

# Enhancing Inter-Institutional Conservation Area Governance through Governance Networks: A Case Study of CMC Tiga Warna Ecotourism in Clungup Mangrove Conservation

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**Abstract** This study aims to review the root problems of inter-institutional conservation area governance using the theory of Governance Networks. This research seeks to gain an in-depth understanding of the political will of community groups in managing conservation areas collectively, institutional relations, and conservation legal systems and policies. This research uses a qualitative approach with the System Thinking method to explore the problem of developing the Governance Networks model in the context of conservation area governance which is then developed into ecotourism. The Soft System Methodology (SSM) method of System Thinking was used in this study to document the problems of cooperation between stakeholders in the management of CMC Tiga Warna ecotourism (Rich Picture) and formulate a conceptual model of cooperation in conservation area management (Conceptual Model), where all these processes follow 7 stages of SSM. Based on the results to be produced in this study and the methodological encouragement of the 7 stages of SSM, initial research was carried out to explore problems and compile a solution model (TKT 5) according to stages 1-7 SSM proposed in this research proposal. This research uses 3 stages of data collection techniques, namely observation, interviews and documentation. The output resulting from this research includes international journal publications and models to facilitate networking between

CMC Tiga Warna management institutions with the institutions involved, as well as with tourists. The research location covers the entire Clungup Mangrove Conservation area located in Tambakrejo Village, Sumbermanjing Wetan District, Malang Regency.

**Keywords** Governance Networks, Local Governance, System Thinking, Ecotourism

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## 1. Introduction

The social problems faced by governments, institutions, and civil society have grown increasingly complex [1-3]. Limited resources and problem-solving result in an interaction between actors to solve these complex problems [4,5]. As a result, governance networks emerge [6,7]. Governance networks can be defined as stable patterns of social relations between mutually dependent actors, which cluster around a policy problem, a policy and a set of resources and which emerge, are sustained, and are changed through a series of interactions [7].

Governance networks are helpful because they can strengthen interactions between governments, institutions, civil society, and other actors in making decisions,

including conservation actions [8-10]. Conservation is environmental protection which is a fundamental part of sustainability [11,12]. Currently, it is not only the government that has the right to make decisions on conservation regulations [13,14]. However, it also requires the roles and responsibilities of regional and local governments and civil society [15]. Based on mangrove conservation and management policies, one of Indonesia's conservation and protected forests is a mangrove forest [16].

Mangrove forests provide essential benefits to ecosystems, such as protection of coastlines from erosion and tsunami, food for fish, water quality maintenance, and ecotourism landscapes [17,18]. The results of other studies mention the critical role of mangroves in absorbing and storing carbon [19-21]. Mangroves are also one of the wealthiest biological and genetic diversity in the world, about 90% of marine organisms spend their lives here, and 80% of the world's fish catch depends on mangroves [22]. In other words, the decline in mangroves can also impact the economy of coastal communities because most of the population's income comes from marine resources and the fishing industry [23-25].

Generally, tourism is one of the essential factors supporting environmental conservation, including mangrove forests in the tropics [26]. In Indonesia, mangroves can grow naturally and abundantly, and their use as a tourism place has been widely practiced [26-28]. Including in East Java, Indonesia, some of the mangrove ecosystems visited by many tourists in East Java are Mangrove Ecotourism Wonorejo (Surabaya City), Cengkong (Trenggalek Regency), Clungup (Malang Regency), and Bedul (Banyuwangi Regency). Many studies have demonstrated the economic benefits of mangrove tourism, primarily based on the value of the environmental services provided [29,30]. However, only a few studies study the collaboration of actors in mangrove forest management, even though without this evaluation, it will only lead to the exploitation of the environmental services provided by mangrove forests.

