

**Ecomuseum as an Approach for Adoptive River Basins Management
A Multiple Case Studies of Oita Prefecture**

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Abstract

This study introduces the Ecomuseum model as a tool for river basin management in Oita Prefecture. Rivers play a vital role in our lives; they are the first platform for humankind's settlement. They are the bloodline for the ecosystem responsible for sustaining life on earth. However, the world's water resources are under threat because of the unbalanced population growth, climate change, and misuse of water resources in general and rivers specifically. In 2017, UNESCO, in cooperation with IHP launched the Water Museums Global Networks. To reconnect communities with their rivers and safeguard and preserve this mutual relationship in its tangible and intangible forms. Alternatively, the Ecomuseum concept is a promising approach to mediate and interpret this relationship by reconnecting the people, rivers, ecosystem, and territory with material and immaterial forms resulting from the interaction of these elements.

From this perspective, this research focuses on observing some local communities in Oita Prefecture that have introduced a unique connection with the river basin by highlighting the vital role of the river in developing communities along with their complex networks, representing the rich and unique cultural and natural diversity of the prefecture.

1 Introduction

1.1 Background

In 2017, UNESCO-IHP launched the Water Museums Global Network, with the principles of promoting cooperation among water museums around the world as well as sharing experiences and best practices in a manner that could create a more adaptive and sustainable management model of water heritage that ensures the preservation of traditional knowledge as well as creating new water culture. According to the Water Museum Global Network, "Water museums display, all around the world, a unique repository of different forms of humankind's connections with water and its natural, cultural, tangible, and intangible heritage" ("MISSION | Water Museums"). Water museums are mainly education institutions that focus on strengthening and recovering the fragile relationship between water as natural and cultural resources and the communities that were founded on these resources through increasing awareness and engaging the local communities in museum activities (Mission: Water Museums, 2017).

In building a sustainable water-use society, it is necessary to have a deep understanding of the real image of water in a specific area. The Ecomuseum has the potential to play this role as a networking tool, a community revitalization tool, an educational institution that can contribute to water literacy and a heritage project that can protect water heritage (Shimmi, 2017). The Ecomuseum could embrace a specific region with its cultural, natural, and resources, aiming to protect and preserve these resources and ensure their transformation for future generations with the traditional knowledge that has evolved through the interaction between humans and the environment in this region (Shimmi, 2017). From this

point of view, the Ecomuseum could be a good source of information about river basins and their ecological and social systems. It could also help people connect the ancient and modern communities and their rivers.

1.1.1 Ecomuseum

According to the French charter of Ecomuseum, issued in 1980, an Ecomuseum is the culture and natural heritage of a living environment and lifestyle that has been studied, preserved, exhibited, and passed down with the participation of local people in a specific territory (Davis, 2011, p.84). But in (2016), the Milan Cooperation Charter: *Ecomuseums and Cultural Landscape*, described Ecomuseums as a participatory mechanism that acknowledges, manages, and preserves the local heritage to assist sustainable development goals. They are projects aimed at reuniting methods, cultures, products, and resources from a single territory (Brown, 2019). The task is to create innovative and inclusive practices that promote the cultural development and economic growth of local communities in a visible manner. In this way, by increasing the local community's awareness of their heritage, their unique identities, and the valuable history of their landscapes, as well as involving them in the management, interpretation, and development process of an Ecomuseum, one will find the most appropriate approach to achieve the community's development goals about its water resources.

1.1.2 The Japanese Ecomuseum

Soichiro Tsuruta proposed the Ecomuseum's concept to the Japanese community for the first time in 1972 after participating in the International Council of Museum (ICOM) round table. However, the first Japanese Ecomuseum was opened in 1992 (Davis, 2011p.247). There are around 100 Ecomuseums in Japan (Ohara, et.al, 2017, P. 376) and they could be classified based on their objectives into three

categories: educational institutions, community development-based museums, and tourism promotion museums (十菱 Jubishi, 2003).

The Japanese Ecomuseum has the same goals and principles of protecting local resources, revitalizing threatened rural and urban communities, protecting local identity, boosting local pride through recovering traditional heritage and appreciating the value of its contemporary heritage (Corral, 2010), and promoting responsible or sustainable tourism activities.

1.1.3 River, Riverscape, and Water Heritage

Rivers are complex, dynamic, adaptive systems. They are cultural symbols and act as socio-ecological agents. They are always in nonstop motion, spanning regions, landscapes, and communities. This movement is constantly in sync with geographic change through time, traversing several layers of landforms and landscapes (Chakraborty et al., 2018, p. 9). Beyond humankind's intercourse with the ecosystem and its natural resources to survive, this interaction introduces various cultural faces that distinguish one territory from another and from one generation to another (Haslam, 2008, p.295). In different forms of inheritance, either physically by controlling the spanning of river basins and creating various water management systems such as bridges, channels, qanats, dams, and water aqueducts (Hassan, 2011, p.24). In a non-physical sense, this can be a clear reflection on daily life activities and spiritual life (Klaver, 2010, p.10). However, there are intensive threats that challenge water's cultural and natural heritage because of human density, water hazards that endanger water in lowland deltas, and arid regions, and the impact of mountain ranges (the rain shadow effect for example). Climate change impacts intensify flood and drought modes, change groundwater and sea levels, and increase pollution. This results in a higher frequency and intensity of disasters. Therefore, riverscapes must be rediscovered by society, prioritizing local interaction and everyday experiences for a long-term effect on river

ecology. This can also help avoid the commodification of river resources and prevent decoupling from the river ecology (Klaver, 2010, p.46).

1.2 Research Problem

This study's focus is to propose the Ecomuseum as a model that could contribute to water resource management and water heritage preservation in Oita Prefecture. The prefecture has a diverse set of water resources that indicate a high potential for river Ecomuseum applications, including cultural, recreational, natural, and touristic attractions. This characteristic variety needs to be woven together to reinforce the prefecture's water identity as a tool for managing the rivers and their riverscape, regenerating an economic profit, and revitalizing the local communities. As noted, the Japanese Ecomuseum model has its traits since they are generally government initiatives rather than community initiatives like in the European model.

On the one hand, depopulation, aging, and migrating from rural to urban communities are Japan's first social challenges. Alternatively, water resource management and river basin control are persistent urgent files for the Japanese government. According to the Japanese River Law, the relationship between people gradually becomes a national concern after decades of being a local and regional issue. Therefore, interpreting and preserving their relationship's past and status should be a part of river basin management to investigate the impact of this interaction on the river course and on the communities that have expanded on the riverscape and waterfront of these rivers.

Many Japanese local communities can develop and adopt the Ecomuseum application as a tool to revitalize their communities, safeguard their traditional wisdom to transfer it to future generations, as well as use and preserve their natural and cultural heritage to regenerate economic profits. Meanwhile, this study will focus on a number of these communities located in the river basin to look over the

opportunities and challenges that may face applying the Ecomuseum application as well as outline the flexibility and ability of the Ecomuseum to protect, preserve, and revitalize the local identity, reinforce, and revitalize the connection between the people and the rivers, riverscape, and the water heritage in different forms.

1.3 Significance

Major human settlements in both urban and rural settings have evolved interwoven and surrounding the catchments of the rivers and on their riverscape. Rivers and water resources, in general, have played a crucial role in developing and sustaining the earliest civilizations in Egypt, Iraq, China, and India. This contribution formed and demonstrated these traditional communities' social, political, and economic structures besides influencing the thoughts, and beliefs of these traditional communities. However, this relationship and influence is a continuous form of interaction that directly impacts the river basin, the communities that have arisen in its basin, and the environment of the river ecosystem.

Meanwhile, there are some critical factors such as Climate change, water scarcity, water stress, floods, droughts, conflicts of transboundary rivers, the misuse of the river, urbanization, and river basin transformations that threaten the rivers' environment and put the lifeblood of the ecosystem. Around 1.2 billion people live in places of physical scarcity, and 500 million are on the verge of becoming so. Another 1.6 billion people, or nearly one-quarter of the global population, are affected by economic water scarcity (2014). Therefore, these water crises have gotten the international community's attention and motivated international and regional institutions like UNESCO and Water Agency to release many programs and initiatives that focus on enhancing water resource management through governance, community participation, water education programs, and increasing awareness.

Even though there is a respectable number of different publications that contributed to Ecomuseum as an approach for community development, the significance of this research is to propose the Ecomuseum application as a form of river basin management that could promote community participation, which could contribute to community revitalization, reconnect the river with its surrounding context and environment, and observing the community-river relationship in Oita prefecture. While there are a limited number of academic papers that describe the Ecomuseum as an approach to the river basin, the researcher selected Oita prefecture to be the basis of this study since the prefecture's formation and topography provided it with a diverse river system that demonstrated the foundation of local communities. Mountains and forests cover 70% of the prefecture's total area. The river system flows through these ranges of different sizes and classifications. However, the major rivers in the prefecture are Yamakuni River, Yakkan River, Ōita River, Ōno, Banjō River, and Beppu Bay and the Bungo Channel (“Ōita Prefecture - Academic Dictionaries)

1.4 Research Objectives

This research has formulated the following research objectives.

- i. To identify the Ecomuseum's definition, design, purposes, and mission that enable it to achieve community development.
- ii. To identify the Ecomuseum's contribution to community participation and cultural landscape management.
- iii. To observe the socio-ecological characters of the river and the human-river relationship.
- iv. To outline the common and shared principles between the Ecomuseum management system and river basin management objectives.

- v. To explore the opportunities of adopting Ecomuseums to empower local communities in Oita prefecture to manage their river basins to achieve governance in river basin management and revitalize the local communities.

1.5 Research scope

This research aims to examine the Ecomuseum concept and characteristics from the theoretical point of view by analyzing the literature and comparing the Japanese and European Ecomuseum models to understand the weaknesses and strengths of both approaches. In Oita prefecture, local communities have interacted with this wide range of rivers according to the topography and the nature of their ecosystems. Therefore, a different form of identity and sense of place has been created, which encourages the researcher to select the following cases:

- 1- Tamagawa River Ecomuseum, Kamagawa Prefecture
- 2- Nakatsu City and River Basin management and cultural identity including the tallest and oldest stone bridge in Japan.
- 3- Yufuin and Oita River governmental plans, tourism attraction branding, and community empowerment including the gorge is a geo-recreational attraction with a strong community.
- 4- Kunisaki bird watching activities

2 Literature Review

2.1 A Brief History of Museums and Their Functions

*"A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, research communicates, and exhibits the tangible and intangible heritage of humanity and its environment for education, study, and enjoyment" **Museum Definition - International Council of Museums, 2007***

For the first time since the ICOM Foundation, this term has been referred to as an approach for safeguarding and promoting museums in ICOM, 2007 and UNESCO 2015 guidelines (UNESCO, 2015; Brown & Mairesse, 2018). Meanwhile, at ICOM 2019, Kyoto, the committee announced the need to revise and rethink the 2007 museum definition and invited global contributions to ensure a better reflection of the museum's goals and duties in the twenty-first century (ICOM Kyoto, 2019). Subsequently, among 250 proposed definitions, there was notable agreement about the museum's social accountability and contribution to achieving sustainable development and ensuring community empowerment and participation as part of its mission and vision, next to its role in preserving and protecting cultural and natural heritage. Community-based museums and Ecomuseums, on the other hand, gained more recognition and support from ICOM and UNESCO during this conference by reappraising the Declaration of Santiago de Chile (UNESCO, 1973), reaffirming ICOM Resolutions relating to communities, sustainability, and cultural landscapes, noting that the ICOM Resolution on the "extended museum" was adopted in Milan in 2016 (Ecomuseums DROPS Platform, 2022.).

According to Merriam-Webster's Collegiate Encyclopedia (2010), a "museum is a public institution" to preserve and interpret the primary tangible evidence of humans and their

environment. While Jung described the museum as a “living organism” or “an ecosystem” that needs a diverse range of indigenous and local cultures, thoughts, and beliefs, a complex social relationship that could assist the museum to achieve social responsibility as an educational organization for all. On the other hand, Pliny, a Roman author, naturalist, and natural philosopher

believed that nature is the first abode of the Muse, if not being a museum on its own. Thus, in his book of Natural History, he reinforced the idea of the museum as a pastoral setting, a meditative place found in nature. In ancient times, the word "museum" meant a place where scholars worked. However, the public museum as we know it today didn't come into being until the 17th and 18th centuries. In 1683, Oxford University got the first private collection that would become the Ashmolean Museum. This was the beginning of the museum (Britannica, Museum, summary, 2022).

Findlen (1979) stated that "The museum did not develop in a vacuum; it was deeply and profoundly shaped by the way people lived in the 1600s and 1700s." Museums are essentially social institutions. They went through the same political, social, and even cultural transformation paths that faced humankind throughout history. For instance, norms like industrialization, urbanization, and modernity combined with factors like fast population growth and immigration in Europe and the USA transformed communities' social structures, weakened community solidarity, and lost the sense of place during the second half of the 19th century and early 20th centuries (Walsh, 1992). These circumstances boosted the first museum revolution, promoting the essential role of museums to reconnect communities with their forgotten heritage and reinforce traditional museums' social responsibility as educational institutions. The second revolution emerged in the 1970s as a reaction to environmentalism and communal movements, which advocated for placing the museum's social accountability over the collection center's responsibilities (McCall & Gray, 2014). Meanwhile, Desvallées reaffirmed that "nouveau

museology" is a return to origins, a regeneration of genuine senses of inheritance, an explanation of the original thoughts, and the recovery of forgotten techniques (1992; De la Rocha Mille quoted Desvallées, p. 215). This new focus confirmed quality, function, open systems, cooperation, inclusion, dependency, and cultural differences as the museum's primary principles (Davis, 2011 p.64 & Bowden, 2018). Also, it's important to reject the exclusive and elitist norms of modern society and instead follow democratic principles that let everyone's voice be heard.

2.1.1 *Comparison between the 1st and 2nd Museology Revolutions*

De la Rocha Mille has indicated a range of differences between the first and second museology revolutions.

	FIRST MUSEUM REVOLUTION	SECOND MUSEUM REVOLUTION
WHEN IT TOOK PLACE	18th century	20th century
THE SOCIETAL BOOSTING FACTORS	It took place during the enlightenment to reinforce the pride and Victorian feeling	Reconnecting people with their forgotten heritage, reinforcing the sense of place
PRINCIPLES	Promotion and popularization of the arts (De la Rocha Mille, 2011, p.3)	Democratic representation of the cultural and the museum policies (De la Rocha Mille, 2011, p. 193)
FOCUS	The modernization and professionalization of internal museum functions	The relationship between museology and its natural and social environment (De la Rocha Mille, 2011, p.1)

THE MOVEMENT	Internal	External (De la Rocha Mille, 2011, p.3)
MANAGEMENT POLICY	"The adoption of a culture of mass consumption and multiplied its functions"	Promoting wise resource management and the preservation of living culture existing in a society (De la Rocha Mille, 2011, p. 1)

2.2 Ecomuseum Evolution

"Ecomuseums and New Museology were born in contrast with traditional museology, aiming at greater community involvement, larger community participation in museum life, and new interpretation of tangible and intangible heritage and social practices" (Garlandini, 2017, P.15). The emergence of the Ecomuseum was a response to the political and social impacts (threats) of the First and Second World Wars. Respectively, movements have arisen to protect natural and cultural heritage, besides maintaining the collective identity in Europe, combined with a significant opposition to armed warfare and industrialization that causes environmental destruction (Ascherson, 2005, p. 17:24; Su, 2008). In 1971, the first Ecomuseum evolved to solve a severe socio-economic decline for towns of Le Creusot and Montceau-Les-Mines after the fall of the Schneiders industrial complex after World War II (Babić, 2009).

The museologists Henri Riviere and Hugues De Varine developed the eco-museum or "Ecomusée" concept in France during the late 1960s. "Integral Museum" was a temporary title reflecting its concern regarding the territory and community. Hugues de Varine conceived the term "Ecomusée" (Ecomuseum) in 1971 during a meeting with the French Minister for the Environment, Robert Poujade (Davis, 2011, P.65). However, they submitted the proposal for the Ecomuseum concept to UNESCO and the ICOM rounded table in 1972 (Davis, 2004). Subsequently, the "1972 Declaration of Santiago de Chile" approved the concept (Garlandini,

2017, P.15). De Varine indicated that this approval occurred due to the international collaboration among political, social, and cultural forces that recognized the urgent need for these new categories of community-based museums to serve as an agent of local development. These community-based museums are widely accepted in Europe and South America as experimental museums in support of experts (Soares, 2021), in addition to verifying their "decisive role in the community's education."(Pappalardo, 2020)

2.2.1 Ecomuseum in France

The French government established the Ecomuseum in 1967 with substantial financial funding to execute an economic and cultural development strategy (Hubert, 1982). In 1991, due to the shared objectives of Ecomuseums, social history museums, and industrial museums, their professionals founded the Fédération des Ecomusée et des Musées de Société (FEMS). The French Minister of Culture, Jack Lang, ensured the significant role of museums in preserving local identity and serving the community (Duarte, 2012). The Ecomuseum has become a tool to maintain remote and rural regions as well as promoting minor cultural heritage (Nitzky, 2012). When Rivière and de Varine developed the Ecomuseum concept, they divided it into two categories. The first, known as the Discovery Ecomuseum, was oriented on ecological principles that were usually aligned with the French nature reserve movement. The second form, known as a "community museum" or a "development museum," was more relevant to the needs of communities (Davis, 2011, P.83).

