Jeju: This Unique Island

Ilsoo YUN
Assistant Professor
School of Environmental, Civil, Transportation Engineering
Ajou University
San 5, Woncheon-dong, Yeontong-gu, Suwon, 443-749, Korea
Fax: +82-31-215-7604
E-mail: ilsooyun@ajou.ac.kr

Jungeun YOON
Graduate Researcher
School of Environmental, Civil, Transportation Engineering
Ajou University
San 5, Woncheon-dong, Yeontong-gu, Suwon, 443-749, Korea
Fax: +82-31-215-7604
E-mail: lovejjung522@ajou.ac.kr

Jinhyung CHOI
Graduate Researcher
School of Environmental, Civil, Transportation Engineering
Ajou University
San 5, Woncheon-dong, Yeontong-gu, Suwon, 443-749, Korea
Fax: +82-31-215-7604
E-mail: haenarain@ajou.ac.kr

Sungho PARK
Graduate Researcher
School of Environmental, Civil, Transportation Engineering
Ajou University
San 5, Woncheon-dong, Yeontong-gu, Suwon, 443-749, Korea
Fax: +82-31-215-7604
E-mail: fenix3339@ajou.ac.kr

Abstract: Jeju Island has the unique features in terms of region, history, culture, and politics compared to other places in Republic of Korea. The island has also drawn much attention as one of the international travel attractions since it is located in the geographical center of Northeast Asia. Therefore, it is believed to be necessary to make full use of the advantages that Jeju Island has as a test bed for various green transportations and green transportation policies that are currently under development domestically. In addition, it is possible to perform a more effective experiment if various contents of transportation and tourism in the island are utilized. It is also believed to be convenient to promote the results of such experiment and their usefulness to the international community.

Key Words: Jeju Island, history, smart-grid system, culture, geography

1. INTRODUCTION

Jeju Island is a volcanic island on the south of the Korean Peninsula and the largest island among the islands in Republic of Korea. It is 141.6km away from Mokpo city in the north, 286.5km away from Busan city in the northeast, and 255.1km away from Tsushima Island of Japan in the east. Jeju Island lies in the Korea Strait to the east, overlooks Shanghai city of China to the west and faces the East China Sea to the south.

Thanks to these geographical features, Jeju Island plays a role as a bridge that connects the continent that includes Russia and China with Japan and Southeast Asian countries. The island is a world renowned resort and travel destination with beautiful natural landscape. In particular, Halla Mountain that stands high on the clean sea is the home to animals and plants including 1,800 species of plants and thousands of wild deer. Furthermore, the island has been under the spotlight as a new international travel attraction when it hosted several summit talks including the summit talks between Korea and Japan and between Korea and the US.
This paper intends to introduce the main features of Jeju Island with focus on its characteristics of transportation and tourism. In addition, the paper examines the advantages that the island is used as a test bed for developing diverse green transportations.

2. JEJU’S PARTICULARLY SPECIFIC GEOGRAPHY, HISTORY AND CULTURE

2.1 Location and Features

Jeju Island is the largest among islands of Korea, being located in the southwestern water of the Korean Peninsula along with eight inhabited islands and 55 uninhabited islands. Since it is in the center of the Northeast Asian region that includes Korea, China and Japan, the island has a geographical importance and has come into the spotlight as one of the world famous resort and travel destinations thanks to magnificent scenery of the island.

In topographical features, the east side and the west side with Halla Mountain in the center of the volcanic island have a very gentle slope at the 3~5 degrees. The north side and the south side have a slightly steep slope at the 5 degrees. Due to Halla Mountain towering in the center of the island, the climatic difference is great between the north and the south. But since the warm current flows off the coast, the annual range of temperature is small, which is typical to the subtropical oceanic climate.