With the characteristics and management of tourism, it can help the utilization of mangrove forest biodiversity. In addition, the role of the local community around can also increase mangrove conservation efforts [31]. The involvement of all actors in the protection of mangrove-based tourism plays a role in increasing active community support and area protection for mangrove forest conservation [32,33]. Hakim et al. [31] studied mangrove conservation strategies and the concept of sustainable mangrove-based tourism development in East Java, showing that knowledge is needed about the characteristics and determination of programs that can support mangrove conservation programs. In other words, the role of the governance network is required to make policies and programs for mangrove conservation.

Environmental problems have given rise to a sense of urgency in the relationship between ecology and public

policy [34]. The utilization of mangrove forest ecosystems must also consider various aspects such as economic, environmental, and social [35,36]. The CMC Tiga Warna area is a conservation area later developed into an ecotourism destination called Clungup Mangrove Conservation. CMC Tiga Warna has various stakeholders involved in mangrove conservation efforts, including the Bhakti Alam Sendang Biru Foundation as the manager, Tourism Awareness Group (Pokdarwis), Perhutani, Forest Farmers Group, Community Monitoring Group, and Village Owned Enterprises (BUMDes).

One of the leading causes of death and loss of mangroves is the direct and indirect impacts of human activities [37-42]. Mangrove forests provide valuable goods and services in economic and environmental terms [30,44,43]. Therefore, protecting mangrove conservation requires government, businesses, and civil society cooperation. As a result, government networks emerged. In 2013, damage to 195 Ha of 344 Ha of mangroves occurred in Malang Regency. The worst damage occurred in the CMC Tiga Warna area. Malang Regency is a complete tropical coastal ecosystem [45]. This study aims to study inter-agency conservation area governance using the theory of Governance Networks in Tiga Warna CMS. The results provide a basic theoretical model of cooperation between government agencies in village areas, development of regional governance, and improvement of tourism services. In addition, the output of this research is a digital model of ecotourism governance that will support efforts to utilize conservation areas.

## 2. Materials and Methods

### 2.1. Study Area

Tambakrejo is a village in Sumbermanjing Wetan District. This village has a mangrove forest conservation area. Furthermore, this location is used for ecotourism, combining education, conservation, and recreation with the CMC Tiga Warna (Clungup Mangrove Conservation) destination. CMC Tiga Warna is one of the environmental conservation policy efforts carried out by social institutions and outreach with various stakeholders, which is then used as an ecotourism destination.

### 2.2. Data Collection

Data collection was conducted by conducting field observations, interviews, documentation, and Focus Group discussions (FGD). The collected data were analyzed using Soft System Methodology (SSM). Interviews in this study were conducted by asking questions directly to informants based on a list of questions (interview guide). Informants interviewed in this study were Bhakti Alam Sendang Biru Foundation, Tambakrejo Village Government, Village Owned Enterprises (BUMDesa), Tourism Awareness

Groups (POKDARWIS), Supervisory Community Group (*Kelompok Masyarakat Pengawas* or POKMASWAS), Perhutani, Institutions, Forest Village Community Organization (*Lembaga Masyarakat Desa Hutan* or LMDH), Malang Regency Tourism and Culture Office, Malang Regency Regional Fisheries Service, and Malang Regency Environmental Service.

### 2.3. Analysis Method

A system thinking approach with qualitative analysis, known as the Soft System Methodology (SSM), is used in this research. SSM is an effective and easy method [46]. This method was chosen because the study aims to create a digital policy model in the governance of conservation areas in the CMC Tiga Warna. Several studies also use this method, in universities [47,48], Pharmacy [49], evaluation of safety performance [50], tourism [51,52], and in sugar industry [53].

The SSM approach has proven useful for solving various problems, especially the problem of project-oriented public organizations [54-56]. SSM originally consisted of seven stages [53]. The first stage, problem situation considered problematic, at this stage, researchers map the object of study through observation, interviews, and scientific literature studies of various stakeholders involved [53,60]. The second stage, problem situation expressed, researchers describe problems that occur through rich pictures using the theory of network governance as a theoretical basis.