2.2.2 Traditional Museums vs. Ecomuseum

According to Rivière, museums and cultural heritage have unified their goals to create a new sense of national history by promoting the concept of "inserted in the land". It implies that demographic trends, agriculture, housing, land ownership, transportation, and traditional skills are all essential components of any community (quoted by De la Rocha Mille, 2011, P.137). However, the place's authenticity is the milestone difference between the Ecomuseum and the open-air museum (as a traditional museum). Since the Ecomuseum's essential focus is to build a connection between the heritage and its original environmental context, unlike the traditional museum, it advances the preservation and protection of the place's distinctiveness (Liu & Lee, 2015)

The Ecomuseum is an evolution of the museum as a social institution that introduces a holistic understanding of the mutual relationship between humans and the environment (Babić, 2009). However, René Rivard briefly clarified a set of differences between traditional museums and Ecomuseums by comparing their basic framework. This comparison was quoted by many scholars, including Davis (1999), Corsane (2006), and Trvinco (2015, page 103).

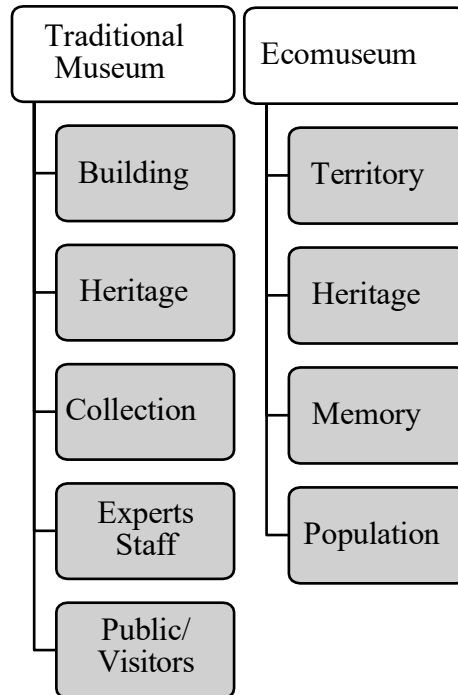


Figure 3-1: Ecomuseum vs Traditional Museum Basic Structure (by Rivard)

The illustration above depicts the essential contrasts between Ecomuseum and traditional museums, such as place (territory vs. building), intangible heritage (memory), and the responsibility for interpretation (population vs. expertise).

On the other hand, traditional museums are most typically operated by the government or municipal authorities, and they exhibit collections representing national or regional heritage. Even though there is a public representation in the museum's administration system, it is a limited percentage due to predetermined regulations (Chang, 2015, P.18). Also, Corsane argued that while governmental traditional museums and heritage centers have vital participation in the preservation, conservation, and documentation of the cultural and natural landscape, so the curators and experts of these museums introduce their understanding of the museum's collection regardless of its value in the local community's perception. Besides that, he pointed out that community-based museums have a distinguished role in protecting 'local distinctiveness' by emphasizing the indigenes and

local people's participation and the linkage between the intangible and tangible heritage to support this notion (2008). As a result, according to Boylan's revision of this comparison, the primary differences between Ecomuseums and traditional museums are the venue, the framework, and the management system.

Table 1: Boylan's Revision of Rivard's Comparison

Elements of comparison	Traditional museum	Ecomuseum
Space Of Reference	Building	Territory
Focus Of Interpretation	Collection	Heritage
Organizational Priorities	Disciplinary	Interdisciplinary
Target	Visitors	Community
Bodies Of Governance and Control	Museum And Its Bodies	Community And Its Bodies

2.2.3 *Ecomuseum's Definition and Concept*

"Ecomuseums are a dynamic way in which communities preserve, interpret and manage their heritage for sustainable development" (The Declaration of Intent of the Long Net Workshop, Italy, 2004). The Ecomuseum is one of the most interpreted museology terms, Rivière introduced many definitions in 1978, 1980, and 1985, including the French Ecomuseum charter. Perhaps the last definition is stated in the Milano charter in 2016. "An Ecomuseum is a project and a process of local development that combines the human and heritage resources of a given area. They participate in the worlds of both museums, monuments, and sites. They accompany the world as it is and prepare the world to come, using the common living heritage of the place, which they manage and enrich through material and intangible components. The Ecomuseum is a network of local actors and collaborates with other public and private institutions that work for the social,

cultural, and economic development and wellbeing of the community (2016 Milan cooperation Charter - ecomusei).” This definition emphasizes Ecomuseums’ principles which promote community participation in preserving both the tangible and intangible. However, the most important objective is protecting the living heritage. This norm is essential to reinforce the sense of place and for interpreting the development of our daily habits and practices. As aforementioned, Varine brought up the word "Ecomuseum" during a meeting with the French Minister of Environment to define an integrated model of museums concerned with the environment and the community. However, in the museum community, this concept was already well-known and reproduced in text (SOARES, 2021). It has attracted a large number of scholars from several disciplines, including cultural studies, anthropology, and environmental science (Chang, 2015, P.9). The conceptual and theoretical efforts on the Ecomuseum concept, which stems from the fusion of two concepts—ecology and museum—have resulted in the formation of a "New Museology," which was approved in the Quebec Declaration of ICOM (1984). Nonetheless, the Greek root 'Oikos' caused a misperception (Negacz & Para, 2014), by being misinterpreted as a metaphor for ecology when it originally meant 'home' or 'household'. Thus, Bowden indicated that the Ecomuseum concept takes a more holistic approach to representing the dynamic relationship between humanity and the environment around him in different themes such as agricultural, industrial, or wildlife, as well as including intangible forms from this relationship such as memories, folklore, skills, crafts, and traditions (2018).

2.2.4 *Ecomuseum and Landscape*

During the late nineteenth and early twentieth centuries, German geographers raised the norm of the "cultural landscape is shaped by people," emphasizing the importance of understanding the landscape with the social and cultural aspects that arose in its settings, such as behaviors, beliefs, and symbols, as an approach to a better understanding of the human-landscape relationship (Taylor & Lennon, 2011). According to the European charter of landscape 2016, "Landscape - means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors". This confirmation of the people's perception of their landscape has also been emphasized by Meining (1979), who stated that humankind identifies their landscape as nature, habitat, an artifact, a system, a problem, wealth, ideology, history, and place, or aesthetic. From this perspective, the Ecomuseum and cultural landscape have a complex and dynamic relationship, that is originated and influenced by the people who give the sense for both. Many scholars referred to the shared characteristics between Ecomuseums and landscapes, like Murtas, who claimed that the holistic perspective, multi-layered approaches, and inclusive language are the common attributes between Ecomuseums and cultural landscapes. A territory with a comprehensive heritage (cultural and natural) and with local communities (Murtas, 2017, p.37). While Corral stated that Ecomuseums, community museums, and cultural landscape site management share the same objective, focusing on the territory with a rich and complex heritage (cultural and natural), in participation of communities and other shareholders, including governmental authorities, institutions, and the private sector in a horizontal network (2017). Milan's charter has also confirmed the relation between the Ecomuseums, community, and the landscape, by creating 4 identifiers, referring to the community-based museum as a landscape, which "monitors the creation of tangible and intangible, living diffused heritage", applying the

“transdisciplinary” approach in observing and studying the community, environment, heritage relationship, and “promoting mutilate levels of cooperation” with museums and other institutions to face cooperatively the new challenges emerging (Milan charter, 2016).

2.2.5 Ecomuseum and Community Development

“Involvement is the mechanism that humankind approaches to changing their natural and social environments, and it is this process that produces the landscape. Because participation is a dynamic and creative process with no specific goal, there may be differences in perspective about heritage, the development community, and the environment in the landscape (Change 2015).”

Divas defined "the community" as a hugely complex, constantly changing pattern. An individual may receive an ascribed identity, often due to a geographical (a Scot, a Glaswegian) or functional (a professor, a plumber) label. The essential shared elements of the community (2011, P.38; Crooke 2006, P.174, Museum Studies) indicated that communities are not obligated by a specific geographical location such as a village or a landscape, they might be geographically dispersed but consolidated by a shared interest. Religions, political systems, ownership, a common culture, interdependence, shared needs, and notions of community spirit. This definition agrees with Boyes-Watson, who designated community as a type of social bond, which is supported by a sense of mutuality, care, connection, identity, awareness, and obligation to others. It could inspire certain behaviors (2005). Nevertheless, museums have a crucial role in creating and preserving the nation's shared cognitive and emotional

fabric. They are community spaces that should reflect their environment and communities. Their essential objectives are to promote equity, and ethics, and support experimental education as well (ICOMOF, 2018). Varina has described the Ecomuseum as an integral museum that acts as an agent of local development (Brown, 2018). According to Corsane, an Ecomuseum is a mechanism to manage all forms of natural and cultural heritage in a manner that ensures community involvement and inclusion, besides emphasizing self-representation, ownership, and a sense of place (2008). This recognition evolved in the 1960s when the museologists recognized that museums were self-contained communal spaces that could assist in educating and enlightening society (Corral et al., 2017, p.38). Later, the Ecomuseum became a tool for the economic, social, and political growth and well-being of the community in which it evolved (Magliacani, 2015, P.22). These could effectively achieve the territory's values and empower local entities, promote capacity building, and generate institutional capital (Borrelli, 2012).

2.2.6 Ecomuseum and Sustainable Development

Hrab (2014) concluded that the 1972 UNESCO and ICOM round table discussion ended by emphasizing that the museum is developed by and for people and promoting the value of inclusion to start a new era of democratic museums. In 2012, in Rio de Janeiro, the United Nations recalled the urgent need to set a range of universal goals to face the empirical environmental, economic, and political threats. The fruit of this new waken-up call is the 17 Goals set by the 2030 UN Agenda of Sustainability -released in 2015- which focuses on environmental protection, economic growth, and social equity. According to Riva, these objectives are too connected to the

natural resources, ecological aspects, socio-economic issues, and the tangible and intangible values which form the territory (landscape). Thereby, Ecomuseums could play an integral role in the sustainable management of heritage (Meng Li, 2021). Because of their dynamic nature which allows communities to identify, conserve, interpret and manage the resources of their natural and cultural heritage for sustainable development (Borrelli, 2012). Riva (2020) states that Ecomuseums are mediators of local development due to their very essence, which could encourage sustainability. They are deeply involved in the local community through facilitating well-balanced programs and initiatives for the territory, and they are concerned about strengthening local identity, history, and social interactions. This social responsibility is the best practice to raise the community awareness about the significance of the natural and cultural heritage and promote the responsible use of the community resources and preserve them for the future generation and ensure transforming the traditional knowledge for the future generation (Pappalardo, 2020).

2.2.7 Magliacani Classification and Corsane 21 Indicators

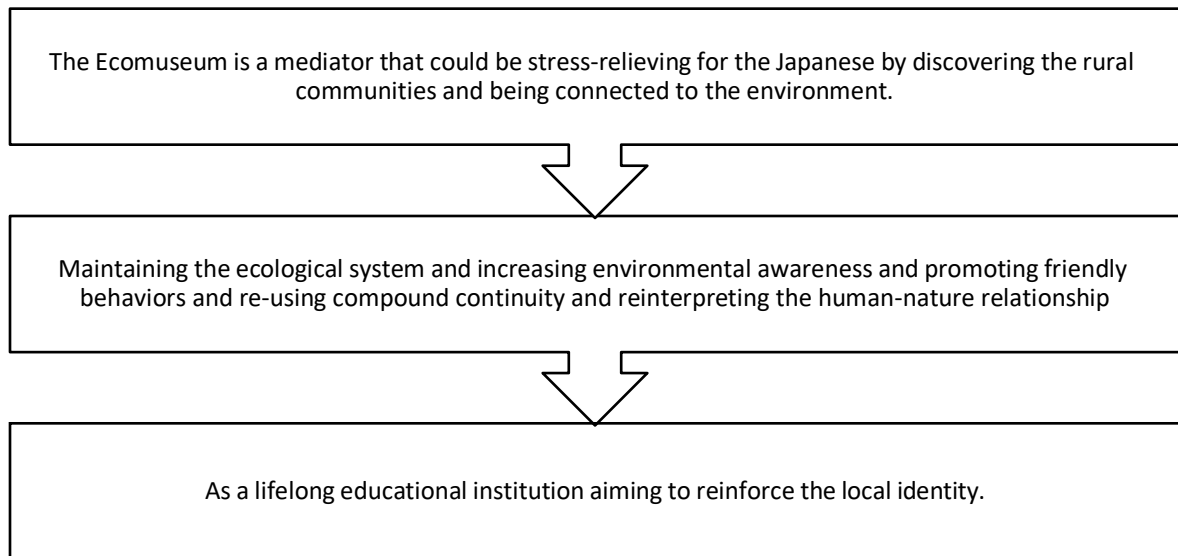
Scholars and theorists have also developed fundamental and significant concepts that have the potential to make museum activities and heritage management far more democratic than traditional models (Davis, 2004). These efforts and extensive academic and practical materials assisted Corsane in identifying 21 indicators that evaluate the Ecomuseum criteria and performance. In 2005, Davis created a list of 21 indicators to evaluate five Ecomuseums in Piemonte and Liguria, northern Italy, and the survey's result reflected the indicators' sufficiency in evaluating Ecomuseums (Corsane, 2006). According to Magliacani, these indicators can be classified into three categories based on the following criteria: "community" involvement; "museum" heritage; and "environmental" development (2015, p.51-52; Davis, 2011, p.93). These criteria are also combined into a graph that depicts Davis's conventional concept of Ecomuseum

and the interaction between community, museum, and environment, which he developed in 1999. Bowden argued that these 21 indicators represent an effective loose network. They may be arranged into the next three categories: Community participation, Museum heritage, and environmental development (2018). [For the 21 indicators look at the appendix table 2]

2.3 Japanese Ecomuseum

2.3.1 *Japanese Ecomuseum: A Brief History*

Japan's attempts at conserving and preserving its cultural and natural heritage were founded as a response to the dwindling cultural and natural landscape, due to the industrialization and modernization attempts that followed World War II (Kakikuchi, 2014). These trends have caused severe social, economic, and environmental impacts. Meanwhile, in the 1980s, the Japanese government adopted a promotional plan for rural tourism as part of its regional development strategic plan to bring the Japanese back to the countryside by providing tourism programs where they can live the experience of living in countryside houses and practicing agriculture (田林 Tabayashi et al., 2011). Therefore, these interests have boosted ecotourism and Ecomuseum notions. The Ecomuseum model in Japan still needs more effort to evolve. But it approved its flexibility to promote tourism, support regional development, and contribute to the educational system. Also, Ohara emphasized these advantages (Matsuhashi & Markova, 2004):



3-2 Japanese Ecomuseum Principles

In this context, the Japanese Ecomuseum's evolution appeared out of nowhere; it evolved as an answer to the community's needs and awareness. And their evolution passed through three phases (Corral, 2010). The first model arose when Soichiro Tsuruta, the first Japanese scholar, introduced the Ecomuseum concept as “contemporary musicological practices” to Japan in the 1970s under the term "environmental museum" after participating in the ICOM round table in the 1972 meetings, but his proposal did not attract the Japanese society appealing (Ohara,2006) & (Davis, 2011, P.247). In the 1980s, the Ecomuseum was reintroduced as a tool for recovering from the socio-economic impacts of the economic bubble as part of local government's spending to develop rural communities as well as preserve the traditional landscape that was declining because of the industrialization and urbanization movements (Corral, 2010). As for Shumbu, this phase of governmental financial support lasted until 2000 as a part of the regional promotion plan and centralization and municipalities merging. The third phase occurred in the 1990s when Japan's government embraced community development and environmental sustainability to combat the

environmental and socio-cultural consequences of industrial growth as well as to meet the 1992 Rio de Janeiro UNESCO Conference-Earth Summit principles of preserving humankind's natural and cultural resources, improving the quality of life for all and maintaining a healthier ecosystem to sustain life on Earth (Corral, 2010).

