For the management of Cagamisan, Cawa-Cawa, and Pangyan Falls. The suggest that the management of Cagamisan, Cawa-Cawa, and Pangyan Falls should upgrade the level service of the falls. The assessment for service got the adjective interpretation of “good” which means a there’s a room for improvement. This can be done by conducting seminar for the staffs to provide a quality service for the visitors of the falls.

It is also highly recommended to enhance or to include the following category: improvement of road facilities, showers rooms, travel directions, more picnic sites, refreshment and

retail outlets, bird sanctuary, more accommodation, souvenir shops, entertainment areas, delicacy store, camping sites, and photo and video shops. These kinds of services will promote attraction in the falls.

For the local residents. It is highly recommended for the residents of Davao, Oriental, specifically those living within the vicinity of the Cagamisan, Cawa-Cawa, and Pangyan Falls that have an initiative to protect the waterfalls to preserve its natural beauty and its natural resources.

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APPENDIX

Questionnaire

The researchers seek help from the group who created the paper “Assessing the Potential of Ambon-Ambon and Malagaslas Falls in Laurel, Batangas, Philippines as a Tourist Attraction”. The researchers ask the permission from them to use the same questionnaires for their paper.

LOCAL OFFICIALS

Please complete the following questionnaire by putting a check in the appropriate spaces provided.

A. Profile

1) Age:

20-25 years 41-45 years 26-30 years 46-50 years
 31-35 years 51-55 years 36-40years 56 years or older

2) Gender:

Male Female

3) Education:

No formal schooling Vocational/Technical graduate Elementary level/graduate
 College level/Graduate High school level/graduate Post graduate level/degree

4) Official Position:

Mayor Vice-mayor
 Tourism officer Municipal councillor
 Barangay captain

Others, specify _____

A. Assessment of the Falls: Instruction: Please provide your honest assessment of Falls by encircling the number that corresponds to your answer using the rating scale below:

5 = Strongly Agree 4 = Agree 3 = Neither Agree nor Disagree
 2 = Disagree 1 = Strongly Disagree

Service	5	4	3	2	1
1) Staff of the falls provide prompt of service					
2) Staff are helpful and enthusiastic in providing service					
3) There is safety and security at the site.					

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4) Staff are well-trained, competent and experienced					
Tangibles					
5) Visitor facilities are clean such as toilets and public shelters					
6) The condition of the facilities is good					
7) There is an inviting and pleasant atmosphere at the falls					
8) Public shelters are available					
9) Visitors have ease of accessing the Falls.					
10) There is a variety of food and drinks available at the site.					
11) There are many alternative activities available in the area aside from swimming.					
12) There is a range of accommodation options for visitors					
13) Picnic areas are clean and available					
14) Refreshment and retail outlets are available					
Sustainability					
15) The falls visually attractive and appealing natural attractions are maintained.					
16) The area is not crowded and unspoiled.					
17) There are minimal changes to existing landform and vegetation.					
18) Tourism development at the falls is integrated with the local environment/culture 19) The falls make use of natural/local resources as equipment and facilities					
20) The route passing is designed according to the natural slope of the water bed.					

B. Facilities and Services that can be Added as Features of the Falls

1) What other facilities/services would you like to see developed in this area to increase the potential of the falls as tourist attraction?(check all that apply)

- Shower rooms More accommodation
 Travel Directions Souvenir shops
 Refreshment and retail outlets Camping site
 Bird Sanctuary Delicacy store

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More picnic sites Entertainment areas
 Improved road facilities Photo and video shop
 Others, please specify _____

LOCAL RESIDENTS

Please complete the following questionnaire by putting a check in the appropriate spaces provided.

A. Profile

1) Age:

18-22 years 38-42 years 23-27 years 43-47 years
 28-32 years 48-52 years 33-37years 53 years or older

2) Gender:

Male Female

3) Education:

No formal schooling Vocational/Technical graduate Elementary level/graduate
 College level/Graduate High school level/graduate Post graduate level/degree

4) Occupation:

Student Self-employed Wage-employed
 Retired Unemployed

Others, specify _____

A. Assessment of the Falls:

Instruction: Please provide your honest assessment of Falls by encircling the number that corresponds to your answer using the rating scale below:

5 = Strongly Agree 4 = Agree 3 = Neither Agree nor Disagree
 2 = Disagree 1 = Strongly Disagree

Service	5	4	3	2	1
1) Staff of the falls provide prompt of service					
2) Staff are helpful and enthusiastic in providing service					
3) There is safety and security at the site.					
4) Staff are well-trained, competent and experienced					
Tangibles					
5) Visitor facilities are clean such as toilets and public shelters					
6) The condition of the facilities is good					
7) There is an inviting and pleasant atmosphere at the falls					
8) Public shelters are available					