This stage allows the illustration of complex interactions of stakeholders involved in conservation in the CMC Tiga Warna area [57]. Stakeholders can also see the benefits of a rich picture, which allows problem identification, and improves the problem situation. The third stage, root definition of relevant purposeful activity system. At this stage, researchers analyze problems with the CATWOE model (customer, actors, transformation, word view, owner, environmental). Root definition is processed based on all information and data collected in the previous stage, aiming to find the root of the problem [58]. Researchers use CATWOE to describe and outline the interests of the stakeholders involved [58].

In the fourth stage, the system conceptual model is described in the root definition that will be built. This conceptual model is an explanation of the activities that must be carried out by actors and institutions to bring about changed [58,60]. The fifth stage, the comparison of the models and the real world. This stage combines the results of rich pictures and FGD activities [57,58].

The sixth stage, change systematically desirable, culturally feasible. At this stage, researchers analyze the results of the FGD. Then the seventh stage, action to improve the situation, which is a follow-up effort to the results of the conceptual and empirical models that have been created [53]. This study only went so far as to analyze the sixth stage of SSM, producing digital model recommendations as an effort to facilitate collaborative

conservation governance for the institutions involved.

## 3. Results and Discussion

### 3.1. Institutional Management of CMC Tiga Warna Area Governance

The CMC Tiga Warna area consists of forest areas that are used as mangrove conservation areas and coastal areas that are used for tourism. In the governance of the CMC Tiga Warna ecotourism area, there is a built-up power system. Disputes between the founders of the foundation and external groups have not been able to maximize the tourism system, and the management is fully carried out by community groups. Village governments are not yet present in coastal governance efforts, even though collaboration between actors plays an important role in governance networks [3,7,51].

Bakti Alam Sendang Biru Foundation is a community institution that has officially obtained a Social Forestry Forest Utilization Permit (IPHPS) for the CMC Tiga Warna area from the Minister of Environment and Forestry. This is based on the Regulation of the Minister of Environment and Forestry Number 39 / MENLHK / SETJEN / KUM.1 / 6/2017 concerning Social Forestry in the Perum Perhutani Working Area (MENLHK, 2017). This regulation aims to provide IPHPS to the community to utilize forest areas in the Perum Perhutani work area to improve community welfare by paying attention to forest sustainability. Meanwhile, the tourism permit was obtained by the Bakti Alam Sendang Biru Foundation from the Ministry of Tourism and Creative Economy.

Tourism is one of the potential sectors, due to its contribution to economic development [26,51]. The development of the CMC Tiga Warna ecotourism is shown to improve the welfare of the people of the tourism industry. There are several challenges that are also strategic issues faced by the Bhakti Alam Sendangbiru Foundation, such as not optimal efforts to develop and manage tourist objects and attractions, limited human resources, development of tourist destinations has not been combined, not optimal participation of the private sector and the community in tourism development, and tourism promotion has not been carried out optimally.

Sustainable tourism development can be achieved through the cooperation of all actors, the development of locally oriented codes of ethics, and the participation of local governments [51]. To overcome these challenges, the author provides several recommendations for strategies that can be taken for the development of the CMC Tiga Warna tour. First, the rehabilitation of mangroves and coral reefs by increasing the conservation budget. Second, capacity building of local communities [15]. Third, investment strategies in tourism development through promotion on social media, holding tour packages in East

Java, and fourth strategy for developing facilities and infrastructure.

### 3.2. Rich Picture from Problem

The second stage of the SSM methodology is to translate unstructured problem situations into an interweaving of information in the form of the relationship of images with the term rich picture [57,59]. Rich picture in stages in the CMC Tiga Warna area is divided into 3 levels, namely macro, meso and micro. At the macro level, there are the Ministry of Environment and Forestry (KLHK), Ministry of Tourism and Creative Economy (Kemenparekraf), Ministry of Marine Affairs and Fisheries (KKP), and Perum Perhutani. At the meso level, there is the Malang district government, which then oversees the Marine and Fisheries Service (*Dinas Kelautan dan Perikanan* or DKP), Environment Agency (*Dinas Lingkungan Hidup* or DLH), the Culture and Tourism Service (Disbudpar). While at the micro level, there are POKMASWAS, POKDARWIS, Forest Farmer Group (*Kelompok Tani Hutan* or KTH) and LMDH. Multilevel governance in governance then builds a system in the development of coastal areas in CMC Tiga Warna, Tambakrejo Village, Sumbermanjing Wetan District.