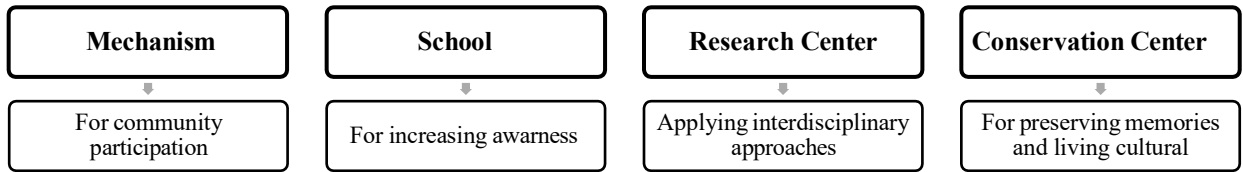
This awareness resulted in the foundation of the Japanese Ecomuseology Society (JECOMS) in 1995 (Davis, 2004), the first national Japanese network that took on the responsibility of connecting and providing academics to the Japanese Ecomuseums. In 1998, the Ministry of Agriculture, Forestry, and Fishery launched the rural environmental museum program. This initiative included the foundation and the development of 50 museums that promote natural and cultural landscape conservation and protect the cultural identities of these rural and local communities. Ohara has highlighted the primary qualities of these projects by promoting the holistic approach to managing the site and emphasizing the local culture (Davis, 2004 & 2011, p. 248).

2.3.2 Definition:

The first Japanese Ecomuseum's definition was formed based on the French Ecomuseum charter, which was authorized in 1980. The charter stated that the Ecomuseum is a system that investigates ecological systems and reinterprets the relationships between humankind and their environment. It focuses on researching, preserving, and exhibiting the tangible and intangible heritage of a specific territory with the involvement of the residents (十菱駿武 Shumbu Jubishi, 2003). The Japanese Ecomuseum is a mechanism for regional cultural and natural resource safeguarding. It is also a lifelong learning program for the residents, where they can discover themselves and their relationship with their environment (小出 Koide et al., 2016). Therefore, the earliest Ecomuseum projects held the title of "environmental museum." However, this misconception in interpreting the suffixes "Eco" was a global notion that forced Vernia, the founder of the Ecomuseum concept, to clarify that the Ecomuseum is a community-based museum, which could be titled a community, regional, or territorial museum (1996). Meanwhile, in 2009, the JECOMS announced a new definition of "Ecomuseum" as "*an activity to explore the relationship between the environment and human beings with the participation of residents in a certain area to contribute to the intrinsic and sustainable development of the local community*" (JECOMS, 2009).

2.3.3 The Japanese Ecomuseum Objectives

Based on the JECOMS charter of the Japanese Ecomuseum 2009, an Ecomuseum has exemplified the Ecomuseum as (JECOMS):



3-3 JECOMS definition of the Ecomuseum

2.3.4 *The Ecomuseum Structure*

Ohara argued that the Japanese Ecomuseum conceptual framework is a centralized approach that was created by Arai, a Japanese museologist who made an essential contribution to the foundation of the rural environmental museum. The framework is known as the "Core-Satellite model," and it includes three fundamental elements (Ohara,2008).

Core museum/facilities: it is an information center that is responsible for managing, coordinating between the satellite facilities, and interpreting the information and the history of the territory. Therefore, it is called a "museum of time" (馬場//憲一 Kenichi Baba, 2014).

Satellite museums or facilities are the heritage resources that express the identity and the history of the community, such as in its natural or cultural form (治 OSAMU, 2013). - The discovery trails are the trails where the visitor can experience the real life of the local community (Ohara,2008) (治 OSAMU, 2013). Ohara argued that the Japanese Ecomuseum conceptual framework is a centralized approach that was created by Arai, a Japanese museologist who made an essential contribution to the foundation of the rural environmental museum. The framework is known as the "Core-Satellite model," and it includes three fundamental elements (Ohara,2008).

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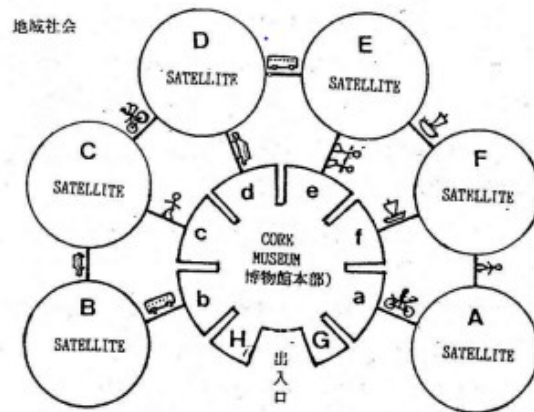


Figure 1. "Core and Satellite " system (Arai 1989)

3-4 Japanese Ecomuseum model quoted from Ohara 2008

2.3.5 Japanese Ecomuseums Weaknesses

Ohara and Divas have listed the challenges and the weaknesses that Japanese Ecomuseums face, including the following: misconceptions regarding their identity, less recognition, and connection with traditional museums and museology, tourism promotion rather than regional development, the participation and the presentation of the local citizens, the scientific approaches, and the documentation.

- There is a misunderstanding about the western and Japanese Ecomuseum structures. While the first has a loose structure (decentralized) and promotes local identities, the second is centralized and composed of three bodies: the satellite museum, the discovery trail, and the core museum, which, according to the Japanese model, operate as supervisors rather than coordinators (Ohara, 2008, & Corral,2010).

- The definition of "Ecomuseum," in general, caused a phase of confusion and misunderstanding, but in Japan, it was interpreted as an environmental museum, which is interested in the ecosystem and its conservation.

- The Japanese Ecomuseum, unlike the Scandinavian Ecomuseum, is restricted to the geographical and administrative system, and it is uncommon to find a cross-border Ecomuseum controlled by more than one municipality.

- Even though the cross-border Ecomuseum requires more cooperation and coordination among the municipalities, it also provides a mutual financial support system (Ohara, 2008). - According to Ohara, Japan has approximately 100 Ecomuseums. However, Davis stated that the number of Ecomuseums is unclear. Some Ecomuseums have changed their names to geo-parks or eco-parks to gain governmental recognition and financial support or to be designated on the UNESCO natural heritage list. That is apart from the heritage projects, national parks, or community centers, which apply the approaches and principles of the Ecomuseums without holding the title (Ohara, 2017, 376).

- Ohara, in his article on the learned lessons of the Scandinavian Ecomuseum, has outlined that community participation in the Japanese model is vulnerable due to the unwillingness of community members to take extra social responsibility. In his article about the challenges that face the Japanese Ecomuseums, he also stated that there is no adequate representation of artists, craftsmen, or other scientific institutions in the Ecomuseum system.

However, in 2011, the architectural institute of Japan, in cooperation with Hugues de Varine, released a national survey by sending a questionnaire to 117 Ecomuseums, and only 46 institutions replied. Based on this survey, Ohara (2017) has listed the weaknesses of the Japanese Ecomuseum as follows:

- The relationship between the Ecomuseum and museology is fragile because tourism promotion has gotten better at emphasizing the ecomuseum's important role in serving the local community and keeping local identity.

- The absence of interdisciplinary or multidisciplinary approaches, as well as the absence of a documentation mechanism to preserve past or living heritage (Ohara, 2017, 376).

2.3.6 Water Ecomuseum in Japan

The Japanese government places water resources management at the top of its strategic plan. Water played a fundamental role in the foundation of past and modern Japan's history. Besides, the world is facing a water crisis, which is getting more serious because of climate change. Therefore, the Japanese government includes water resource management in its national policies of disaster management, flood control, and tourism promotion. Aside from that, almost all of Japan's traditional agricultural and modern industrial communities were built around river basins, resulting in a slew of ongoing changes to the river ecosystem and waterfronts. Thus, it is logical to be the ground for the evolution of the earliest Ecomuseum model in Japan. such as the Tamagawa Ecomuseum in Kawasaki City, Kanagawa Prefecture, a sub-urban of Tokyo. The city played an important role in the foundation of the Edo period. However, there are many water' Ecomuseums in Japan, but the significance is that it is not only the first river-based Ecomuseum in Japan but the river itself has also been designated as IRWM (Integrated Water Resource Management).

Some Japanese scholars support the Ecomuseum model to promote responsible water use and sufficient hydraulic practices. For instance, 治 OSAMU (2013) argued that "Ecomuseum of Water" is a method of networking and structuring regional events and things related to water, an educational institution that aims to improve water literacy for children and adults and foster community revitalization. While Japan has a unique and authentic traditional irrigation system, agriculture has become a core economic activity in the modernization of Japan. It is important to demonstrate sustainable irrigation society conservation in a cooperative framework with the

water resource management programs in Japan to have a clear understanding of traditional techniques and local water cycles that will assist in improving and enhancing modern hydraulic water resources management (治 OSAMU, 2013).

2.4 The River Basin, Riverscapes

2.4.1 Introduction

“It is not to folklore. But in view of sustainable development, ancestral skills have merit. Thus, when earthquakes hit China and Pakistan, traditional buildings withstood the shocks while modern concrete buildings collapsed. We must therefore ensure that large construction companies include this dimension, it can be done when there is a demand for it” Jean Musitelli
Quoted by Olivier Blond (2015 p.15).

The development of any culture is the result of inventing a technique to exploit a natural resource, in the case of the rivers, they have the strongest impact on the human settlement and communities’ formation, besides developing the social and political structures of most of the ancient cities, therefore, they received prestigious status in these communities (Wantzen et al., 2016). However, the pre-existing and traditional water resource management system proved their efficiency because they are time-tested via cultural practices, and proved to be resilient, and sustainable. Pre-existing resource use systems often use fewer inputs and less intensive but diverse uses of landscapes (Chakraborty et al., 2019, p. 249). Hassan illustrated the diverse forms of river-human relationship patterns such as the spiritual-religious patterns, the ecological-scientific patterns, the hydraulic-economic patterns, financial-managerial patterns, and the legal-ethical patterns, and confirmed the essential role of the culture to explain and understand these patterns (Hassan, 2011, p.48). While Malcolm asserted some important perceptions regarding the river

societal relationships, stating that: 'River-society is a coupled system that should be interpreted through the culture. Therefore, it is essential to capture the nature of human-river harmonization, monitor rivers in diverse ways for (new) river basin livelihoods, and conserve the riverine landscape outside the protected area is a necessity for the sustainability of the ecosystem (Chakraborty et al., 2019, p. 249, 250).'

2.4.2 The Global Recognition of Water's Significant Value

"Water is a unique and non-substitutable resource of limited quantity. As the foundation of life, societies, and economies, it carries multiple values and benefits. But, unlike most other valuable resources, it has been very hard to figure out its priceless value (Home|2021 World Water Development Report - UNESCO)". Rivers are indistinctive land features thanks to their complex interrelations with their surrounding environments (Jungwirth et.al., 2000). They play a vital role in sustaining life on earth, acting like a "lifeblood" of the ecosystem that maintains the continuous flow of the water cycle for a healthy ecosystem and communities' survival (Haslam, 2008, p.15) &(Anderson et.al., 2019). So, the negative effects of increased water stress, shortages, floods, pollution, biodiversity loss, ecosystem service loss, and other water-related environmental problems show how important it is to change how water is valued and used, incorporating more sustainable ways to manage water resources.

As a result of the rise in global environmental awareness and the recognition of water-related problems. The United Nations held the first conference on water in 1977 to improve the status of water resources while also meeting the world's socio-economic demands. The conference declaration stated that "All people, regardless of their stage of development and social and economic conditions, have the right to access drinking water in quantity and of a quality equal to their basic needs ("United Nations Water Conference - Wikipedia") (UN, 1977)." These

recommendations were reaffirmed in the 1992 Declaration of Human Rights, which was followed by the Dublin Conference on Water and Sustainable Development, and the 1992 Earth Summit, which emphasized that "access to water is critical to acknowledge as a basic right." These recommendations and attempts, combined with the growing interest in holistic and bottom-up approaches to managing natural and cultural resources during the 1970s, stimulated the international community to issue plenty of regulations, action plans, and management models, fueling the advocacy for community-based approaches to managing water resources. This interest has grown and evolved due to the international hydrological decade (1965–1974), the first international research program on water problems that aimed to promote collaboration and cooperation, share knowledge, and support networking between the 96 countries that were program members (Britannica, 2016). Even though the program successfully improved the global community's awareness of hydraulic system issues and established the basis for hydraulic science, there was an urgent need to extend the program to solve some challenges. From this point, in 1975, UNESCO launched the Intergovernmental Hydraulic Program, which aims to support the development of resilient and sustainable societies, promote the enhancement of water resources management research approaches, ensure capacity development, address the regional and global water challenges, and introduce a comprehensive perception of water as a socio-ecological substance (UNESCO- IHP Hydrology, 2022).

In 2002, UNESCO released the Integrated Water Resource Management approach, "a process that promotes the coordinated development and management of water, land, and related resources to maximize the resultant economic and social benefits." IWRM aims to maintain balanced, long-term sustainable environmental practices based on cooperation and collaborative efforts among all the different sectors related to water resources (UNESCO, 2009). This perspective triggered the need to understand the cultural dimension of the water-human

relationship in parallel with understanding the “environmental flow”. This perception boosted the need for UNESCO-IHP Water and Cultural Diversity Project, 2008”. Later, the UNESCO-IHP program established the Global Network of Water Museums in 2017 to connect and support water museums around the world for their significant contribution to preserving and interpreting the distinctive water heritage, which evolves through a continuous transmitting process. (Water Museum: Mission, 2022). "*Water is a unique and non-substitutable resource of limited quantity*" ("Home | 2021 World Water Development Report - UNESCO")

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2.4.3 Academic Efforts and the River Ecosystem Relationship Definitions

2.4.3.1 “The River Ecosystem Services”

Ecosystem services are the enormous goods and benefits which the ecosystems provide to people and contribute to their well-being. In the case of the river basin, they are the water, the food, the sedimentation, fish, and other essential elements to the community's survival. However, conversely, this interchange boosts different forms of cultural and social impacts. These impacts are identified as cultural ecosystem services: “The benefits of the human-nature interaction through cultural practices are conceptualized as cultural ecosystem services (CES) in the ecosystem service (ES) concept (Thielea, et.al, 2020).”

2.4.3.2 “The Environmental Flow”

In 2018, the Brisbane Declaration and Global Action Agenda on Environmental Flows were revised marking a new era in environmental flow science, as well as an opportunity for a better assessment of river flows, ecosystems, and society, and to integrate these relationships more consciously into river management. (Arthington et al., 2018) The Revised declaration emphasizes the importance of the social and cultural dimensions of environmental flow management” and promoting the full and equal participation for people of all cultures, and respect for their rights,

responsibilities, and systems of governance in environmental water decisions as an approach to protect and safeguard the world's cultural and natural heritage. It defines the E-flow as “the quantity, timing, and quality of freshwater flows and levels necessary to sustain aquatic ecosystems which, in turn, support human cultures, economies, sustainable livelihoods, and well-being. The declaration also referred to the role of Local knowledge and customary water management practices that can strengthen environmental flow planning, implementation, and sustainable outcomes (Anderson et.al., 2019).”

2.4.3.3 “The River Culture approach”

This concept recognizes that human well-being and the preservation of biological and cultural diversity are subjected to the same factors (natural habitat dynamics, water quality, various ecosystem services) and provides a framework for reorganizing river management priorities based on these requirements. Several concepts are proposed by the River Culture approach to increase the sustainability of human activities in or around rivers (Wantzen et al., 2016).

On the other hand, according to “the river culture chair” to maintain and protect the safety and sustainability of River-human relationship diversity, it is important to protect and conserve the biological diversity along the riverbanks for a sustainable cultural diversity, which will enhance the tangible and intangible form of culture and promote “learning from the river” principles that would contribute to river management technologies and approaches that are targeted to maintain and improve ecosystem functions and diversity in a more sustainable way. This perception cannot be achieved without recognizing the traditional ecological knowledge.

Traditional Ecological Knowledge is “a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission about the relationships of living beings with one another and with their environment” (Berkes, 1993) which has been developed by the local and the indigenous through their interaction with the river basin for thousands of years.

2.4.4 The Traditional Human-River Interchange

The human-river relationship is one of the most cross-cultural and prevalent among communities and civilizations (Hassan, 2011, p.20). Since the first settlements on the Nile River and Mesopotamia rivers, humankind has had a reciprocal relationship with them. These traditional communities have wisely interacted with these wild lines by understanding them within the surrounding context, innovating highly developed irrigation systems to expand the cultivated land, improving transportation methods to navigate more easily, and adopting flood control systems that enabled their communities to survive (Wantzen et al., 2016 & Jackson, 2021). These attempts spread among civilizations and nations, creating more complex hydraulic methods in ancient Rome, India, and China, and influencing the social and political formation of these communities, which came to be identified as Hydraulic civilizations. For example, the Roman Empire significantly altered river basin management by draining land, digging canals, constructing bridges, constructing long-distance ferries, and installing water mills, all of which had an impact on rivers both when they were constructed and when they were used for things like fulling and tanning (Klaver, 2010, P.10 & Haslam, 2008, p.19).