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9) Visitors have ease of accessing the Falls.					
10) There is a variety of food and drinks available at the site.					
11) There are many alternative activities available in the area aside from swimming.					
12) There is a range of accommodation options for visitors					
13) Picnic areas are clean and available					
14) Refreshment and retail outlets are available					
Sustainability					
15) The falls visually attractive and appealing natural attractions are maintained.					
16) The area is not crowded and unspoiled.					
17) There are minimal changes to existing landform and vegetation.					
18) Tourism development at the falls is integrated with the local environment/culture 19) The falls make use of natural/local resources as equipment and facilities					
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B. Facilities and Services that can be Added as Features of the Falls

1) What other facilities/services would you like to see developed in this area to increase the potential of the falls as tourist attraction?(check all that apply)

- Shower rooms More accommodation
 Travel Directions Souvenir shops
 Refreshment and retail outlets Camping site
 Bird Sanctuary Delicacy store
 More picnic sites Entertainment areas
 Improved road facilities Photo and video shop

Others, please specify _____

PROFILE OF DAVAO ORIENTAL

Davao Oriental: The Gateway to the Pacific

Davao Oriental is a promising tourism and investment destination located in the easternmost part of Southern Mindanao. It ranges about 189.30 in kilometers from its common boundaries. It is bounded by the Pacific Ocean in the East, Davao Province in the West, Agusan del Sur and Surigao del Sur in the North and Davao Gulf and Celebes Sea in the South. Its proximity to the Pacific strategically places it as the gateway to the Pacific.

With a total of 5,164 square kilometers, Davao Oriental is the biggest province in Davao Region contributing around 32.82% to the total regional land area.

Political Subdivision and Land Area

The province is composed of two congressional districts covering eleven (11) municipalities. District I comprises the municipalities of Boston, Cateel, Baganga, Caraga, Manay and Tarragona while District II includes Lupon, Banaybanay, Mati, San Isidro and Governor Generoso and these are further subdivided into 183 barangays.

The City of Mati is the seat of the Provincial Government being the capital of the province.

The province has a total land area of 5,164 square kilometers representing 16.21 percent of the total land area of Region XI.



Baganga has the largest land area with 1,177.10 square kilometers, while San Isidro has the smallest with only 205.20 square kilometers.

The diverse natural resources including forests and agricultural products, mineral resources and tourist spots are sources of potential industries, investments possibilities and employment opportunities. These resources have already been tapped for support purposes, but utilization of the same are yet to be fully maximized. Presently, various areas are now being identified and promoted for eco-tourism development. Centers for information on potential investments are also put in place.

Topography

The eastern coast of the Province is fringed with mountain ranges, while the rest of the areas have uneven distribution of hills, swamps and lowlands. In general, about 493.68 km² are classified as lowlands, 235.90 km² as uplands; 2,263.48 km² as hilly lands; and about 2,154.35 as mountainous. The remaining 17.05 km² are covered by creeks, braided river beds, lakes and quarries.

Elevation

The elevation of 0 to 300 meters above sea level is 24.8 percent of the total land area of the province and 500 m and above sea level elevation is 37.6 percent.

Slope

The area of the land in the 0-18% slope range that is highly suitable for agricultural purposes is 31.2% of the total land area while those in the 30-50% slope range is 39.3% of the total land area.

Coastal and Marine Resources

The marine resources include a coastline of about 513.2 kilometers (NAMRIA), stretching from the Municipality of Boston in the northeast up to the Municipality of Banaybanay in the south-west. The length of the Province's coastline is about 3% of the total coastline of the country. It is one of the longest in the Philippines. Its territorial water is estimated at over 5,400 sq. kms, with coral reef and mangrove areas of over 340 and 1,820 hectares respectively. Of the marine resources, 15,000 hectares is suitable for seaweed farming. Mati, Baganga, Banaybanay, Lupon, and Tarragona are already involved in seaweed farming, but the aggregate area is just about 50 hectares. The tuna migratory route passes through Gen. Santos City in the south and goes all the way up to the Municipality of Gov. Generoso. Some of the fishing boats from Gen. Santos City and Davao City often find their way in the territorial waters of the 2nd District of Davao Oriental. Some even anchor at Pujada Bay. The tuna migratory route passes through Gen. Santos City in the south and goes all the way up to the Municipality of Gov. Generoso. Some of the fishing boats from Gen. Santos City and Davao City often find their way in the territorial waters of the 2nd District of Davao Oriental. Some even anchor at Pujada Bay. The inland aquatic resources of the Province include lakes, rivers, and springs. The more important lakes are the Tinagong Dagat located at the boundaries of San Isidro, Governor Generoso and City of Mati, the Diomaboc and Catampa Lakes in Manay and Carolina Lake in Baganga. Many of the larger rivers are located in the 1st District of the Province. Among the major rivers, the navigable ones are the Cateel River in Cateel, the Mahan-ub, and Dapnan Rivers in the Municipality of Baganga, Caraga and Manurigao Rivers in Caraga, Casauman River in Manay, and Quinonoan River located at the boundaries of Manay and Tarragona. In the 2nd District, the more important rivers are those located in

Mati and in Lupon. "The major rivers in Cateel, Baganga, and Caraga are viewed to be potentially viable for inland floating fish cages and taking into considerations the freshwater and brackish water areas of the Province, the potential area for freshwater fishery development is estimated to be over 1,350 hectares.