In Tambak Rejo Village, there are three groups of beach managers; First, Sendiki Beach and Tamban Beach, which LMDH manages, are different. Meanwhile, the Tiga Warna Beach, Gatra, and Clungup Beach groups are governed by the Bhakti Alam Sendang Biru Foundation. The second and third groups of beaches are for tourism and mangrove conservation. GPMC (Gunung Piting Mangrove Conservation) manages conservation at Tamban Beach, while the Bhakti Alam Sendang Biru Foundation manages Conservation at Tiga Warna Beach, Gatra, and Clungup shows the organizational structure of the CMC Tiga Warna regional governance.

Figure 1 shows the collaboration between actors managing the interdependent CMC Tiga Warna area. There is a vertical and horizontal relationship. Vertically it is under the coordination of the KLHK and the KEMENPREKRAF, while at the regional level, it is under

the coordination of the tourism and culture office, and the marine and fisheries service. Horizontally, it has a strong relationship with similar species such as BSTC which carries the mission of turtle conservation and the NGO GPBC institution which has a similar mission to CMC Tiga Warna.

Village communities are the main managers of the CMC Tiga Warna area, therefore increasing human resources in this region is important. In fact, the village government has not played a role in the management of the CMC Tiga Warna. On the contrary, the village government actually took advantage through the tax levy in the tourist ticket levy managed by the Alam Sendang Biru bhakti Foundation and other similar institutions in tambakrejo village.

In 2013, 195 Ha of 344 Ha of mangrove occurred in Malang Regency. The worst damage occurred in the CMC Tiga Warna area. The Bhakti Alam Sendang Biru Foundation is an independent non-governmental organization responsible for managing and reporting to the Ministry of Environment and Forestry (KLHK). The Bakti Alam Sendang Biru Foundation provides direct transfer funds to regions and villages, 10% to regions, and 20% to villages. The second and third groups of beaches are for tourism and mangrove conservation. In addition to tourism, the second and third beach groups are also mangrove conservation areas. GPMC (Gunung Piting Mangrove Conservation) manages conservation at Add Beach, while Bhakti Alam Sendang Biru Foundation manages Conservation at Tiga Warna Beach, Gatra, and Clungup.

This study shows that many actors are involved in tourism management in the CMC Tiga Warna, both the Government (KLHK and KEMENPAREKRAF), and the Village (Bakti Alam Sendang Biru Foundation). In other words, to maintain the sustainability of conservation areas, it is necessary to collaborate with all actors and the governance network plays an important role in the conservation management of the CMC Tiga Warna. Klijn et al. (2010) shows that networks where increasingly intensive strategies are used show better performance compared to networks where fewer managerial strategies are used.