The continuous enhancement process included digging canals and drains and constructing qanats, dams, and barrages, during the Roman and Islamic eras, when the water management system advanced techniques in watering desert lands, the invention of lifting devices, extracting

groundwater, and later the invention of the water wheel, these irrigation technologies were constantly renovated and advanced. This fundamental relationship between water and agriculture influences the relationship between humans and their communities, which in turn generates various forms of economic, cultural, and social activities that have an impact on rivers and their waterfront landscapes, either directly or indirectly. On the other hand, the majority of the world's important and ancient cities evolved, developed, and expanded along river basins. This evolution process was combined with enormous and essential innovations in the fields of construction, water lifting engineering, and hydraulic systems (Hassan, 2011, p.22).

2.4.5 Modern River Basin Management

The Industrial Revolution, combined with the focus on energy production and economic activities, (Klaver, 2010, p.15) caused the transformation of the social, topographical, political, and economic settings of the old traditional communities by creating new communities that promoted industries, which brought more economic revenue, created more job opportunities and helped boost a more comfortable lifestyle. Conversely, these modern communities have excluded rivers and water resources from their context to ultimately exceed the economic benefits of this priceless substance (Vorosmarty & McIntyre, 2010 p.10), resulting in an unbalanced interplay between economic value and ecological, social, and cultural settings (Anderson & Jackson, 2019). This exclusion has harmful effects on the biophysical and water cycles of the ecosystem, such as water pollution, lower water quality, endangered river species, and soil degradation. It also changes the social structure to account for the increased and rapid migration from rural to urban communities, loss of identity, loss of sense of place, and weakening of the solidarity of traditional communities (Wilde, 2007).

The modern human-river relationship passed through three phases:

	1 st phase	2 nd phase	3 rd phase
When	19 th century after the industrial revolution	The mid of the 1970s	
How	Industrializing and urbanizing the river and their waterfronts	Repairing and revitalizing the river basin as a part of environmentalist actions	The city river
The main features	Increasing traffic on the river course (Steinbach, 1995)	The recognition of landscapes and river waterfronts as tourist attractions (Shetawy, 2017).	By changing the waterfront into a public space and recreational area (Marzano, et.al, 2009)

2.4.6 River Basins, Riverscape, and Their Significance

Rivers are one of the most complex socio-ecological units on earth, they are the lifeblood of the ecosystem. However, climate change, vegetation, geology, and demography, besides human intervention have continuously reshaped and reformed the river basin and the riverscape (Ekka, et.al., 2020) Thus, industrialization, urbanization, and modern hydrological applications deliberated to extract the river from its socio-ecological context to maximize the profitable value of the water as an economic substance (Vörösmarty, et.al., 2010, & Anderson, et.al., 2019). These practices included the modification of the river basin such as changes in land-use patterns, inter-basin water transfer, subsurface modification, tunneling work, damming, and stream channelization (Ekka, et.al, 2020). In some cases, these modifications caused a phase of imbalance between ecological, socio-cultural, and economic uses of the ecosystem, (Chakraborty, et.al, 2019; Ekka, et.al., 2020) causing a group of serious and destructive impacts on the biophysical and social

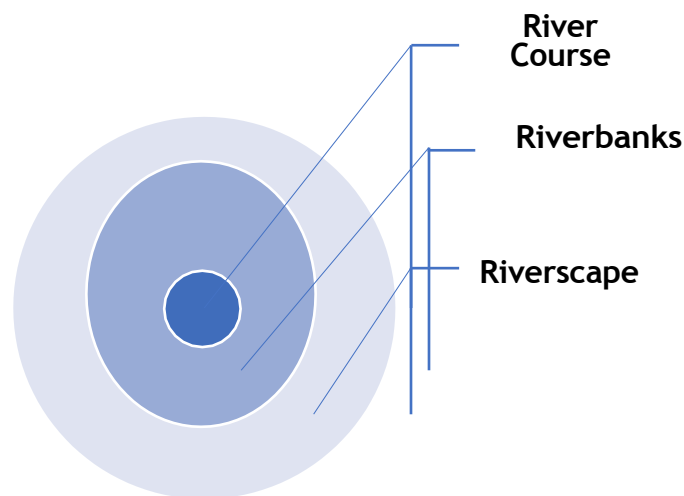
structure of the ecosystem and the water cycle (Hassan, 2011, p.22). From this point, there are increasing concerns about the protection of water resources as a complex, dynamic substance that is critical to the health of the ecosystem and the survival of humankind.

2.4.7 River Hydraulic Ecological System

"The river can be the backbone of a socioecological system, a complex dynamic web of adaptive interactions where surprise and change are part and parcel of the system dynamic; the system periodically undergoes a swift (apparently destructive) release of energy but reconfigures itself due to its' memory 'etched in the landscape over time." Quoted by Chakraborty (2019, P. 4)

A river basin, catchment, or watershed is a waterbed carved by rainfall and winds that travel forcefully from upstream to downstream, longing for their paths in bedrock. Rivers are complex social-ecological (Dunham, et.al., 2018) units that function in a variable rapid long-term or short-term, on various scales and multiple layers process with their surrounding environment (Anderson, et.al, 2019). Haslam illustrates a structure for the relationship between the river and the riverscape. He explained that the riverscape is a hydrological cycle responsible for many essential ecological processes, such as land erosion and sedimentation. Furthermore, he emphasized that this relationship is a continuous cycle of transformation. However, the hydrological cycle, sediment transformation, soil vegetation, biogeochemical land use, and pollution are all factors that influence river and riverscape relationships (2008, 9-15). Consequently, in the 1990s Water resource academic researchers in cooperation with anthropologists, economists, and engineers introduced some new concepts, regarding the importance of reconnecting the water with its social and ecological characteristics. two of the most important concepts are “the Social-ecological system” and “Environmental flow” which

emphasize the significance of the holistic approaches in studying and interpreting the rivers within their ecological, hydrological, landform, and socio-cultural contexts (Ekka, et.al., 2020). The results of these scientific and communal efforts have been accelerated during the 2000s and emphasized in the sustainable development goals that include water security, and water sustainability as primary goals.



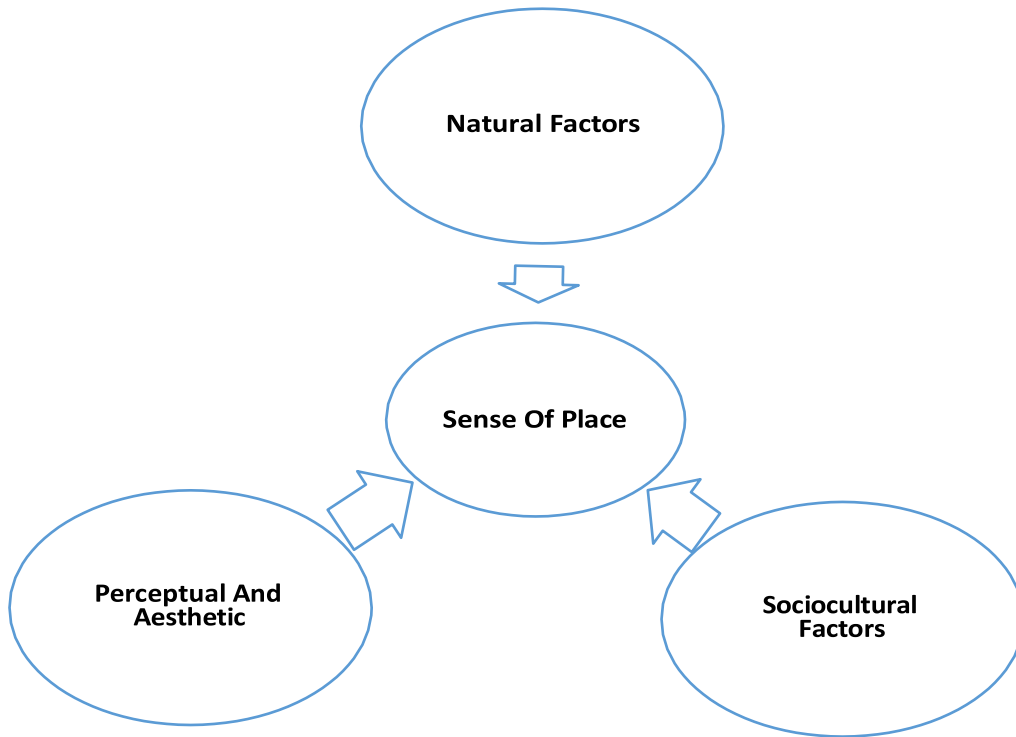
3-6 River & riverscape created by the author

2.4.8 The Human-River Socio-Ecological Relationship

“According to the International Union for the Conservation of Nature (IUCN), there is a strong bond between biodiversity and cultural diversity. Both are shaped and influenced by ecological, genetic, and species diversity. For example, the biocultural variety of a given region reveals a complex history of human interaction, knowledge, values, and environmental care, particularly the vital role of water in sustaining life (Wantzen et al., 2016). The riverscape is where humans and the ecosystem have a fluctuating mutual relationship. Some scholars argue the

importance of coupling humans and natural systems to have a better perception of the interaction and the influence of both social and ecological systems. (Liu et al., 2007)

From this point, Haslam has underlined the relationship between rivers, riverscapes, and the factors that control this complex relationship by connecting the natural factors (geographical, topographical, climate change, etc.) (Haslam, 2008, p. 9-15; Hassan, 2011, p.22), the socio-cultural factors (human settlements, economic activities, etc.), and the immaterial heritage that resulted from the interaction between those factors. This invisible heritage is mirrored in all social, cultural, religious, economic, and political forms (Klaver, 2010, p.46). In other words, it creates a sense of place, which varies from one community to another and from one ecosystem to another in a relationship regulated by time, place, and natural and human interfacing. On the other hand, since the 1980s, the recognition of the social-ecological interface has gradually grown (Hein et.al., 2021). Creating an extensive interest in integrated water resource management and emphasizing the importance of community-based approaches in managing natural and cultural resources (Dunham et.al., 2018).



3-7 River & Riverscape Sense of Place

2.4.9 The Significance of Community-Based Approaches in River Basin Management.

Recently national and regional institutions promote governance, co-management, and community-based approaches to reduce the enforcement costs, exchange knowledge and promote systematic learning between the stakeholders, and develop and reinforce the social networks among the riverscape stakeholders. However, the application of these methods is controlled by two indicators: the people's perception of the river value and their acceptance of governance practices.

- The perception of how communities perceive the real value of the natural resources could be noticed in their attitudes and behaviors towards the river and riverscapes.
- People and communities have the first and the most direct interaction with the river basin, therefore it is essential to engage them as individuals or organizations in any development plan. Engaging them could enrich the conservation plan such as stakeholders accepting and more strongly basing decisions on riverscape science, as well as directly contributing to knowledge discovery.

Thus, other terms are connected to governance like co-management and sharing partnership all these concepts promote the integration of the indigenous communities in the decision-making process with the state and other stakeholders regarding one or more aspects of natural resource access or use. It is a sort of collaborative arrangement among diverse stakeholders sharing accountability, avoiding conflict, and enhancing the negotiation process by including indigenous user groups, non-governmental organizations (NGOs), and corporations.

Berkes indicated that engaging the indigenous or the local people is essential for any development plan. They have a wider contextual understanding of the environment; its

geographical and topographical formation may be better than any scientists, and experts. Their understanding could introduce new biological and ecological insights into the river basin and its riverscape. Their knowledge could contribute to the conservation and education efforts, which are vital for sustainable development and environmental assessment.

2.4.10 Japanese River uniqueness

Japan's archipelago consists of four main islands – Honshu, Hokkaido, Shikoku, and Kyushu – plus nearly 3,000 small islands with a total area of 377,727km². Mountainous occupy approximately three-fourths of Japan's topography. The extended mountain ranges have created the spearheaded Japanese rivers, which are often short and have steep channel slopes. Therefore, Dutch engineer Johannes de Rijk, who participated in the flood control plan during the Meiji period, stated, "*Rivers in Japan are like waterfalls*". According to Japan's River Law, The Japanese rivers are classified into three major groups according to their size (A, B, C), this classification is based on the catchment size. However, the Japanese riverine system is connected as a network where small and medium-sized watersheds are widespread in tough and mountainous terrain with elevated heights and severe topography and feed large rivers. They are marked by poor basin management and storage capacity, a short confluence time high ecological sensitivity, vulnerability to natural disasters, and significant human influence. They are also counties with a considerable population and resource discrepancies, as well as a vicious cycle of economic and environmental devastation. Counties with small and medium-sized watersheds urgently need high-level sustainable development paths that combine conservation and development. Thus, these land formations caused the Japanese to be interwoven within the communities and had a great impact on the social, cultural, and economic structure of the Japanese rural and urban communities and dominate a huge concern of any development plan.

3 Methodology

3.1 Introduction

The literature review chapter has firstly discussed the correlation between museums' history and the correlation between museums' social accountability and the development of its objectives and function. Secondly, it has demonstrated the Ecomuseum's promising contribution to reinforcing the link between heritage, cultural and natural landscape and resources, and community development. Third, it highlighted the Japanese Ecomuseum experience, by illustrating the Japanese Ecomuseum objectives, structure, and weaknesses. The last part has investigated the literature regarding the river basin and riverscape to demonstrate how the Ecomuseum could contribute to the river basin management by identifying the river-riverscape relationship, the community-river relationship, and the river socio-ecological and cultural characteristics.

As aforementioned, the rationale of this research is to test the potential of the Ecomuseum model in river basin management as an approach for supporting community participation, reconnecting the river with its social and ecological context, and preserving its natural and cultural identity.

From this perspective, multiple case studies were selected to investigate the possible opportunities for the Ecomuseum concept to contribute to the regional governments and local communities' initiatives for revitalizing their communities, achieving community development, and recognizing the river's role in sustaining their communities.

3.2 The case Studies

3.2.1 *Tamagawa Ecomuseum:*

One of the first Japanese Ecomuseum, the Museum represents the role of the local community in the river basin management, and it reflects the strong recognition of the traditional knowledge and how this knowledge boosts the need for the museum.

3.2.2 *Nakatsu City:*

The city has a strong potential for a river Ecomuseum that represents the rich and diverse natural and cultural resources, and the role of the Yamakuni river has as the lifeblood of the city in developing a flourishing community over its riverscape. Even though the local government is promoting community participation in river basin management, and promoting many scattered sightseeing along the river, However, the river basin management plan is going to remove the longest stone bridge in Japan as a part of its flood control plan, underestimating the cultural value of the bridge which encourage a group of community members to stop this attempt.

3.2.3 *Yufu City Revitalization Plan and Yufugawa Tourism Association*

The local government currently embraces a development plan that connects and promotes the city's three districts (Yufuin, Shonai, and Hasama) as rural tourism destinations, as a part of the city's strategic plan to contribute to the SDGs goals. Oita river has a fundamental role in the revitalization plan as a part of the river basin management and flood control as well as enhancing and developing the river's waterfront for recreational purposes. Moreover, Yufu City has a promising local community initiative that represents the role of the woman in the community

development as well as the recognition of the natural resource value and how it could achieve economic growth for the local community.

3.2.4 *Kunisaki Peninsula and Bird Watching*

The local community acknowledges the value of their environment and its rich biodiversity, which resulted from the diverse geography and land formations. Besides that, they recognized the wildness of the Akira River and its influence on their lifestyle and the richness of the cultural and biological diversity. Therefore, they embrace many revitalization initiatives to designate the peninsula as a GIAHS site including bird watching, forestry, and organic agricultural activities.

3.3 Research Strategy and Research Approach

This research will conduct a qualitative approach, and multiple case study methods because together they could illustrate “*naturalistic, holistic, ethnographic, phenomenological and biographic research methods*” (Johnson & Stake, 1996).

3.3.1 *The Justification for Choosing Multiple Case Studies*

“*The case study is an investigation and analysis of a single or collective case, intended to capture the complexity of the object of study*” (Johnson & Stake, 1996).

The approach gained wide acceptance in social sciences because of its flexibility and ability to provide a holistic and comprehensive understanding of one or a group of communities, phenomena, or situations (Kumar, 2010). Also, Leavy (2014) has identified it as a systematic critical examination that creates new knowledge accessible to the public and could be criticized. This definition agrees with the description of the case study as “a bounded system” (stake, 2003). For Yin (2009) the case study is the best strategy to answer the How and Why questions, However,

Robson stated that a study case is “A strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real-life context using multiple sources of evidence” (1993), The multiple could provide replicated findings among the case to illustrate the similarities and the differences among the selected cases to obtain insights about the opportunities to promote the river Ecomuseum concept in Oita prefecture (Baxter & Jack, 2010).