Davao Oriental has one of the longest coastlines of about 513.2 kilometers, stretching from the Municipality of Boston in the northeast up to the Municipality of Banaybanay in the south-west. The province is also situated near the tuna migratory route.

Inland Aquatic Resources

- The inland aquatic resources include lakes, rivers, and springs.
- Many of the larger rivers are located in the 1st District of the Province.

Mineral Resources

Davao Oriental has rich deposits of :

- Manganese ore
- Metallurgical chromite ore
- Magnesite
- Limestone
- Nickel Ore
- Shale
- Chert Copper
- Chromite
- Gold
- Silica
- Marble
-

Watershed Areas

Priority watersheds are Cateel Watershed, Casauman Manay & Caraga River Cluster Watershed, Sumlog Watershed, and Western Pujada Peninsula Watershed. These priority watersheds are used for domestic purposes and for irrigation. Watersheds with critical condition are Baganga Watershed Reservation and Mati Watershed Forest Reservation.

- Baganga Watershed Reservation
- Cateel Watershed
- Casauman, Manay and Caraga River Cluster Watershed
- Baganga Dapnan River
- Caraga Watershed
- Mati Watershed Forest Reserve
- Sumlog Watershed
- Western Pujada Peninsula Watershed
- Dumagooc Cluster Watershed
- Mayo River Watershed

Climate

The province has 3 rainfall types:

Rainfall Type I – greater than 2,500 m.m. with slight dry season and moisture deficit, covering the Municipalities of Boston, part of Cateel, Baganga, and Caraga whose vegetative cover is greater than 50 percent close canopy.

Rainfall Type II – Intermediate – with rainfall of 1,500 – 2,500 m.m. with moderate dry season and moisture deficit. The Municipalities with rainfall Type II are part of Cateel, Baganga, Caraga, Manay, Tarragona, Mati, Lupon, and Banaybanay whose vegetative cover is less than 50% open canopy.

Rainfall Type III – dry with rainfall less than 1,500 m.m. with considerable dry season and moisture deficit. The municipalities with rainfall Type III are almost all parts of

Mati, Banaybanay, Lupon, San Isidro and Gov. Generoso or the Gulf Towns. No tropical depression.

- short dry season and a pronounced rainy season
- average monthly rainfall of 3.5 inches
- average number of rainy days per year of 75 days
- no typhoon

Land Classification

- Davao Oriental has a total land area of 516,446 hectares
“Forestland/Timberland which is called Public Land has a total area of 315,600 hectares which is 61% of the total area of the province.
- Alienable and disposable (A&D) with a total area of 200,846 hectares which is 39% of the total land area of the province.
- With the largest land area in the region, Davao Oriental has more A&D lands and forestlands compared to other provinces.
- A & D – 200,846 hectares
- Forestland – 315,600 hectares

ECONOMIC STRUCTURE

89.7 percent of jobs generated came from agriculture, 6.3 percent from fisheries, and 1.3 percent from forestry/wood. Taken together, they produced 97.3 percent of the jobs. Of the total jobs created in agriculture, 65.94 percent came from coconut, 14.47 percent from corn, 9.4 percent from abaca, 4.11 percent from banana, 3.85 percent from rice, and less than 1 percent each from root crops, mango, vegetables/legumes, and durian. Of the production value, 47 percent came from coconut, 17 percent from fisheries, 12 percent from banana, 10 percent from corn, and 11 percent from rice.

Leading Industries :

1. Agriculture

2. Fisheries

3. Forestry/Wood

89.9% of jobs generated came from Agriculture

1. CROPS

Davao Oriental is the largest coconut-producing province in the region and contributes an average of 7.4% to the country's total production or equivalent to 1.06 billion nuts. All municipalities have land planted to coconut. The top 4 municipalities in terms of number of hectares planted to coconut are Baganga, Mati, Caraga and Gov. Generoso. Together, they produce 60% of the coconuts produced in the province. Davao Oriental produced only 14% of the total rice produced in the region. Rice is produced in 8 of the 11 municipalities. Of those 8, Banaybanay, Cateel and Lupon are the top 3 producers.

