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The pattern of Water Resources Resilience in Coastal Areas Centered on Balance in Society 5.0

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Introduction

The era of society 5.0 is the starting point for a paradigm shift in thinking and moving to take references Fukuyama, 2018 that defines the journey of society from the beginning, namely during the society 1.0 period where the community lived their life by hunting and living well together with nature. Developed into society 2.0, namely when the community lived the way of farming, here the agricultural period was formed, the formation of associations and the formation of integrated development carried out by the nation. Developing in the era of society 3.0, society began to rise in the industry, with work support equipment. The subsequent development of society 4.0 industrial society began to use data-based computer tools and technology to complete work, developed during the era of society 5.0 where the potential of technology, human degradation by robotics, and quality data became information in solving problems, which in turn creates a society that is centered on people in decision-making, to support economic and social development, so that people can enjoy a high quality of life that is fully active and comfortable and the beach area [1].

Mavrodieva, 2020 researched disasters, namely disaster handling that must be faced by the Japanese government where disasters continue to increase, have an impact on social and economic risks, together with private parties in the sense of non-governmental society in implementing the Society 5.0 concept by utilizing technological innovations owned by private parties, to achieve goals development. His research aims to get the concept of causes of disasters, creating policies on climate change that are integrated into sustainable strategies [2]. Likewise, what happens in Indonesia is known as the Maritime Continent where there are coastal resources that have problems that

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must be handled in an integrated manner; based on previous research, it is said that the rapid development of cities causes life to shift towards the coast, where the area often occurs erosion, abrasion, changes in ecology, in the economic sector, in the social sector accompanied by an increase in population, this has made the need for clean water to increase [3].

Intergovernmental Panel on Climate Change (IPCC) reports that the availability of fresh water in Asia, especially in significant watersheds, is projected to decline due to climate change and population growth and increased demand due to higher living standards, adversely affecting more than one billion people by 2050. Coastal areas, especially in densely populated delta areas, will be at the most significant risk due to increased flooding from the sea and rivers. Coastal areas also face the problem of seawater intrusion into the land. Freshwater supplies are running low because of the large amount of seawater that enters the ground. Seawater that pushes into the land is a problem for coastal communities dependent on their raw water from rivers for their daily needs, industry, fisheries, and agriculture. Even during the rainy season, water sources' quality decreases due to the abundance of water, but the water produced is milky white with a high content of lime and sediment. In the dry season, reduced river run-off affects reservoirs, which in turn has an impact on reduced groundwater supply. An increase in the evaporation rate will affect the water supply and contribute to agricultural land salinization[4].

The drought in Spain is a disaster every year due to the management of water resources that are not optimal and not integrated, resulting in an increased risk of drought in Spain. The steps taken in addressing this matter determine the framework through integrated climate change prediction and hydrological planning, determining a sensitivity system for the focus of water resources in the development and basic implementation of early adaptation in water resources management before drought conditions occur. (Challenges for the Integration of Water Resource and Drought-Risk Management in Spain). This study's results make an essential way to adopt that climate change in Indonesia needs to be considered for its impact on water resources management for drought prevention [5].

The decline in the average water quality in Langata Sub-County, Kenya, occurred in water sourced from the Langata sub-district drilled

water source, an area located south of Nairobi, Kenya's capital in East Africa, that indicated that water dryness resulted in a decrease in groundwater in the region. The results showed that the past drought resulted in a decrease in water quality in the present. The quality of groundwater in the area is substantially vulnerable to a decrease in any drought event. It is recommended that groundwater control in the form of monitoring must be carried out continuously to become clean water. This is very important to use as a reference for groundwater control in Sidoharjo Village [6]. The results of research by Nurmalia et al., 2019, show that there is a shortage of clean water in Sidoharjo Village, Tepu District, Gunungkidul Regency Yogyakarta, which takes water from the Bribin SPAM reservoir as a measure to equalize clean water; there has been a physical leak in the piping network and a small water supply resulting in water not flowing to the Village Sidoharjo [7]. Based on a survey that Sidoharjo Village already has clean water infrastructure in the form of reservoirs, intake pump houses, reservoirs, and pipelines, it is planned that water sources from the tapping of the PDAM network under the PAMSIMAS program, but until now, Sidoharjo Village still lacks clean water because the network is cut raw water supply has not met capacity needs.

Sidoharjo Village has 4 (four) beaches, one of which is Sadranan Beach; based on coastal geoecological characteristics that Sadranan Beach has a dangerous potential, namely cliff collapse, it is known that the 12-meter high cliff has occurred due to sea abrasion. This location has a fragile karst rock type when exposed to continuous wave exposure conditions, which causes weathering. Sadranan Beach has 2 (two) springs, which come from a cave adjacent to Slili Beach and the water source comes from drilling, both with fresh and clear conditions [8]. The location of the study is Sidoharjo Village, Tepus District. Geologically, climate and geography can be considered the same as Tepus District. Tepus Subdistrict has rainfall including 1725 mm/ year, the topographic height of 0 to 25 m, geomorphology including thousand mountains, latosol, and red Mediterranean soil types, high gap aquifer hydrogeology with groundwater depth greater than 15 m, groundwater fluctuation types of karst groundwater, land use in the form of moor or gardens and empty land bushes, ecosystems including thousand mountains [9].