3.3.2 The Justification for Choosing Qualitative Methods

The qualitative approach could generate insights grounded in human experience. This approach is more flexible in collecting data by using multiple forms of data collection such as interviews, observations, documents, and audiovisual information rather than relying on a single data source. These are all open-ended forms of data in which the participants share their ideas freely, not constrained by predetermined scales or instruments. Then the researchers review all of the data, make sense of it, and organize it into codes and themes that cut across all of the data sources. Moreover, it could produce an effective explanation of intangible elements, such as perceptions, social norms, socioeconomic norms, and people's experiences. Furthermore, qualitative research is a deductive approach, they are more common in Museology and social science because of their unstructured flexible characteristics that could descriptive, non-linear, or non-sequential operationalization.

3.4 DATA Collection

In my study, I will depend on qualitative methods to achieve my research objectives; by using three techniques in my data collection:

3.4.1 *Documents Observation:*

- to observe and analyze the previous literature, such as the ICOM, UNESCO, and European Union charter regarding the Ecomuseum, the landscape, the heritage, and their relation to sustainability and community development.
- UNESCO-IHP, Water council, and IRWM guidelines and declarations.

3.4.2 *Field Study Observation*

- to understand the insights through observing the internal and external of the case studies
- To evaluate the participation of the local community in the process of developing the museum and how far the traditional knowledge and the personal belonging or even the traditional building or tools are utilized in the interpretation plan of the museum.

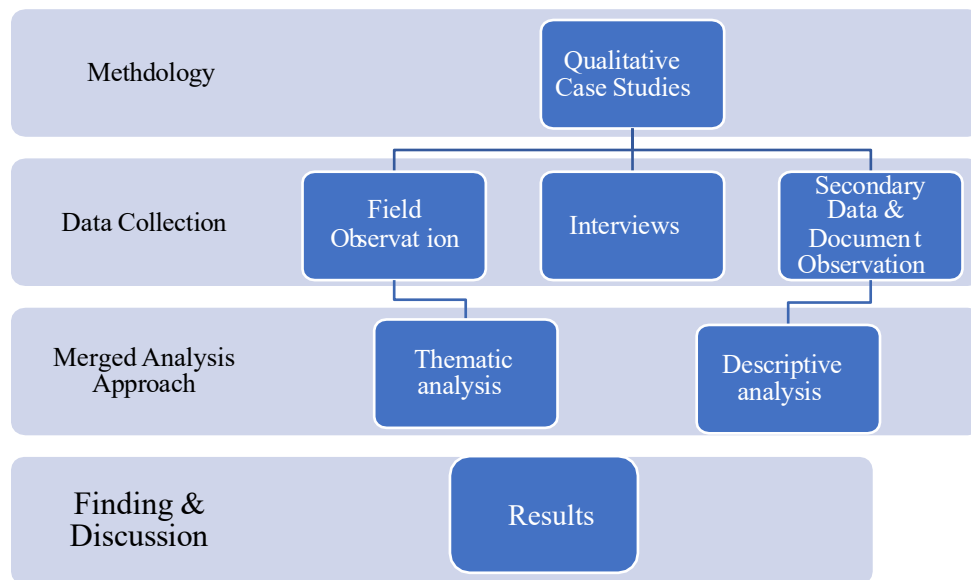
3.4.3 *In-Depth Interview:*

- To understand the potential of the local authorities to engage and recruit the local community's representative in the management system soon of the museum.
- To predicate local community recognition of the river's role and the natural and cultural value of the river in their life, along with testing their acceptance for co-management and involvement in the natural and cultural preservation.

3.5 Data Analysis

The research will conduct a merged method between thematic and descriptive analysis techniques. First, the descriptive approach will introduce a comprehensive view and description of each case study's features, characteristics, and facilities to recognize the spectacular individuality of each site. Second, the thematic technique will describe, organize, and report themes found within the interview and the secondary data (Braun & Clarke, 2006). It is a flexible approach that could generate a trustworthy clear well-structured final report (King, 2004). It could underline the differences and similarities among a group of respondents or the case studies besides the ability to summarize the key factors of a large data set (Nowell et al., 2017).

3.6 The Conceptual Framework



3-1 The Conceptual Framework

4 Findings

4.1 Introduction

This research is based on observing Tamagawa Ecomuseum as an existing model of the river Ecomuseum, which has already contributed to strengthening the correlative relationship between the local community of Kawasaki City and the Tama River through a group of interactive and engaging educational activities that focus on increasing the awareness of the Tama River in developing and sustaining the life of the Kawasaki community. Besides that, the museum team attempts to represent and preserve the biodiversity of the river basin and its environment. On the other hand, rivers in Oita prefecture have played a crucial role in developing and sustaining many local communities. However, the most intriguing thing is that there are many local initiatives that are promoted and managed by local governments, groups of seniors, and individuals, promoting educational, recreational, or eco-friendly activities where the river is the main focus. Furthermore, a few of them have applied the ecomuseum principles and values without holding the name. Therefore, the researcher has selected three community-based initiatives that aim to revitalize communities and show a clear understanding of how important the river is to the growth of their towns and investigate their potential as river ecomuseum projects.

The analytic approach in this chapter merges descriptive techniques based on the secondary data, field observation, and the thematic analysis of the in-person interviews with local community leaders and the government officers who contributed to the foundation of these communities' initiatives. It is important to highlight some indicators that reflect the potential of applying the Ecomuseum concept based on the Magliacani (2014) classification and Corsane (2006) 21 indicators, which test the potential of each community initiative to be a promising Ecomuseum on its own or to be a satellite of a bigger network of rivers. Oita Prefecture's Ecomuseums represent

Oita Prefecture's history of adopting river basins and expressing the cultural and natural diversity of the prefecture as a tool for supporting the local communities.

4.2 Case Studies

4.2.1 *Tamagawa Ecomuseum*

The Tama River is in Kanagawa Pref. Prefecture, in the suburban area of Tokyo. The river is classified as a national river according to the Japanese River classification. It extends for 138 km from Kasatori, the source of the plan, to Tokyo Bay. The river is a livelihood river that the Kawasaki community has developed around it. The museum is a community-based initiative that aims to preserve and safeguard the natural and cultural heritage of the city, achieve community development, and promote social education. A group of residents who recognized the cultural and natural value of the river created the Tamagawa Ecomuseum NPO in 1995 and proposed their project to the city hall. The local government approved the project, provided technical support to the NPO, and released a survey for volunteers to expand the museum structure. The ministry of land, infrastructure, transport, and tourism provided the Nikaryo Seseragikan building to be the management office of the activities. The museum follows a bottom-up approach. According to the Tamagawa Ecomuseum NPO website, the museum's fundamental objective is to construct a living, inclusive museum where the community and the environment are connected. The museum's total size is nearly 500 m². The Nikaryo Seseragikan is the museum's core building, occupying one-third of the museum's total area and consisting of two floors; the first floor includes the front desk and a small exhibition gallery that is decorated with a set of maps of the river's topography, fish tanks, and a small photo gallery for the immigrated birds to represent the biodiversity of the river; the second floor has the conference and the meeting room; there is also a small library attached to the building. The museum's front area is prepared for educational activities and arranged for events.

The museum's interpretation plan reflects the interaction between humankind and the river basin. It presents three main stories: the history of the city's development and how the ancestors developed a unique irrigation system by digging a set of artificial streams and channels, where the city of Kawasaki was founded, as well as creating a system of water control and distribution, still being constructed. The museum's activities underline the role of the Modern Dam in flood control and risk management, especially after the 1980s typhoon. The museum focuses on the environmental impact of the dam on the river ecosystem and biodiversity by observing the fish, sea creatures, and birds' immigration. Three factors evaluate the Ecomuseum's performance, as mentioned in the following diagram.



4-1 Tama River catchment

4.2.1.1 Theme: Community Participation

Tamagawa Ecomuseum reflected a strong community involvement and is different from many other Japanese Ecomuseums which are considered governmental projects

INDICATORS	FINDING
FOUNDER	Tamagawa Ecomuseum NPO was founded in 1995 as a local initiative by a group of senior residents, while the official opening was in 2000.
MOTIVATIONS	Tamagawa NPO Ecomuseum arose during the 1990s, because of the community's awareness of the river's role in developing their society. The respondent stated that: <i>"Tama River is the heart of the community of Kawasaki City. The river played a crucial role in the development of the community on its riverscape and waterfront. To safeguard and preserve the historical and cultural legacy of this living river, it was essential to establish this museum."</i>
ACCEPTANCE AND RECOGNITION BY THE LOCAL COMMUNITY	The Museum has had wide acceptance among the community members from the announcement of the NPO to the current moment. <i>"In 1995, the Tamagawa Ecomuseum, a non-profit organization, proposed the museum concept to Kawasaki City Hall. The Kawasaki City Council approved the proposal and released a survey requesting volunteers, and many of the local community members applied, and the museum opened its doors in 2002."</i>
VOLUNTEERING	The museum board and activities are completely based on volunteerism: there is no employee.
INCLUSION FOR ALL	The museum board is completely managed by a group of senior community members. Aside from that, women make up 20% of the museum board committee. But there is a good indicator for more women's engagement; he stated that

	<i>"Women who do not work usually have free time until their children and husbands come back from work, so we encourage young women to join us in the activities. For example, we distributed a volunteering survey and 30% of the respondents are young mothers."</i>
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<p>NETWORKING AND COOPERATION</p>	<p>The museum's team shares their knowledge and managerial experience with the nearby community: <i>"We cooperate with a local village in Kasatori Mt. the source of the river by participating in one of the oldest festivals in Kawasaki City, and it is believed to be related to the river and its flood"</i></p> <p><i>"We are helping other local communities to build their systems. They are also in Kanagawa prefecture. We assist them in structuring and planning the activities of their river Ecomuseums, such as Kanamoko city and Kusuge Mura town. Also, he alluded to the cooperation with local schools and nurseries like Mizube primary school and a sports stadium on the river basin."</i></p>
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4.2.1.2 Cultural and Natural Heritage Preservation

INDICATORS	FINDING
SIGNIFICANCE	<p>Tamagawa is a livelihood river that plays a fundamental role in the community foundation, were agriculture and industry boost the flourishing of the community.</p>
CULTURAL	<p>The community's seniors have a deep understanding of the river basin, its environment, and the traditional hydrology that sustained the life in its basin. The respondent explained why Kawasaki city has a strong bond with the river: <i>" There is a unique artificial river stream that is reminiscent of the traditional irrigation that was founded by the emperor "Tokugawa Iyasu", the founder of Bakufu, the first Edo government (Bakufu). The irrigation was found to provide a water resource to cultivate the rice bedding and, in purposing of cover the needs of the growing community of food."</i></p>

	<p>He extended his speech about the traditional irrigation system by saying, <i>"It was not developed as the modern water control system; however, they created a water control system by using iron cages filled with rocks, linked together with a set of gates to manage the water amount and flow, creating a net of channels to be open-based to maintain a fair and equal sharing system."</i> The system succeeded in redirecting the water flow from the river mouth to the ocean and creating a series of artificial river streams where many livelihood communities developed along the riverfront of the Tamagawa River. "On the other hand, the interpretation plan underlines the continuous interaction between humans and the river basin, highlighting the role of the modern dam in sustaining life in Kawasaki city. The respondent indicated that the modern dam was built after a strong typhoon in the 1980s that destroyed huge parts of the old irrigation system and demolished many houses on the river's waterfront.</p>
NATURAL	<p>Even though the museum does not have a scientific community, they observe the environmental impact of the dam on the river ecosystem. Their exhibition galleries display a set of fish tanks that represent the fish species and river creatures that live in the river ecosystem. Hence, the Tama River has been designated as the home of the catfish to become the symbol of the museum and the river and to observe and document the seasonal bird migration in cooperation with photographers and bird watchers.</p>
HERITAGE PRESERVATION	<p>The uniqueness of Tamagawa Ecomuseum is that the seniors act as guardians of the cultural and natural heritage and the biodiversity of the river. They protect the oral, intangible, and fragile tangible heritage of Kawasaki through museum activities such as storytelling and hands-on activities to explain the traditional irrigation system.</p>

4.2.1.3 Environmental Development

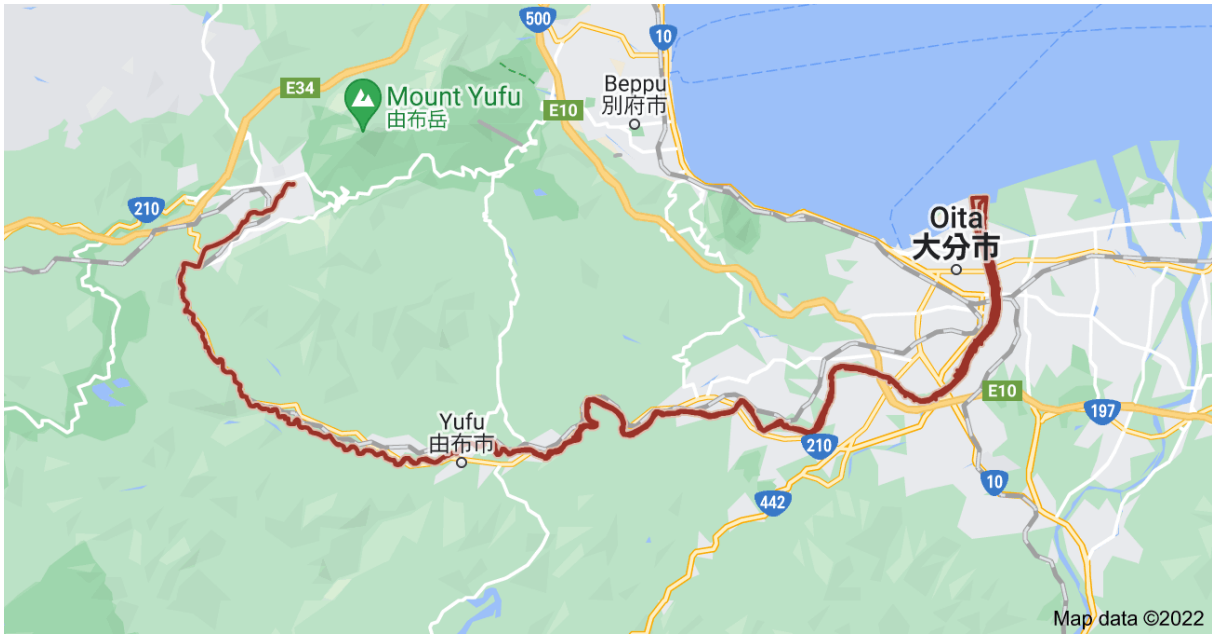
INDICATORS	FINDINGS
GEOGRAPHICAL	The museum's interpretation and exhibitions reconnect the river with its surroundings. The exhibition gallery shows different types of 2D and 3D maps, which illustrate the river basin from its source to its
	mouth in the ocean. The visitors could have a detailed explanation of the land formation and how this reflected the human-river relationship. It also shows the position of all communities that benefit from the river.
ENVIRONMENTAL PRESERVATION	Flood control and human-life protection are Japan's priorities due to the high risk of typhoons. The local government constructed the modern dam after a strong typhoon that destroyed part of the old dam and irrigation system and removed several houses directly located on the river waterfront. The Dam has regular maintenance that ensures controlling its impact on the river basin and its environment. The respondent indicated that in the 1960s the dam faced a technical error that blocked the water and created a white foam that prevented the sunlight from reaching the river water and hindered the fish's movements. Therefore, the dam management fixed the problem, and regular observation of the basin of the impact of the dam is now adopted.
OTHER	The museum's team embraces cleaning up activities for the river basin and the city. Moreover, they provide international training courses in waste management. <i>"The museum organizes clean-up activities for the city, and they receive some foreign volunteers from Indonesia and Jakarta. He said that they are doing an exchange workshop between Japan and Jakarta to share experience and knowledge."</i>
THE BUILDING AND CLEAN ENERGY	The museum introduced a proposal for the city hall to change the regular electricity system, but unfortunately, the government rejected the proposal temporarily because of the lack of a financial budget.