Together they produce 78.5 percent of the total rice production in the province. Davao Oriental's corn production from 2001 to 2006 was 23% of the region's. It was less than Compostela Valley's 27% and Davao del Sur's 31%. Corn is planted in all municipalities. Manay, Mati and Caraga are the top three producers. Davao Oriental produced the least quantity of mango at only 4% of the region's total production. Mango is planted in 9 of 11 municipalities and 82 percent of mangos planted are in Mati and San Isidro. Davao Oriental is the top producer of abaca fiber in the region and the fourth in the Philippines. 93% of abaca produced came from District 1. Manay produced the most at 37% of the total production of the province. The province has the least production of banana in the region. This is an indication of the largely untapped potential for banana production especially for intercropping with coconut trees. Banana is produced in all municipalities. The top 5 producers are the 5 municipalities in District 2. Together they produce 83.5% of the total production of the province. Davao Oriental ranks 4th in cassava production, that

produces 14.1% of the total production of cassava in the region. Cassava and other root crops are planted in all municipalities. The top three producers are Mati, San Isidro, and Gov. Generoso.

Baganga has the most number of hectares planted to rubber.

- From 2002 to 2006, no production of rubber was reported because the trees that were planted were still young and not yet ready for tapping.

These are the following crops produced :

Coconut

- Rice
- Corn
- Mango
- Abaca
- Banana
- Cassava
- Rubber

2. LIVESTOCK AND POULTRY

The Province is sufficient in cattle, carabao and swine, but insufficient in chicken meat and eggs.

Major Livestock Commodity :

- Goats
- Cattle
- Swine
- Poultry (native and layer)
- Sheep

3. AQUACULTURE AND FISHERIES

The provinces fish production in 2006 was 17,247 MT, lower than the previous year due to the decrease of production in the commercial and municipal fishery sector. 73.46% of the province's aquaculture production came from brackish water sources and 24.46%.

Major fishing grounds :

- Davao Gulf
- Pujada Bay
- Mayo Bay
- Manay Bay
- Baculin Bay
- Caraga Bay
- Cateel Bay

4. FORESTRY/WOOD

- Largest production forest in the region
- Total production forest of the Province is 125,155.2 hectares
- Baganga and Caraga (both in District I) account for 62,526.4 hectares or almost 50% of the total production forest

5. MINING

Total area for production of minerals is 21.5% of the region

Minerals produced :

- Chromite
- Copper
- Silica
- Magnesite
- Manganese
- Molybdenum

6. TOURISM

There are a total of 122 potential tourist spots/destinations in the province. Tourist spots or destinations consist of islands, waterfalls, white sand beaches, rivers for trekking, bays and coves for kayaking and scuba diving, lakes, caves, hot springs, mangrove resorts, historical and religious sites, cultural sites, and nature preservation areas

7. TRANSPORTATION, ACCESS & CIRCULATION

A total of six (6) ports in the province, five (5) in the Second District and one (1) in the First District. Secondary airport in Mati that could be a key entry and exit point in Southern Philippines has been underutilized. Airstrip/airport in Lambajon, Baganga which was used before for commercial flights when the road conditions in the First District were still very bad. It has also been underutilized. The province has a total of 2,334.6 kilometers of road 393.8 kilometers of which are national roads, 491.2 kilometers are provincial roads, 101.9 kilometers are municipal roads and 1,347.2 kilometers are barangay roads.

1. Airports

- 2 airports/airstrip

2. Seaports

- There are a total of six (6) ports in the province

3. Road Network

- The Province has a total road density of 1.18 km/sq.km of A & D lands

Three Municipalities

Profile of Lupon

Home to the majestic Sumlog River which is largely part of this town's rich history, the municipality of Lupon also offers wealth in natural wonders and welcoming people. Subdivided to 21 villages, Lupon was formally created as a municipality in 1948 from being a barrio of Pantukan in 1919.

Profile of San Isidro

Bounded by mountain ranges and gulf waters, this small quiet town of San Isidro offers one of nature's great gift to the world—the Mt. Hamiguitan Mountain Range. Recently nominated as a UNESCO World Heritage Site, this natural

wonder boasts its 12 kilometers untouched pygmy forest teeming with life of diversified flora and fauna. San Isidro's marine reserves also offer exciting underwater adventures. The municipality of San Isidro is politically divided into 16 barangays. While seven villages are along the coastlines, nine are in the upland areas.

Profile of Governor Generoso

One of the municipalities located along the gulf, Governor Generoso boasts its rich seascapes swarming with fishery resources. Endowed with this gift, this marine-rich town is considered the major fishing ground of the Davao Gulf. In addition, Governor Generoso also prides its rich history which dated back from the Spanish occupation when the European colonizers settled in the area concentrating in the Cape of San Agustin, which sits at the southernmost part tip of Mindanao and became an important navigational landmark in those early times.