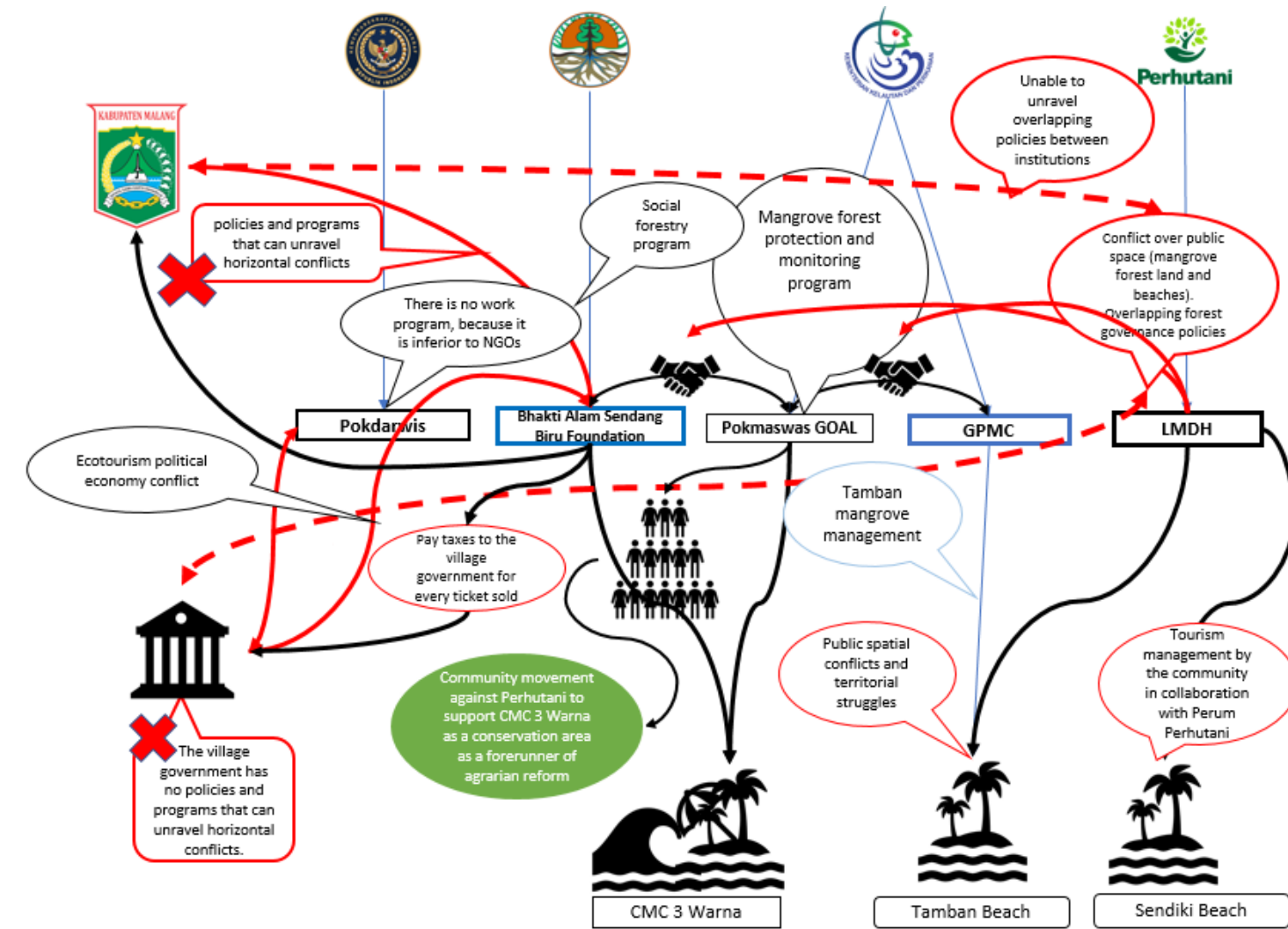


Figure 1. Conceptual Model Based on Rich Picture

### 3.3. Root Definition and Conceptual Models

The determination of the root definition in building a conceptual model is based on a rich picture that represents the problem, theoretical review literature, and thinking logic. Thus, the system chosen is the most relevant to the problem interest and research interest. Based on the problems that have been obtained from the real world, the CATWOE model can be formed as in Table 1 below.