4.2.2 Local and Governmental initiatives for Ecomuseum Projects

4.2.2.1 Yufu City Revitalization Plan and Yufugawa Gorge

The Yufu City Office embraces a revitalization project for the city. The plan targets the city's three districts (Yufuin, Shonai, and Hasama) as part of the strategic agenda of the SDGs and maintains a higher quality of life for the community. The project aims to connect the three districts and promote them as tourist destinations. Since Yufuin is famous for Onsen and its breathtaking nature, agriculture is the main economic activity for Shonai, and Hasama is a residential area for people who work in Oita and Beppu. This attempt aims to revitalize the community by giving priority to the Oita River as the lifeblood of the city, which has evolved in its basin. The enhancement plan includes adopting the river basin and the riverscape and creating recreational spaces for the public so they can organize events, practice sports, and other water-related activities as well as maintaining risk management and flood control programs,

From the researcher's field observation, there is an ongoing enhancement process to the river basin and waterfront as a part of the flood control plan and waterfront recreational development project. However, the river adoption process is somehow artificial by rearranging the rocks in vertical lines. The city's urban development founded five recreational parks along the river basin as space for residents to enjoy the river waterfront. The researcher observed one of these parks that are prepared for camping and recreational activities such as barbecuing and river swimming, kitting, and rafting. The camp consists of five wooden huts that can host a family or group of five people, a playing ground, barbecuing equipment, and a swimming pool in the river pool for the children.



4-2Oita River Catchment

4.2.2.2 Theme: Community Participation

INDICATORS	FINDINGS
FOUNDER	Yufu City Office Revitalization Plan
MOTIVATION	The local government embraces this strategic plan as a precaution against the increased flooding risk. A city official indicated that <i>"Two years ago, there was a natural disaster caused by strong flooding. The three districts have developed around the river, practicing agriculture, and promoting industry"</i> . However, nowadays, Yufuin is one of the top Japanese tourist destinations, it received around four million in 2017, and the city office plan attempts to promote and connect the three districts as tourist destinations as an approach to community development.
ACCEPTANCE & RECOGNITION BY THE LOCAL COMMUNITY	The revitalization plan encourages the involvement of local communities in the river basins. However, the aging and depopulation issues and the acceptance of senior community members to take on challenges or to be part of the development plan create obstacles that slow down the achievement of the revitalization plan. For instance, in the Shonai district, the negotiation process lasted for four years to convince the local citizens to be involved. Likewise, in other cases, after the training program, they could not be involved because of their age and health concerns. <i>"It was difficult to persuade the community members to be involved. It took around 4 years to agree and participate, according to the city officer's statement.</i> The city hall encourages community leaders to collaborate and form groups that represent them. Currently, there is only one formed group and another two groups under construction. The plan requires a foundation.
VOLUNTEERING	Ten years ago, a group of community members created a group called Yufuin Husuikan, which took the charge of cleaning the river basin, protecting the ecosystem of the river, and preserving the water plant that was under threat in Yufuin. Currently, they are going to expand their work to cover some other areas of the basin.
NETWORKING AND COOPERATION	The city also gives priority to tourism and environmental education through cooperation with APU Ritsumeikan University by providing face-to-face workshops at the university campus and in field studies that enable students to interact with the river basin. On the other hand, Yufu city is the only city in Oita prefecture that has introduced tourism, environment, and river basin management courses in secondary and high schools.

4.2.2.3 Theme; Natural and Cultural Significance and preservation

INDICATORS	FINDINGS
GEOGRAPHICAL EXTEND	<p>The Oita River originates from Mt. Yufu (elevation 1,583m) in Yufuin Town. It flows through the main basin, flows down the middle stream of the gorge together with the Asono River, Seri River, etc., and reaches Hasama Town, Yufu City. Then enter the Oita Plain, combine the Kaku River and the Nana River, and pour into Beppu Bay in Toyomi, Oita City. The main river channel is 55 kilometers long, with a basin area of 650 kilometers (大分川水系河川維持管理計画 2012)</p>
CULTURAL SIGNIFICANCE	<p>Many archaeological sites have been excavated at the mouth of the Oita Plain and around the riverside, indicating that it has brought great benefits to the people of the basin since ancient times. Around the 8th century, the Oita River was the political and cultural center of ancient Bungo, with government offices, temples, and stations. In the 16th century, Sorin Otomo set up a pavilion in Funai, on the left bank of the Oita River, and formed an international city with a strong Nanban culture as a Christian daimyo. At the mouth of the Oita River is the center of town development that inherits the history, culture, and exchanges that made it an international city in the Middle Ages. (大分河川国道事務所 (Kyushu Regional Development Bureau Oita River National Highway Office, 2012)</p>
OTHER	<p>Besides that, Yufu city like other Japanese cities has an annual festival, where the local community practices the Kagura dance.</p>
NATURAL SIGNIFICANCE	<p>The Oita River is blessed with a rich natural environment as well as forms the foundation of society, economy, and culture in this region.</p> <p><u>Yufuin Town</u></p> <p>The town is designated as one of the top Japanese natural-based destinations. It is popular as an Onsen destination besides the beautiful scenery of Mt. Yufu and Kinrinko Lake.</p> <p><u>Yufugawa Gorge</u></p> <p>The gorge is one of the unique natural destinations that has recently attracted recreational and river sports tourists.</p>

4.2.2.4 Environmental development

INDICATORS	FINDINGS
ENVIRONMENTAL PRESERVATION	The river has an auto-cleaning system. <i>"The flood and rain create an auto-clean system for the river basin from the framed and industrial waste."</i> On the other hand, Japan has developed a strict environmental policy that limits the negative industrial impact on rivers. Yufu City also followed this regulation. However, the priority is flood control by enhancing and lining the river basin. in addition to increasing the younger generations' awareness about the environment through schools' curriculums, and providing special courses about the environment, biodiversity, and responsible tourism. Yet, there are a few conditions that misuse the river basin. <i>"40 years ago, the river was very polluted due to industrial expansion, and the city succumbed to control impact, and senior community members are aware, and the educational programs target the new generation."</i>
OTHER	Nowadays, the government is working on developing a local biodiversity preservation plan as a part of the city's SDGs agenda.

4.2.2.5 Yufugawa Gorge

It is in a bridging location between Beppu and Yufuin, in the Hasama district. It is considered one of the iconic scenes of Oita prefecture, which attracts domestic and international tourists while commuting from and to Fukuoka. However, only ten years ago, a local imitative recognized the natural and economic value of the gorge and established the Yufugawa gorge tourism association, which aims to promote environmental and ecotourism as an approach to

achieve community development. However, this initiative attracted governmental support as a part of the Yufu City revitalization plan. This support comes in the form of technical support, such as the construction of the museum facilities and the maintenance of these facilities.

4.2.2.6 Field Observation

The gorge site is well equipped and accessible for tourism and recreational activities, with a parking lot that is quite large and accessible, and a resting place facilitated with restrooms, shaded areas, and seats. During the observation, workers were fixing wooden fences for safety. In 2017, the government constructed stairs to facilitate access to the gorge so that visitors can go down the gorge much more easily. However, a slider for wheelchairs is going to be attached to the stairs. Nearby the gorge site, there are a group of guest houses, where tourists could enjoy the Japanese rural life experience by living with a Japanese family, tasting Japanese traditional cuisine, and experiencing farming. The gorge is free to enter, but visitors could donate to the cleaning-up activities for around 100 yen each. However, there are fees for the rafting activities, which cost 18000 yen, according to the Yufugawa Tourism Association website.

4.2.2.7 Community Involvement and Development

INDICATORS	FINDINGS
FOUNDER	The Yufugawa Tourism Association is a local initiative, created by Mushira San, a Japanese senior woman who studied community development and felt a social responsibility toward her community.
MOTIVATIONS	<i>"I wanted to do something for my community. The gorge site was very popular; people came to visit and go without doing anything, and there was no benefit to the local community. Also, there are four small villages across the river. The river is the lifeblood of the local community that depends on agriculture. However, the income of the agricultural is very low, so they must work outside in Oita and</i>

	<i>surrounding areas, so enhancing the rivers is very vital to communities' development, especially for those communities dependent on agriculture. "</i>
ACCEPTANCE AND RECOGNITION BY THE LOCAL COMMUNITY	Ochira San found a quiet acceptance from the community leaders who welcomed her and supported her ideas about revitalizing the community. Around 16 community leaders elected her to be their leader and establish the association. Yet the process is challenging to make the whole community accept the change. The generations between the 30s and 40s underestimated the uniqueness of the gorge and the development plan until they recognized the impact of tourism promotion. She stated that <i>"since the people here are not as open-minded as people in big cities, development takes time, and it does take time. It was tough, though. Since people used to only think about their own lives and their own lives, I am trying to change their minds. "</i>

4.2.2.8 Natural and Cultural Significance and Preservation

INDICATOR	FINDINGS
GEOGRAPHICAL	Yufugawa Gorge, as mentioned above, is one of Oita's natural icons. <i>"Yufugawa Canyon is an upstream gorge of the Yufu River, which connects Mt. Yufu with Mt. Tsurumi."</i> The mountain watercourse flows for around 12 km beneath the cliffs.
NATURAL	The gorge was created around 600000 years ago because of a volcanic eruption.
CULTURAL	The Hasama district and Yufugawa gorge represent the uniqueness of the rural setting, where the river is the center of the communities. They still practice traditional farming, providing a rural life experience for tourists, who could join a Japanese family's traditional life and enjoy the traditional Japanese cuisine after collecting fresh vegetables from the farm and participating in cooking the food.
TEMPLES & FESTIVALS	There is a shrine over the mountain where visitors can pray, wishing safety for those who are enjoying recreational activities such as rafting and kitting in the river basin. The association organizes an annual autumn festival celebrating the golden week and the designation of the gorge as one of Japan's unique natural icons.

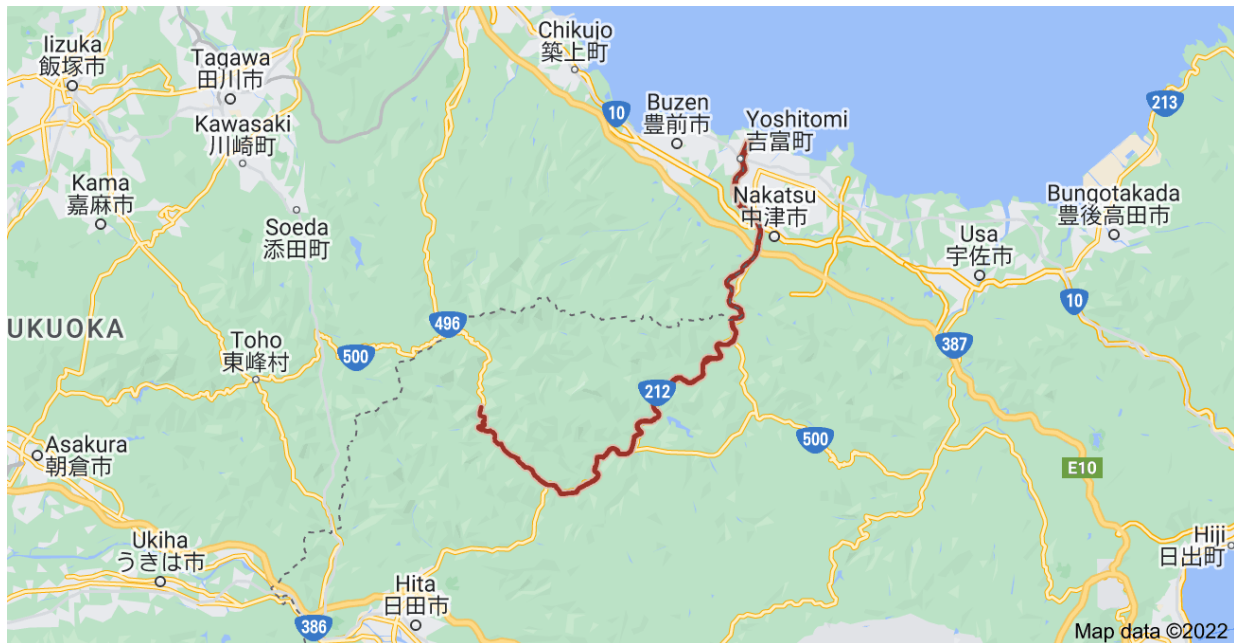
4.2.2.9 Environmental Development

INDICATOR	FINDINGS
EFFORTS	The association, in cooperation with the local government and the communities, follows regular maintenance and environmental clean-up system to cut the grass and keep the gorge clean.

4.2.3 Nakatsu City

To the north of Kyushu Island, in Oita Prefecture, Nakatsu City is seated, where the Kuroda daimyo family erected their castle at the mouth of the Yamakuni River in 1587 to control the trade traffic since the textile industry was the first economic activity in the end of the 19th century (Britannica, 2016) The topography of Nakatsu City formed its diverse natural and cultural identity. This stunning and diverse scenery has attracted prayers, monks, residents, artists, and painters, who were fascinated by the breathtaking scenery and created a corresponding number of paintings and poems. Therefore, the basin is designated as the scenic Yabakei and Yaba-Hita Hikosan National Monument and is a treasure trove of a wide variety of flora and fauna, topography, geology, and landscape resources. However, the government is currently working on a developing hydraulic control system to prevent flood damage in the entire basin by maintaining the dam, digging channels, enhancing river disaster prevention stations and related infrastructure, and replacing bridges. A noteworthy point is that the tourism promotion plan of the city promotes several sightseeing destinations as scattered destinations in the river basin, like Nakatsu Castle,

Honyabakei, Kyoshuho (Blue Cave), and Mabayashikyo. Besides that, along the river basin, some remarkable sites reflect the society-river relationship, such as Rakanji Temple, the Yabakei stone bridge, the longest stone bridge in Japan, and Yabakei Dam. However, the local government promotes community-based initiatives as part of its strategic plan to integrate the community into the water resource management programs.



4-3 Yamakuni River Catchment

4.2.3.1 The Cultural and Natural Significance and Preservation

INDICATORS	FINDING
GEOGRAPHICAL SIGNIFICANCE	The Yamakuni River is a first-class river that flows through Mt. Hiko, a spiritual mountain on the prefectural borderline between Oita and Fukuoka, via the scenic Yabakei and Nakatsu Plains, and into Suo-nada, spanning three cities and three towns. It extends to 56 Km, while the rainfall zone covers 540 km.
NATURAL	The body of the basin slopes down to mountains formed by volcanic activity, while the lower streams are fan-shaped, forming the fertile Nakatsu. The river's flow carved the Yabakei Gorge into the mountain cliffs. Around 35% of Nakatsu Tidal Flat species are rare, making it one of the richest and most extended biodiversity areas in Japan.
CULTURAL	Yamakuni River and the surrounding natural environment have been the center of the development of Nakatsu city. Many industries have grown on its riverscapes such as forestry and wood production in the upper streams, agriculture such as rice and fruit tree cultivation on fertile soil in the middle and lower levels, and recently, automobiles and housing equipment based in northern Kyushu, have developed.
SIGHTSEEING	<p>Along the river basin, many traces reflect how the people interact with the river evolving the community, starting from Rakanji Temple, Kyoshuho (Blue Cave), the stone bridges, Yabakei Dam, Nakatsu castle, Honyabakei, and Mabayashikyo.</p> <p>Besides Yabakei gorge and the Nakatsu Tidal Flat, extending from the Kunisaki peninsular in Oita prefecture to Buzen City in Fukuoka prefecture, and</p>
	reflects rich and rare biodiversity(<i>大分川の歴史 History of the Oita River</i> 2008).
HERITAGE PRESERVATION	<p>Many local groups have lately launched several educational and conservation activities pertaining to the river basin, environment, and riverside utilization. Like the NPO Nakatsu Waterfront Conservation Association which focuses on conserving and protecting the biodiversity of one of the Japanese best-protected, largest, and richest tidal flats. (NPO 法人 水辺に遊ぶ会 – 中津干潟保全を中心に水辺環境に関わる活動をしている団体のサイトです。A NWCA Activities in the Nakatsu Tidal Flat)</p> <p>Nakatsu Castle had been destroyed in a strong earthquake. Later it was rebuilt and renovated. However, the government, as the flood control product, is going to remove the longest stone bridge in Japan.</p>

4.2.3.2 Community Participation and Community Development

According to the Yamakuni River Office, the local government promotes community-based activities and associations. However, the researcher was only able to contact two community leaders, who adopted two initiatives that focused on engaging the local community and reinforcing the human-river relationship.

- The First initiative is an Educational and Tourism Promotion Program.
- The Second Initiative is a Community Coffee Shop in the River Basin.