2.2 History

Relics and ruins from the Prehistoric Age have been discovered on seashore of the island and foot of the mountain. The 15th descendant of “Goh, Eul-na” attended the royal court meeting in Silla Dynasty and was granted the name of a country “Tamna,” which resulted in establishment of the Tamna country. Tamna was a vassal state to Baekje in 498. But it became a vassal state to Silla after the fall of Baekje. In 1105 during the Goryeo Dynasty period, the royal system was abolished so that Tamna was relegated to the county and the royal court dispatched an official who governed the island. In 1211, Tamna was renamed to Jeju. In 1416 during the Joseon Dynasty period, as the population increased, the island was divided into Jeju Mok, Jeongeui Hyeon and Daejeong Hyeon (note: mok and hyeon are smaller administrative sections than province). This division had remained intact until the end of the Joseon Dynasty. In 1915 during the Japanese colonial period, the division with three eups (note: eup is the unit of town) was abolished as the province system was introduced. As a result, the island was reorganized with one eup and 12 myeons (note: myeon is bigger than eup). After the restoration of Korea’s independence, Jeju was raised to the status of province in 1946 with North Jeju county and South Jeju county newly established. In 1955, Jeju eup was elevated to a city. And in 1981, Seogwipo eup including Jungmun was elevated to a city. In July 2006, as Jeju was promoted to a special self-governing province, it came to have the administrative system that has two administrative cities, seven eups and five myeons. Currently, Jeju is a worldwide travel destination that represents Republic of Korea.

2.3 Culture

The islanders have reclaimed Jeju in the long process of removing countless stones that covered the island due to volcanic activities of Halla Mountain in order to cultivate field, build ports and construct defense walls and lookout stations. In addition, they have had to fight against the sea since ancient times because Jeju Island is situated in the path of typhoon. The effect by heavy wind can be found in all aspects of everyday life of the islanders along
with the feature that Jeju is abundant with stones. The examples include a thatched cottage, which is built with stone fence and low roof that is tied up with turf, and a field surrounded with stone fence. Another feature is that there are many women in the island. Even though this is based on population statistics, the feature means that women in the island work industriously. Woman diver, working against big waves, is the term that represents Jeju Island where women work at sea.

For a long time, the islanders had taken diligence, frugality and mutual help as virtue to follow in order to exploit the rough and barren environment of the island. Therefore, they did not steal or beg, living without any gate in a house. They did not do anything bad or shameful since they highly valued honor and knew each other very well, living in a small island. As they had lived a life with a high value on self-reliance, self-help and honor, they were always assiduous, thrifty and cooperative so that they did not feel the need to have any gate in a house.

3. JEJU’S APOLITICAL SYSTEM IN KOREA

Political inclination of the Jeju islanders based on the Korean mindset can be summarized into a few points in reference to some publications and media release even though there has been no survey on political awareness of the islanders since the 1990s.

First, a majority of the Jeju islanders have a strong interest in various issues related to the local community but show the negative opinions when they are asked about consensus and cooperation among the residents for solving the issues. This may be attributable to the fact that the islanders are accustomed to solving problems in a way that is dependent upon one another. They ask a favor of someone in personal acquaintanceship with power, rather than using an official channel such as a political party.

Second, the islanders have the view on personal motivation-based local autonomy and take any means to realize the local autonomy. This is attributable to their failure to cultivate awareness of local autonomy and democracy for the public good of local community under the centralism. This is originated from individualism or self-centeredness that puts importance on the primary group that is based on blood relationship, regional affiliation and school affiliation. Such inclination was well displayed in the local election held recently. The self-centered feature is spread out across the nation. Without any exception to Jeju Island, the degree of such personal relationship was conspicuously stronger in the island than in other areas due to the geographical features. This demonstrates that the human relationship based on the subjective non-rationalism is more remarkable because population migration is low owing to geographical features and the population has a strong tendency toward being stagnant.