**Table 1.** Root Definition Problem Interest

Question 1	RD 1
How is the interaction between actors in the governance of the conservation area currently held by the Bhakti Alam Sendang Biru Foundation?	The interaction built by the Bhakti Alam Sendang Biru Foundation in the village sector shows a model of cooperation with several similar institutions such as GPMC. GPMC is a social institution that has the right to manage mangrove forests around the sendiki coast. In addition, it also has a relationship with the village government as evidenced by the provision of tourist ticket income as a form of Original Village Income (PAD). At the regional level, Bhakti Alam Sendang Biru Foundation as the manager of CMC Tiga Warna builds relationships by depositing taxes to the regional revenue office.
Question 2	RD 2
What is the digital model of ecotourism governance that will support efforts to utilize conservation areas?	The use of digital media built by the Bhakti Alam Sendang Biru Foundation is still not optimal. The use of digital media built by the Bhakti Alam Sendang Biru Foundation is still not optimal. In booking entrance tickets in the CMC Tiga Warna area, the manager applies manual booking via Whatsapp media.

In the development of the question ban model is formed as in Table 2

**Table 2.** CATWOE analysis of human activity systems

Customers	Bhakti alam sendang biru foundation
Actors	<ol style="list-style-type: none"> <li>1. Gunung Piting Mangrove Conservation (GPMC)</li> <li>2. Community Supervisory Group (POKMASWAS)</li> <li>3. Forest Farmers Group (KTH)</li> <li>4. Forest Village Community Organisation (LMDH)</li> <li>5. Village government</li> <li>6. Local government</li> <li>7. Ministry of Environment and Forestry (MoEF)</li> <li>8. Ministry of Marine Affairs and Fisheries</li> </ol>
Transformation	The development of ecotourism areas and mangrove forest governance pays attention to ecological, empowerment and economic values. Ecological values are the most basic foundation for producing economic activities through community empowerment
Word View	The implementation of network governance is able to build a collaborative performance model
Owner	Bhakti alam sendang biru foundation
Environmental	The CMC Tiga Warna area is a conservation forest that has a zoning division, so the development of tourism programs cannot run progressively because it must pay attention to social ecology.

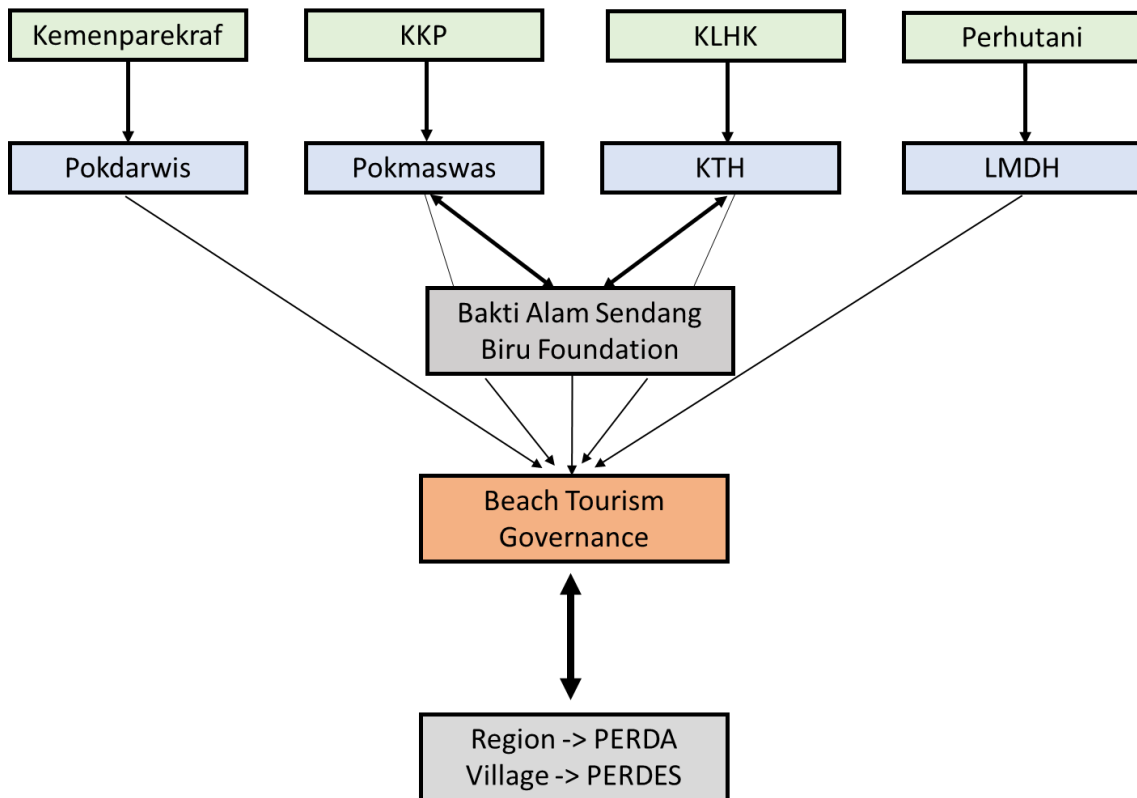
The conceptual model aims to formulate solutions institutionally that have an impact on bureaucracy [60]. In detail, the identification of activities that lead to the transformation of real-world implementation has the problem of overlapping policies vertically and horizontally. Then there are three vertical and horizontal problems in the development of the CMC Tiga Warna area. First, vertical conflicts are characterized by overlapping mangrove area development policies.