INDICATORS	FINDING
FOUNDER	A local initiative by 1 resident
MOTIVATION	<u>The first initiative:</u> He stated that "he was working as a firefighter, then in 1985 he shifted his career to introduce educational programs for children when he saw a group of children playing, swimming, and teaching each other. He got inspired to offer this educational program and to teach them also safety and risk management. He implied that "his purpose is to engage the children with the river and its environment but also provide them with an experience." Besides that, he is concerned about introducing risk management and evacuation for seniors as well.
	<u>Second initiative:</u> "I spent my childhood in this community, and I graduated from this school. Then I traveled. When I came back, I found my school was closed, so I decided to open this community coffee to be a place where I could reconnect with me school colleagues."
ACCEPTANCE AND RECOGNITION BY THE LOCAL COMMUNITY	The local communities show great acceptance of both initiatives. For the educational program, before the COVID-19 pandemic, they were receiving two groups daily, each group consisting of 20 members. Now they only organize ten programs annually.
NETWORKING AND COOPERATION	The local community shows a quiet acceptance of such educational and recreational activities, which connect the children with the river and its environment. This support can be understood from the technical and financial support which is provided by schools and retirement houses. Also, he stated that "There is cooperation with 10 local enterprises."

4.2.3.3 Environmental Development

INDICATORS	FINDING
YABAKEI DAM	<p>“To live safely and with peace of mind while making effective use of the abundant environmental resources of the Yamakuni River, "hydraulic control" that properly manages the flow of river water and effective use of river water. It is necessary to proceed with the two initiatives of "hydraulic engineering" while maintaining the natural environment of the river. The Yabakei Dam was built in 1985 on the Yamautsuri River, a tributary of the Yamakuni River in Yabakei Town, Oita Prefecture, with the aim of carrying out these efforts” (ダム建設の目的 <i>purpose of dam construction</i>)</p>
NPO NAKATSU WATERFRONT CONSERVATION ASSOCIATION	<p>NWCA is a local initiative, that establishes an online museum that documents and displays the rare biodiversity of the Nakatsu Tidal Flat. The project focuses on engaging the local community through educational events and workshops, monitoring, and cleaning-up activities. NPO 法人 水辺に遊ぶ会 – 中津干潟保全を中心に水辺環境に関わる活動をしている団体のサイトです。A NWCA Activities in the Nakatsu Tidal Fla)</p>

The site visit included the following three attractions:

The site	Description	The researcher's observation
Rakanji Temple	To halfway up Mt. Rakan, on the eastern bank of the river. The temple was constructed for the first time in 1337 in a place where the Indian monk Hondo finished his monastic training in the middle of the 7th century. The temple monks have a strong contribution to facilitating and adapting the river basin to make it more accessible and livelihood. Thus, the priest Zenkai, who lived during the 18th (1720–1750) century, spent around 30 years digging a tunnel to facilitate the road to the temple. It is considered the first tunnel in Japan for transportation, and it is known as the "blue tunnel or Aonodomon. Kyoshuho (Blue Cave) "	The temple entrance and main hall are based in a cave at the bottom of the mountain, and they act like a memorial shrine for priest Zenkai, where his tools, his dust, his memorial statue, and the tools he used in digging the tunnel are displayed. Also, the shrine is decorated with an original painting panel of the city map showing the river cutting across its center (there is a recent paper copy of the panel for the explanation). To reach the main shrine from the mountain cliffs, visitors have two options: either climb up or use a chairlift with a fee of 800 yen. The temple's accessibility system is well organized by providing a large parking lot for visitors with disabilities and elderly people. Otherwise, in the parking area, in front of the temple gate, there are two shops for food, local products, such as local alcoholic drinks, dried fruits, some kinds of black grass which grow on the tree trunks by the river basin, and souvenirs like wooden sculptures and pottery. The guide in the first shrine provided some pamphlets, flyers, and maps about the temple and the important sightseeing, but they were only in English.
Yabakei Dam,	the Dam was put into function in 1983 to achieve the following objectives: river flow maintenance, flood control, agricultural irrigation, water supply, hydropower, recreation, and snow melting and removal (<i>Yabakei Dam, Oita. Pref</i> 2012).The Ministry of land, infrastructure, tourism,	The tour included a tour inside the dam building and facilities by using stairs to go down for approximately 62m to reach the bottom of the dam. During the explanation, three main stops illustrate the hydraulic system, but on the way up, visitors can use the elevator. The explanation highlighted the hydraulic

and transport promotes the dam as a tourist attraction and introduces educational tours for students and schools to enhance the students' awareness of the dam's function, objectives, and principles to sustain and preserve the ecosystem and community (*Infrastructure rooted in the local community Yabakei Dam* 2019). The Dam site is provided with accessibility facilities like a large parking area, restrooms (not clean enough), risk management signs, and a lecture room, but it was closed due to the COVID-19 restriction. The Observatory spot was where tourists could enjoy the panorama of the reservoir.

system of the dam, the capacity of the dam, which reaches 23.3 million m³, the risk management system, and the environmental conservation procedures that are followed to mitigate the negative impact of the dam on the river ecosystem, such as using water circulation aeration mechanisms that enhance the water quality and prevent the growth of phytoplankton. On the other hand, the dam promotes the reservoir's lake for recreational activities like the lakeside festival, the fountain, water skiing, and banana boating. However, recently, all these activities were suspended due to COVID-19.

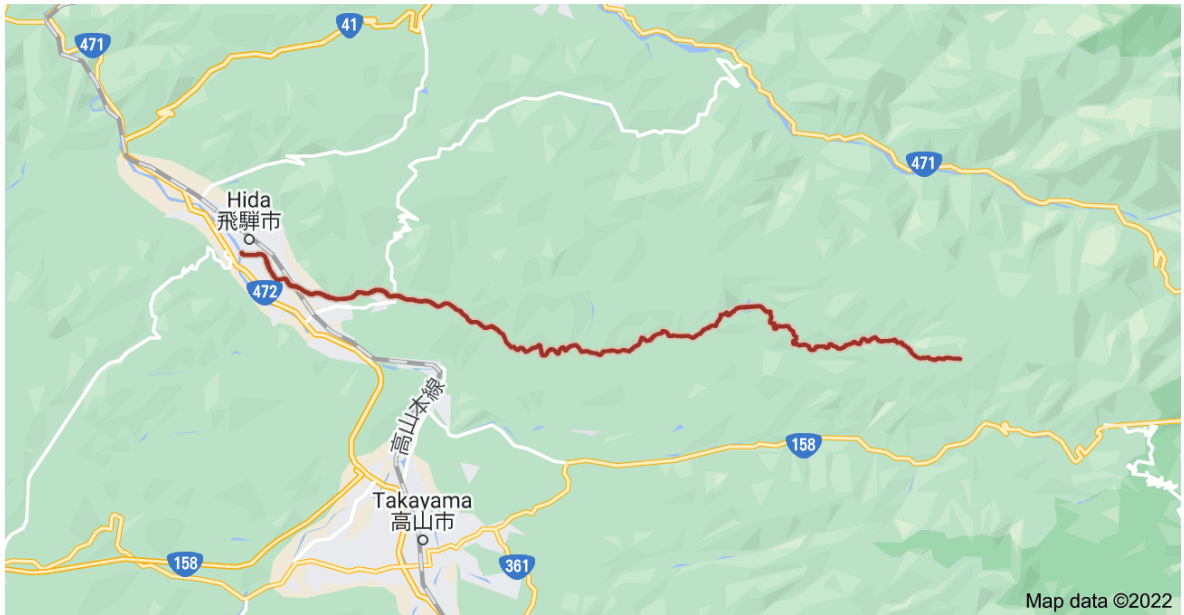
The stone bridges:

Kyushu has around 95% of Japan's stone bridges (Akoi, et.al, 2007). Nakatsu City has the longest one; the Yabakei stone bridge is 116 m long and consists of eight arches. However, there are around 100 stone bridges only in this city. (Akoi, et.al, 2004). The most popular are the Yabakei, Rakanji, and Bakeibashi bridges. the construction of the Yabakei bridge lasted from 1919 to 1923. Its function is to facilitate movement over the river basin for local citizens and tourists. Dutch masonry has a strong influence on most of the Oita bridges were inspired, especially in Nagasaki Prefecture, where these types of bridges were first introduced. The bridge's history and location are significant.

The national government plans to remove the bridge as a risk management precautionary measure for flood control. Floods annually carry stones, trees, and mud along the basin, blocking the river's flow under the bridge. The bridge's position relative to the city center and river basin is significant as a tourist attraction. Besides having a parking lot, accessibility, and risk management signs. There is a local bakery next to the bridge, overlooking the river basin. However, the cultural value of the bridge's local government underestimates the passengers who use the bridge with no limit to the maximum cargo for the cars passing the bridge. (Imagawa & Suematsu, 2011)

4.2.4 Kunisaki Peninsula and Bird Watching

The Kunisaki Peninsula lies in northeast Kyushu, just south of the Seto Inland Sea. It consists of four municipalities and one village, with a semicircular peninsula in the midst. The Mt. Fugato Mountain range is situated in the middle of the peninsula. The plains are narrow, with several short, rough rivers. Since ancient times, this region has battled water shortages due to its low precipitation and volcanic soil, which swiftly absorbs any rainfall. Thus, this land formation diversity shaped the relationship between the people sharpened their skills and developed their experiences. Kunisaki local people developed a wide knowledge of the bird species and the area's biodiversity. Because of this recognition, they promote bird watching activities besides agriculture and forestry activities to promote natural-based tourism as an attempt for community revitalization. The local bird watchers know the birds' inhabitant areas and they track them from the ocean's shore to the mountains' crests, where the diversification and numbers of the birds increase.



4-4 Araki River catchment

4.2.4.1 Community Participation & Community Development

INDICATORS	FINDING
FOUNDER	A group of local people who created an NPO and the launched the activities since 2009

MOTIVATIONS	The main priority of this initiative is to reconnect the people with their environment to benefit the people, protect the environment and preserve the traditional knowledge by involving the residents, reinforcing the local identity, creating a safe environment for visiting Kunisaki as well as obtaining a new designation of Kunisaki as GIAHS.
ACCEPTANCE & RECOGNITION BY THE LOCAL COMMUNITY	The local communities have recognized the essential value of their biodiversity and traditional knowledge related to bird species and traditional agriculture, they participate in the project since the planning and development of the GIAHS designation process. Besides having a strong contribution to the activities based on their deep knowledge about the birds' biodiversity and species. “All activity design and work are organized through collaboration with locals”
VOLUNTEERING	The local people volunteer in the activities.
INCLUSION FOR ALL	The main purpose is to empower the local community. According to the respondent he stated that “The majority of the members are senior over 60, and there is a good representation for women as well”. on the other side, “The activities target different segmentation of visitors: seniors, handicaps, children, families, adults, schools, university students on both domestic and international level”
NETWORKING AND COOPERATION	We contact other GIAHS communities, and with local museum (YAYOI-no-MURA)

4.2.4.2 Cultural and Natural Significance and Preservation

INDICATORS	FINDING
SIGNIFICANCE	Araki River valley is a rich repository of the environment, heritage, and culture, the river is only extended for 10 km.
CULTURAL	The local expertise plays a primary role in the activities by observing and monitoring the birds. They could identify the birds' names, gender, attitude, behavior, and the numbers of the birds in each spot.

NATURAL	<p>Another symbolic boon for the Araki River ecosystem is the bird's diversity. Approximately 9000 species of birds are in the ecosystem. 700 of them are in Japan, and nearly 300 species of them are in Oita prefecture, Only the Kunisaki peninsula is the home for 50% of them. As result, the rich geographical formations such as freshwater, seawater, mountains, farms, and forest hills create rich biodiversity and provide a good survival and living source for diverse immigrant birds. Seabirds are seen with freshwater birds in the same location. This diversity supports the quality and health of the environment of the Kunisaki ecosystem. This biodiversity and eco-diversity had a direct impact on local communities.</p>
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HERITAGE PRESERVATION	<p>In 2009 The peninsula has been designated as Globally Agricultural Apply organic and wild farming techniques that commend friendly farming activities using the old traditional cultivated tools and methods that encourage the participation of humans more than using machines to maintain high-quality food production in an adequate quantity and to reduce the waste of mass production.</p>
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4.2.4.3 Environmental Development

INDICATORS	FINDING
	Kunisaki peninsula
	This activity focuses on preserving the environment and preserving the related traditional wisdom by applying governance and community engagement.
	Does the museum adopt any documenting and observing activities in regard to the river basin, its biodiversity, and impact of human interactions? We collaborate with local university research projects.

5 Discussion

5.1 Introduction

Through the literature review analysis, the political, economic, and social major events reshaped the management approaches to cultural and natural resources over history. Industrialization, modernization, and urbanization attributes have the strongest impact, by advancing and maximizing the economic value of any natural or cultural substance over the ecological, social, and cultural value. For instance, the traditional museums of the 20th century exhibited their collection apart from their original context. The same attitude for the modern water resource management, which eliminated the river from its surroundings, this approach is insufficient in the 21st century. Therefore, UNESCO and other international communities recently have recognized the significance of the integrated approaches in managing natural and cultural heritage resources that ensure community empowerment, responsible use of the resources, and reconnecting the people with their environment. Besides promoting the holistic techniques of managing and understanding natural and cultural resources.

According to Malcolm, Rivers are “fundamental landscape features”, (Chakraborty, et.al, 2019, p.246) Therefore, throughout history, they examined the ecological, social, and political conditions changes. They have observed different forms of modification because of deforestation, mass agriculture, and urbanization application, causing the loss of biodiversity, soil degradation, and districting of the rural scenery (Chakraborty, et.al, 2019, p.246). Asiliogu (2016) indicated that throughout history the landscape witnessed ecological condition change, holding evidence

of the interaction between humans and their environment in the form of tangible and intangible heritage. Hence it is more sufficient to be treated as an ecoregion. On the other hand, water-related heritage in both tangible and intangible forms is also threatened for the same reasons. Therefore, UNESCO emphasizes the role of culture as the fourth pillar of sustainable development (Blond, 2015, p. 15).

The Ecomuseum, among community-based museums, is the most convenient mechanism to reconnect community, environment, and heritage (Magliacani, 2015, p.18). They could illustrate the correlation between mankind and the environment, and confirm on humans are part of nature, not separate from it (Davis, 2011, p.17). According to the Milan convention 2016, the Ecomuseum is the landscape, a platform where tangible and intangible inheritance have been co-evolved, a transdisciplinary approach to investigating and analysis the human-environment relationship, and a framework that promotes mutilate levels of collaboration. Hence, they could have significant potential in River basin Management because they can reconnect the river with its ecological, social, and cultural context. They could reinforce the local communities' participation, increase their awareness, conserve, and protect the natural and cultural heritage, and interpret the human-environment relationship in situ (Liu & Lee, 2015).



6-1 River Ecomuseum Model Created by the Researcher

5.2 Tamagawa River Ecomuseum

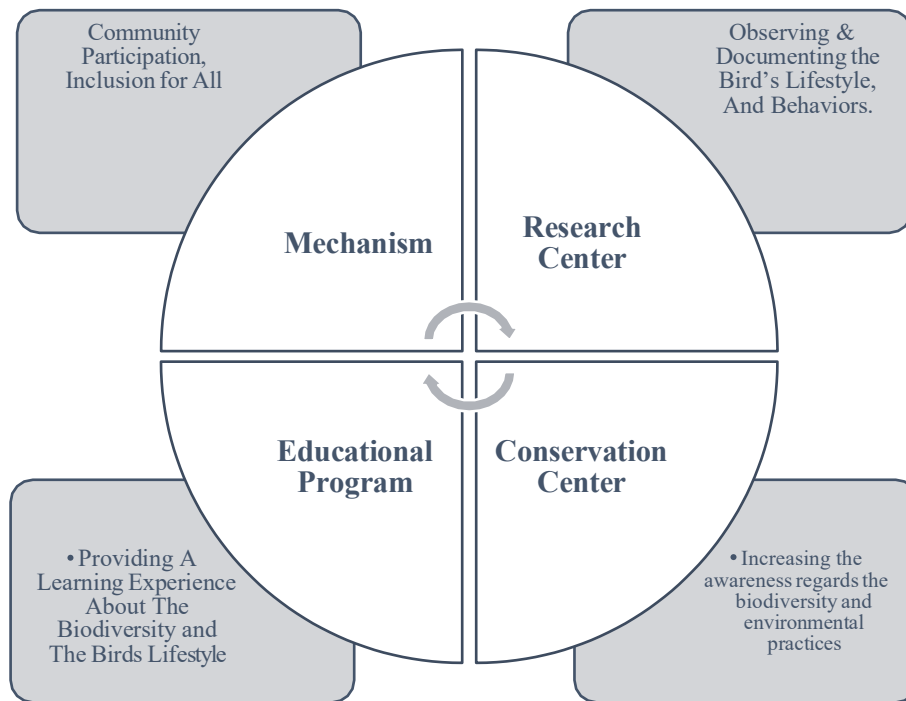
Tamagawa river represents the contribution of the river Ecomuseum in engaging and enlightening the community with the river basin and its environment. The Museum could be a model for community revitalization because of the Museum's NPO's following efforts:

- The Tamagawa Ecomuseum is a well-established model of a river museum that has served the Kawasaki community for twenty years. The museum has gained the local community's trust through its strategic plans.
- Educating the children about the river, the ecosystem, and the city's history.
- Transferring the traditional knowledge of Kawasaki city's history and the river's role in sustaining life in the city from generation to generation.
- Observing and conserving the ecosystem of the river.