Third, the islanders have the very strong characteristics of resistance in making a political decision. Development of Jeju Island based on the centralism has caused the imbalance in development between the income groups and between the regional areas. In the aftermath of such central-government-led development, the development-first idea for Jeju Island has deepened the anemic local economy’s dependence on the central government and stripped the islanders of their self-empowering ability. As a result, increase in unearned income has led to the phenomenon that the rich get richer while the poor get poorer. This phenomenon has been translated into the relative sense of poverty, which has ended up with the rise of emotional resistance.
According to the political inclination of the residents in Jeju Island that has been mentioned thus far, the islanders get accustomed to the top-down system in the relationship between residents and local government and still have personal motivation interfere with decision over public issues. Awareness of the residents has turned from emotional dependency to self-interested resistance in the relationship with the government while the residents have the very high standard for political expectation. The reality with Jeju Island has laid bare many problems joined together with the feeling of being historically victimized, the top-down communication system and the emotional resistance. Such local and political inclination has played a role as a big obstacle to development of Jeju Island’s autonomy along with the insufficient system to collect and deliver opinions of the residents on policy decision by the local government.

4. TEST-BED POLICY IN INDUSTRY

4.1 Test-bed Policy

Jeju Island is geographically far away from the Metropolitan area that can be called a typical industrial park of Korea. The reality is that there is no major industrial complex in the island. Therefore, industry of Jeju Island centers mainly on tourism industry and agricultural and fishery industry. However, for the sake of balanced national development, Jeju Island is frequently utilized as a test bed for various industries and technologies. In particular, as a way to make the most use of advantages that the island provides as a travel destination, the island has been actively used as a test bed for new green technology as shown in the table below (Kim, 2006).

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Ministry</th>
<th>Host</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telematics Test-bed</td>
<td>Ministry of Information and Communication(MIC)</td>
<td>SKT Consortium</td>
<td>9,429 million won ('05-'07 year)</td>
</tr>
<tr>
<td></td>
<td>Jeju Province</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Development of core Technology for national transportation</td>
<td>Ministry of Construction and Transportation</td>
<td>KT Consortium</td>
<td>8,251 million won ('05-'07 year)</td>
</tr>
<tr>
<td>USN(Ubiquitous Sensor Network)-based marine environment information gathering system for the coast of Jeju</td>
<td>MIC National Computerization Agency (NCA)</td>
<td>SISNET Consortium</td>
<td>306 million won ('05 year)</td>
</tr>
<tr>
<td>Structuring the nationwide USN network and its application using KOREN(Korea Advanced Research Network)</td>
<td>MIC</td>
<td>ICU</td>
<td>120 million won ('05 year)</td>
</tr>
<tr>
<td>Development of u-Conference using RFID</td>
<td>Small &amp; Medium Business Administration</td>
<td>Cheju national University</td>
<td>354 million won ('04-'07 year)</td>
</tr>
<tr>
<td>Pilot Project of Taxi Telematics for Tourism and Life</td>
<td>MIC Korea S/W Agency</td>
<td>JEJU KIPA</td>
<td>2,000 million won ('06-'07 year)</td>
</tr>
<tr>
<td></td>
<td>NCA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>u-Flash farm RFID/USN Pilot Project</td>
<td>MIC</td>
<td>Jeju City Hall, Cheju Provincial Government</td>
<td>700 million won ('06 year)</td>
</tr>
<tr>
<td>Research Center for Telematics</td>
<td>MIC</td>
<td>Cheju national University(ITRC)</td>
<td>4,490 million won ('04-'10 year)</td>
</tr>
</tbody>
</table>
This chapter introduces the two test-bed projects that are currently underway in Jeju Island.

4.1 Creative Wave Region

One of the prerequisites for frequency allocation is to ensure no interference between frequencies. In this sense, it is in fact difficult to get an existing or new frequency allocated for operation in the Metropolitan area. And one of the conditions for being used as a test bed is to have a densely populated urban area that coexists with a non-crowded area that enables driving at a high speed. The international travel destination of Jeju has the urban area with continuous inflow of floating population including tourists. It also provides a test environment that enables a constant-speed driving at a high speed all over around Halla Mountain. Since the island has the frequency environment in various forms, it is evaluated to be the best place as a test bed.