Second, horizontal conflicts in the development of the CMC Tiga Warna area are marked by friction with the Lembaga Masyarakat Desa Hutan (LMDH). This research shows that the collaboration between the Bhakti Alam Sendang Biru Foundation and GPMC strongly supports the conservation and utilization of mangrove forests in Tambakrejo village. Third, in dealing with these dynamics, the village government has not been present to make village strata regulations focused on mangrove forest governance and tourism.

**3.4. Conceptual Model Research Interest**

This research also develops a conceptual model of research interest, for problem solving. In research interest, relevant root definitions, theoretical understanding, interview data, and thinking logic are built only on systems that are currently running. The model in construction describes the reality that occurs without intervening both theoretically and logically thinking to find solutions to problems, but rather puts forward unique findings as the development of knowledge constructed into a model [57,58].

Another research interest in this study aims to identify how the governance networks model built by CMC Tiga Warna manages mangrove forest areas through the concept of ecotourism. Furthermore, this study will also build a digital concept that is used to facilitate the implementation of governance networks as shown in the following figure 2. As a goal of selection accuracy, it needs to be combined with CATWOE analysis [59,60].



**Figure 2.** Conceptual Model of Research Interest

## 4. Conclusions

The ecotourism development of Clungup Mangrove Conservation (CMC) is shown to improve the welfare of the community from the tourism industry. The following are challenges that are also strategic issues faced by Bhakti Alam Sendang Biru Foundation as the manager of the CMC area; (1) Not optimal efforts to develop and manage tourist objects and attractions, (2) Limited human resources, (3) Development of tourist destinations has not been integrated, (4) Not optimal participation of the private sector and the community in tourism development, (5) Tourism promotion has not been carried out optimally. The service sector that has the potential to increase its contribution to GDP is the tourism sector related to the tourism industry, such as hotels, restaurants, and handicraft industries. If the tourism potential can be developed properly, then other industries will also develop. A development will mean better if it is sustainable (sustainability).

Governance networks are thought to generate benefits by promoting interactions between organizations, institutions, and other actors where conservation decisions are made and action is taken. The institutional analysis built on CMC Tiga Warna ecotourism governance is vertically and horizontally. In the vertical network, CMC Tiga Warna are under the direct coordination of the Ministry of Environment and Forestry under the Director General of Social Forestry. On the other hand, Bhakti Alam Sendang Biru Foundation also has a vertical relationship with the Ministry of Marine Affairs and Fisheries through the Pokmaswas program. The two ministries play an important role in the establishment of ecotourism governance collaboration in the coastal area of Tambakrejo Village, Sumbermanjing Wetan District, Malang Regency. Furthermore, vertical relations in the regional strata are tourism and culture offices, marine and fisheries offices. The service has the most central role as a representative of the ministerial institution.

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