- Providing a space where the whole community could enjoy and connect with the river, and environment, and reinforcing the social bonds among the community members especially the seniors and the children.
- Networking and sharing knowledge with other Kanagawa prefecture communities.

5.3 Kunisaki (Biodiversity)

In Kunisaki, the wildness of the river, and the limited access to the water resources encouraged the ancestors to develop an irrigation system that consists of 6000 artificial ponds to reserve the rainfall for rice cultivation, on the other hand, the rivers also enriched the biodiversity of the peninsula, to be a station for the birds' immigration along the four seasons. Kunisaki bird-watching activities are an example of the Japanese local initiative that applies the Ecomuseum's principles without holding the title, by comparing the initiative activities with the JECOMS definition of the Ecomuseum.



6-2 Kunisaki Bird's Watching Principles

5.4 Yufu city and Yufugawa Gorge

The Ecomuseum could support the city office's attempts to achieve SDGs goals and contribute to enhancing water resource management. According to the 2021 Ecomuseum and Climate Action webinar, the Ecomuseum and community museum have an essential role in achieving SDGs as well as facing the climate change impact by increasing awareness and empowering the local community to reinforce their sense of responsibility and belonging. According to the Yufu city officer, engaging the local community is a long and challenging process due to the aging, ability, and the health condition, and for some seniors, it is not easy to accept the change and to involve in the revitalization plan. On the other hand, the city office has a good network with public schools and universities introducing training and educational programs. Hence the Ecomuseum has a good potential to tackle these obstacles, by providing a system that coordinates and organizes these efforts.

On the other hand, the Yufugawa Gorge Tourism Association founder showed a strong understanding of the Ecomuseum concept and its role in community development. Since it was founded, the Association adopts the Ecomuseum principles such as community revitalization and tourism promotion and reconnecting the local community with their environment. The Association aims to achieve economic revenue to assist the local community to recognize the true value of their cultural and natural resources.

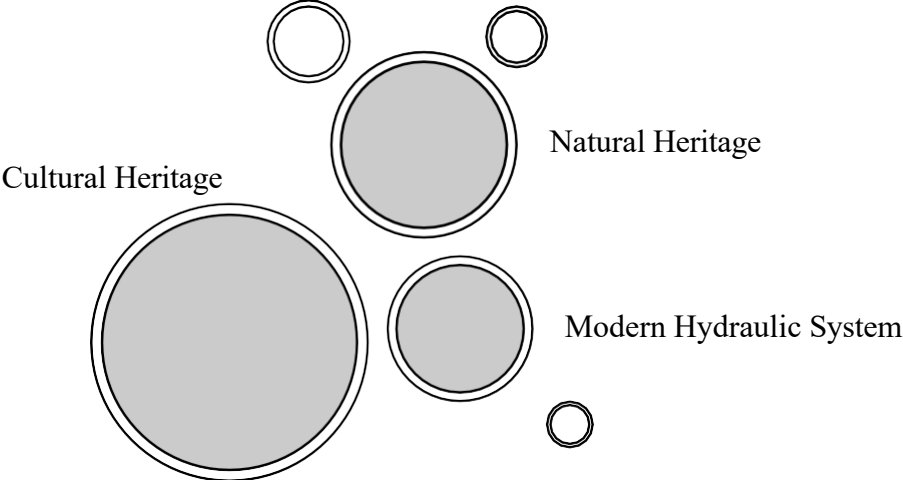
To sum up the Yufu City Ecomuseum could promote and assist in the following points:

1. Contributing to the city office's efforts to encourage local initiatives and associations (Engaging communities).
2. Providing a Framework or a mechanism that coordinates the city office's attempts to network the local communities' initiatives, public schools, and universities.
3. Extending the network of the Oita River basin management by connecting with other successful local river museums like Tamagawa River Ecomuseum.
4. Interpreting the human-river relationship, which leads to the development of Yufu City and connecting between the bio and cultural diversity that enrich the local community
5. Reconnecting the river within its cultural and environmental context for a better water resource management

5.5 Nakatsu City

The land formation of Nakatsu City shaped its diverse natural and cultural identity. The city landmarks represent the history of the human-river interaction along the Yamakuni River. For instance, Nakatsu Castle was built on the river mouth to control the trade traffic between the city and the surrounding community. However, Rakanji Temple is the sign of the temple's efforts to make the river basin accessible for the people by digging the Kyoshuho, Blue tunnel, which has sustained the life above the river basin. Besides the longest stone bridge in Japan, which the government is planning to remove as a part of the flood control procedures. All these attractions are promoted on the city tourism promotion site. However, they could face the same threat as other water heritage terraces by demolishing or neglecting for developing the river basin. Meanwhile, UNESCO recently emphasized the significant role of water heritage in understanding the river characteristic and enhancing the water resources management application. Thus, promoting the Ecomuseum model is to protect the cultural and natural identity of the city which has been formed

by the Yamakuni River, and to observe and conserve the living heritage of the river which still developing and changing due to the dynamic human-river relationship. Therefore, the proposed Ecomuseum for Nakatsu could cover and connect more than one theme:



6-3 Nakatsu Rich and Extended Identity

6 Conclusion and Recommendations

6.1 Conclusion

In 2017, the UNESCO-IHP Program launched a global network of water museums to promote the museum's role in protecting the water heritage and to emphasize the cultural dimension in water resource management. From the researcher's perspective, the river Ecomuseum is a promising model that could assist water resource integrated management in achieving that goal, because of its characteristics in preserving the cultural and natural heritage in situ, engaging and empowering the local communities, and its ability to reconnect the river with its socioecological context. Along with its ability to bring the human dimension to understanding the river's behaviors and attitude.

However, Ecomuseums and community-based museums have gained more recognition. In 2021, ICOM organized a webinar confirming the role of Ecomuseum in facing climate change. However, water scarcity, drought, and flood are among the most pressing issues. On the other hand, the Integrated Water Resource Management programs have recognized the role of culture and social inclusion for better water resource management.

Natural Resource Management and Ecomuseums, as a model of the new museology types, have evolved due to the global recognition of the impact of misuse of the natural resources, industrialization, and urbanization, which advanced economic profits over cultural or ecological value. As a result, many integrated methods were promoted to support governance, co-management, and community participation in managing cultural and natural resources.

However, these notions and directions are working individually, rather than working cooperatively. Especially in the river basin management, the Ecomuseum could have a vital contribution to the river basin management by following:

- A mechanism for engaging and involving the local communities to support the governance and the co-management approach that is the priority of an adoptive river co-management approach.
- A conservation center that could protect and preserve the cultural and natural heritage related to the river and its basin
- A research center that could observe, protect, and document the biological and cultural diversity of the river basin and its ecosystems.
- An educational center that could provide long-life learning programs that educate and enlighten the local communities and reinforce their relationship with the rivers and the riverscapes.
- An interpretation center that narrates the human-river relationship and as a mediator that links the river's forgotten and living heritage.
- Even though Ecomuseums are non-profit organizations that rely on volunteering and technical support, in the long term they could contribute to economic growth, in the river basin management, which may promote recreational, sports, and environmental based activities.

The field studies have provided a better understanding of the opportunities as well as the changes which may face the Japanese River Ecomuseum. The Japanese community has a strong potential to embrace such kinds of initiatives related to natural and cultural preservation. All the case studies showed a strong recognition of their legacy, for instance, Tamagawa Ecomuseum, Yufugawa tourism promotion association, and Kunisaki bird watching activity are local initiatives that follow bottom-up approaches. On the other hand, the Yufu city office revitalization plan is promoting community participation as well as recognizes the ecological, cultural, and historical value of the Oita River.

But an aging population, depopulation, and a decline in number in the younger generation creates critical challenges for recent and future revitalization plans, therefore, the research contains some recommendations which may solve these issues.

6.2 Recommendation

In general, Ecomuseum could contribute to addressing many of Oita prefecture's revitalization plans which target community involvement, revealing and protecting the natural and cultural heritage of the prefecture, and promoting rural and environmental tourism. The Ecomuseum concept could assist in creating a new identity of Oita, besides the Onsen identity, a water identity that reflects the role of the rivers in sustaining life in the prefecture, assisting in creating many communities surrounding the rivers basins. Also, the Ecomuseum has a promising potential in reconnecting and interpreting the forgotten heritage of the prefecture with the modern and daily life activities, this attempt will not only reinforce the sense of place, but it will reconnect the local communities with their riverscape, which is approved by Tamagawa Ecomuseum. Furthermore, the Ecomuseum is a very flexible and loose model that could be managed on a small

scale or a large scale. It is a good tool for networking, cooperation, and exchanging knowledge and experience.

Therefore, it could be promoted in separate satellites or one huge network that could find regional and national support.

1. **The Yamakuni River** in Nakatsu city is a not only a clear example of the river's role in sustaining Nakatsu city community development, but also it identifies the intersecting multilevel complex human-river relationship over the history, besides representing the power of the religious man and their contribution to enhancing the river basin. Moreover, it reflects the sense of responsibility of community members who recognized the cultural and the historical value of the stone bridges and their attempts to negotiate with the government to protect this vital part of the city's history.
2. The river Ecomuseum model could assist in the **Yufu City** revitalization attempts, by encouraging co-management and governance. The museum also has could narrate the Oita River as a livelihood river, which was the heart of the economic growth of the city. The museum could assist in networking the city's three districts and representing the cultural and natural diversity of the city.

On the other hand, more networking on the regional and the national level could have a positive impact on achieving the revitalization plans, such as JECOMs introducing a group of training, workshops, and educational programs that could assist in encouraging volunteers and students to participate in the revitalization activities in cooperation with local and regional universities.

Encouraging the investment of small businesses that adopted responsible and environmental activities is another solution to solve the depopulation obstacles. There

is already one of these promising initiatives BUNGO ONO Tourism Development in Rural Japan, which promotes many recreational based on the river basin.

This kind of networking with regional and national universities will bring experience and new insights to overcome the aging and the depopulation problems and assist to encourage a new generation to participate in the revitalization programs.

6.3 Further Studies

Promoting a water museum is considered a new concept that needs further understanding. However, the community-based museum could have a better chance of achieving these goals by preserving, observing, and monitoring the human relationship in situ. Thus, more studies are needed to find the common value, the opportunities, and the challenges to bring more insights into how the community-based museum could assist in achieving the integral and holistic principles of the river basin governance.

The Ecomuseum model has a good potential to contribute to Egypt's vision 2030 agenda; The museum can introduce a mechanism for community development, promoting water governance and partnership, and engaging local communities, besides promoting the cultural identity while protecting and safeguarding environmental resources as well as controlling the urbanization processes under the government authorities. These principles can assist in advancing community-based river tourism to achieve economic growth and community development. Based on UNTWO guidelines about tourism and confirm the following statement. "Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities."

Moreover, the river Ecomuseum could contribute to managing and preserving the biological and cultural diversity of the Nile River, as one of the longest rivers and the land of one of the oldest civilizations in the world. Egypt's riverscape can be considered one of the most inhabited areas on earth- a vital cultural and ecological area with thousands of years of tangible and intangible ecological and cultural heritage with a modern and vibrant population ready to develop and preserve their Nile.

From another perspective, Tashibunoshō (田染荘) in Kunisaki Peninsula is another form of a living museum or a landscape museum that represents a unique technique in water resource management and irrigation system, for that Tashibunoshō (田染荘) was designated as a heritage landscape in 2013. However, it is a governmental Ecomuseum that faces many issues regarding partnership with local communities, enabling the local communities, and sustaining an economic profit from promoting rural tourism which consider a

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2 Appendix

1- Ecomuseums Definition

In 1978, the International Committee of Natural History Museums defined the Ecomuseum (Magliacani, 2015, P.22) as *"an institution which manages, studies, and exploits—by scientific, educational, and cultural means the entire heritage of a given community, including the whole natural environment and cultural milieu."* Thus, the Ecomuseum is a vehicle for public participation in community planning and development. To this end, the Ecomuseum uses all the means and methods at its disposal to allow the public to comprehend, analyze, criticize, and master (liberally and responsibly) the problems that it faces. Essentially, the Ecomuseum uses the language of artifacts, the reality of everyday life, and concrete situations to achieve desired changes”

It is a mirror in which the local population views itself to discover its image, in which it seeks an explanation of the territory to which it is attached and of the populations that have preceded it, seen either as circumscribed in time or in terms of the continuity of generations. It is a mirror that the local population holds up to its visitors so that it may be better understood and so that its industry, customs, and identity may command respect. It is an expression of man and nature. It situates man in his natural environment. It portrays nature in its wildness, but also as adapted by traditional and industrial society in their image. Rivière definition,1980”

L'écomusée est une institution culturelle Assurant, d'une manière Permanente, sur un territoire donné, avec la participation de la population, les fonctions de recherche, conservation, présentation, mise en valeur d'un ensemble de biens naturels et culturels, représentatifs d'un milieu et des modes de vie qui s'y succèdent. (*"Pour un débat ouvert et partagé - OpenEdition"*) *The French charter of Ecomuseum P.84*

"An instrument conceived, fashioned, and operated jointly by a public authority, and its local population. The public authority's involvement is through the experts, facilities, and resources it provides; the local population's involvement depends on its aspirations, knowledge, and individual approach. It is a mirror in which the local population views itself to discover its image, in which it seeks an explanation of the territory to which it is attached and of the populations which have preceded it, seen either as circumscribed in time or terms of the continuity of generations. It is a mirror that the local population holds up to its visitors so that it may be better understood and so that its industry, customs, and identity may command respect. It is an expression of man and nature. It situates man in his natural environment. It portrays nature in its wilderness, but also as adapted by traditional and industrial society in their image. ("World Heritage Cultural Landscapes | Landscape - Scribd") It is an expression of time, when the explanations it offers reach back before the appearance of man, ascend the course of the prehistoric and historical times in which he lived and arrive finally at man's present. It also offers a vista of the future, while having no pretensions to decision-making, its function being rather to inform and critically analyze. It is an interpretation of space – of special places in which to stop and stroll. It is a laboratory, insofar as it contributes to the study of the past and present of the population concerned and of its total environment and promotes the training of specialists in these fields, in cooperation with outside research bodies. It is a conservation center, insofar as it helps to preserve and develop the natural and cultural heritage of the population. It is a school, insofar as it involves the population in its work of study and protection and encourages it to have a clearer grasp of its future. This laboratory, conservation center, and school are based on common principles. "The culture is the name of which they exist is to be understood in its broadest sense, and they are concerned to foster awareness of its dignity and artistic manifestations, from whatever stratum of the population they derive. (Its diversity is limitless, and so greatly do its elements vary from one specimen to another. This triad is not self-enclosed; it gives, and it receives. "Rivière definition, 1985" (quoted by Davis, 2011, p.79)

Magliacani Classification and Corsane 21 Indicators

Participation In the Community	<ol style="list-style-type: none">1- An Ecomuseum is an originator and sustainability supporter of local communities.2- Allowing democratic public participation in decision-making processes.3- Stimulate joint ownership and management-double inputs systems from local communities, academic advisors, local businesses, local authorities, and government structures4- Placing a high priority on heritage management methods rather than heritage items for consumption.5- Promote collaboration with local entrepreneurs, artists, authors, actors, and musicians.6- Using a significant active volunteer program.7- Emphasizing local identity and "sense of place."
Museum Heritage	<ol style="list-style-type: none">8- Encompassing a "geographical" territory, which can be determined by different shared characteristics.9- Covering both geographical and temporal components, with a chronological focus rather than just freezing objects in time.10- Taking the form of a "fragmented museum" that is made up of a network with a central hub and antennas from numerous buildings and sites.11- Promotes the preservation, conservation, and safeguarding of heritage resources in situ.12- Gives equal attention to immovable and movable tangible material culture, and intangible heritage resources.
Environmental Development	<ol style="list-style-type: none">13- Stimulates sustainable development and the responsible use of resources.14- Allow for change and development for a better future.15- Encourages an ongoing program of documentation of past and present life and people's interaction with all environmental factors,16- Promote research at several levels-from local "specialists" to academics.

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- 17- Encourage multidisciplinary and interdisciplinarity in research.
 - 18- Encourage a holistic approach to the interpretation of culture/nature relationships.
 - 19- Attempt to illustrate the connections between technology and individuals, nature, and culture, and past and present.
 - 20- Provide for an intersection between heritage and responsible tourism.
 - 21- Bring benefits to local communities, for example, a sense of pride, regeneration, and/or economic income.
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