Figure 1 shows the geographical environment of Jeju as an outdoor test bed. The course A is the urban area of Jeju city, which is favorable for experiment on diverse patterns of radio field strength and the Doppler Effect of receiver terminal. The course B is the shadow area where radio waves from main and subordinate transmitting stations do not reach. And this is used as an area for test of weak electric field. The course C is a non-crowded area with low traffic that enables high-speed driving test at the speed of 70Km/h or higher. Lastly, the course D is a complex path where signals from main station coexist with signals from subordinate station, showing severe changes in field strength. As the four courses with different features are established as a test bed outside the city, it is advantageous to provide various types of the experiment environment (Kim, 2010).
As a special self-governing province, Jeju Island has been developed to make a free international city with competitiveness such as Singapore or Hong Kong. To this end, the island guarantees international movement of people, goods and capital and provides the maximum convenience for business activities. In addition, it has eased various statutory regulations, taken over the power from central administrative agencies, and fostered key industries such as clean industry and service industry. The newly established Article 215.8 (designation of creative wave region, etc.) of the Special Act on the Establishment of Jeju Special Self-Governing Province stipulates that the nation or the Jeju self-governing province is allowed to designate a certain area of the Jeju self-governing province as “creative wave region” for the purpose of fostering creative wave industry and securing international competitiveness of related industries.

In March of this year, the Korea Communications Commission allocated to Jeju the frequency of 8MHz in the range of UHF 686–694MHz (CH50–CH51) that is used for TV broadcasting. By acquiring the license for radio station, the island was allowed to start mobile digital broadcasting for a test. Based on the trial, Jeju is planning to provide the test bed service for various mobile broadcasting standards, starting from the second half of this year.

The test bed for digital broadcasting and communication technology is expected to play a significant role in promoting productivity and international competitiveness of overall industries. Particularly, a country that is highly dependent on export in the field of information & communication technology (ICT) such as South Korea is definitely required to preoccupy technology and service models by utilizing test bed. Korea has high-quality human resources, high technology and a great number of consumers who are willing to experience sophisticated technology. Thanks to these factors, Korea has become test bed for new products from global smart phone manufacturers, which suggests some significant implications. The project to establish test bed in Jeju Island is expected to play a role in establishing an industrial cluster for mobile broadcasting and digital terrestrial TV, going beyond establishing a place for research and business development (R&BD) that aims at providing diverse environments in the product development stage and finding out problems in the early stage.

4.2 Smart Grid System

Smart grid is the next-generation intelligent power grid that enables the real-time exchange of power information in two directions between supplier and consumer in order to optimize energy efficiency as the smart grid combines information technology with the existing power grid. The basic concept of the smart grid is to connect power plant and transmission and distribution facilities with power consumers in the information network and to use the information shared in the two ways to ensure that the entire power system operates efficiently as one body system does.

The smart grid has been linked to wind power, solar power and fuel cell for the practical and integrated verification of the achievements from power IT researches conducted as part of national projects. After the pilot operation of power storage device and consumer power management unit, the demonstration complex that houses 3,000 households are currently established in Jeju Island.
In Korea, universities, businesses and research institutes along with experts have developed basic technology since 2004. In 2008, the smart grid was selected as a task for green energy industry development strategy before the committee on construction of intelligent power grid was newly established to lay the legal and institutional foundation for the task. In June 2009, the government announced the “Korean Style Smart Grid Vision” and selected the special self-governing province of Jeju as the smart grid demonstration complex. In 2010, the technology demonstration started in earnest. Beginning in 2011, the technology has been provided to model city in a large scale. According to the plan, intelligence on the part of consumer will be finished by 2020 while intelligence of the entire power grid will be completed by 2030.

The smart grid demonstration complex of Jeju, which houses around 6,000 households as the world’s largest and sophisticated smart grid demonstration complex, was established in Gujwa eup of Jeju Island (situated in 12 ris, northeast of Jeju) (Note: ri is the smallest administrative unit and smaller than eup) with a view to promoting technology commercialization and export-oriented industrialization.

Domestic conglomerates including Samsung, LG, Hyundai, and KEPCO have made the huge investment (around KRW 240 billion) in the complex, which is expected to contribute to development of the local economy in the direct and indirect ways. And many companies in Jeju also have joined the project, which is expected to play a big part in development of the local economy. In addition, provision of energy management system and diverse services will arouse pride of the local residents. And theme park will be developed to publicize smart grid and pursue regional specialization of Jeju as a tourist attraction in the international scale. All of these efforts will spread out the image of Jeju as a green island.

5. UNIQUE TRANSPORT AND TRAFFIC CHALLENGES

Land transportation in Jeju centers on highway. The island has the coastal beltway and the mountainous way that circumnavigate the island from the east to the west, the first transverse way of Halla Mountain and the second transverse way of Halla Mountain that connect Jeju city with Seogwipo city from the north to the south, the eastern and western industrial ways, and the Namjo way. In addition, the roads, being connected to such main roads, and the coastal roads, passing through scenic spots in coastal area, have been developed in pace with tourism development in Jeju, which has significantly contributed to development of tourism and industry. According to road statistics, Jeju has the general national road in 426.2 km, the local load in 241.7 km, the city/county road in 1,961.3 km, which brings the total to 2,629.2 km with the highest road ratio among the provinces of Korea.

Since the coastline is monotonous with a small number of good harbors, Jeju had some difficulties in transportation to connect the island to the land. But the transportation of Jeju had developed as the regular line between Mokpo and Busan was opened after the restoration of Korea’s independence. In 1977, a car ferry was put on the route between Jeju and Busan. Afterward, a car ferry with a capacity of 3,000 tons or higher went on service bound for Mokpo, Busan, Wando (island), and Incheon, which had increased the number of passengers and reduced the travel time, resulting in development in great strides. Jeju harbor and Seogwipo harbor take the center stage of maritime transportation in Jeju. Starting from Jeju city, ships carry passengers to Mokpo twice a day, to Busan once a day, and to Wando once a day. From Seogwipo to Busan, ships are in operation once every other day. The route from
Jeju to Mokpo takes the largest number of passengers for transportation while the route from Jeju to Wando is the shortest in distance.

As the Korea National Airlines (KNA, private airline) entered service in the late 1950s, the air route from Seoul to Busan and Gwangju was opened. The Korean Air Lines (KAL, national airline) started its service in 1968, entering into the era of air transportation. In the 1970s, as a jet aircraft was put on the air route, it took one hour or so to travel across the nation, which turned the nation into a one-day life zone. As the Asiana Airlines entered service in the late 1980s, the air transportation had developed further. In the early 1980s, as the number of air transportation passengers exceeded that of marine transportation passengers, the transportation to connect Jeju Island to the land had shifted toward the airline transportation.

The Jeju International Airport is the third largest airport in Korea behind the Incheon International Airport and the Gimhae International Airport. Currently, the Jeju International Airport provides direct routes and service to Tokyo, Osaka, Nagoya, and Fukuoka of Japan, and Taipei of Taiwan. Besides, air routes to the Southeastern Asian countries are taken into consideration in case that aviation agreement is concluded with other cities of Japan and some cities of China, which shows a bright outlook for the future. At present, Korea has 11 domestic air routes between Seoul, Busan, Daegu, Gwangju, Cheongju, Jinju, Yeosu, Mokpo, Ulsan, Pohang, and Kunsan.

6. CONCLUSION AND FUTURE STUDIES

As mentioned thus far, Jeju Island has the unique features in terms of region, history, culture, and politics compared with other places in Korea. Furthermore, the island has drawn much attention as one of the international travel attractions since it is located in the geographical center of Northeast Asia. Therefore, it is believed to be necessary to make full use of the advantages that Jeju Island has as a test bed for various green transportations and green transportation policies that are currently under development domestically. In addition, it is possible to perform a more effective experiment if various contents of transportation and tourism in the island are utilized. It is also believed to be convenient to promote the results of such experiment and their usefulness to the international community.

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