Sidoharjo Village is one of the villages located in Tepus District, with a land river system from Bribi where water flows to the southwest to Baron while the other water systems are from Ngobaran to Ngobaran Beach. There are 10 (ten) springs in the area, each of which has a Ngobaran water source debit of180 l / sec, Baron of 8,200 l / sec, Slili for 50 l / sec, and Sundak 200 l / sec [10]. Based on several literature reviews and survey results, this study aims to examine the conditions of Sidoharjo Village based on the problems of water resources on the coasts of Slili, Sadranan, Ngandong, and Sundak beaches, to policies, regulations, and laws currently in force in Indonesia, to produce a solution that is in line with the concept centered on Society 5.0.

Discussion

Sidoharjo Village, with an area of 1,604.29 Ha, has a percentage value of the village area to the district area of 15.29, based on the division of land functions, namely the area of open land in the form of moor and shrubs covering an area of ?? 5.44 Ha, type of dry land 1,428.54 Ha, 141.2 ha of built-up land, 29.02 ha unused. According to the type of irrigation, paddy land is in the form of a rainfed area of 5.44 hectares. The Village of Sidoharjo consists of 11 hamlets, 11 of which are divided into 11 Rukun Warga. The average number of people per hamlet is 581.90 and divided into 51 Neighborhood Associations, a population of 6,401 people, consisting of 1,910 heads of families and an average soul per head. Family of 4 people [11]. It can be concluded that the ratio of land availability in Sidoharjo Village is based on land use to the total area 1604.29 Ha so that the ratio to the total area is 0.339 bushes/moor, 89.045 to dry land, 8.8014 to built-up land, and 1.8089 to unused land, to make it more transparent over the area of Sidoharjo Village as shown in Figure 1.

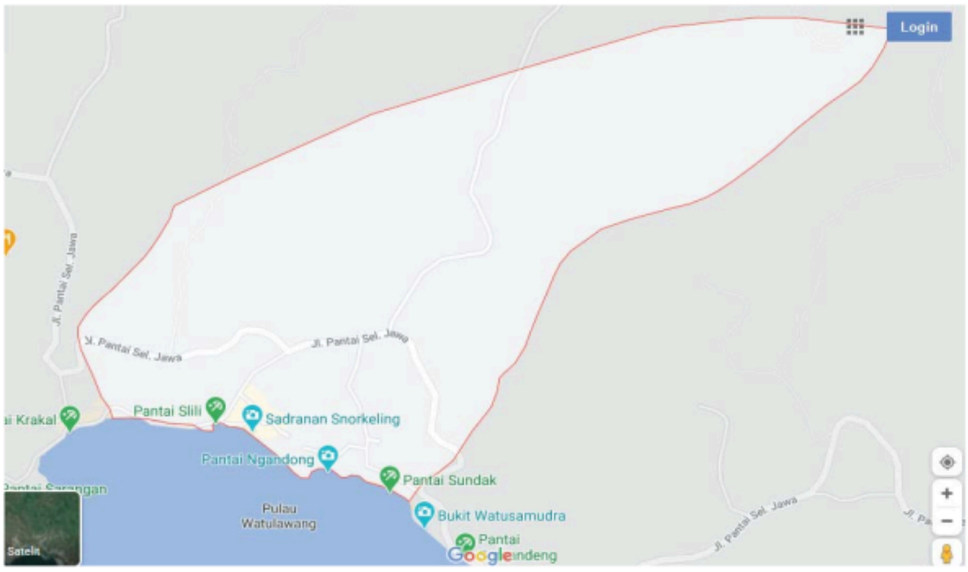

Figure 1. Boundaries of Sidoharjo Village

The tourism potential of Sidoharjo Village should be an independent village in water resistance because it has a source of clean underground water from a cave, predicting groundwater with a discharge of 50 l / sec. Figure 1 shows that in Sidoharjo Village, there are 4 (four) beaches, namely Slili Beach, Sadranan Beach, Ngandong Beach, and Sundak Beach. Based on information on Gunungkidul development, only Sundak Beach, a beach, is managed by the Regional Government [12].

Definition of Water Resources

Many definitions of Water Resources have the same assumption that refers to the Water Resources Law that Water Resources are water, water sources, and water resources contained therein. Water Resources Management is planning, implementing, monitoring, and evaluating the implementation of Water Resources Conservation, Utilization of Water Resources, and Control of Water Damaged Resources. At the next point, the Water Resources Management Pattern is a basic framework in planning, implementing, monitoring, evaluating the activities of Conservation of Water Resources, Utilization of Water Resources, and Control of Damaged Water Resources. Conservation of Water Resources is an effort to maintain the existence and sustainability of the condition, nature, and function of Water Resources so that they

are always available in sufficient quantity and quality to meet the needs of humans and other living creatures, both now and in the future [13]

Method of Compilation

This paper is compiled with a qualitative method aimed at producing a study in the form of descriptive data, which is a literature study, by tracing data and related information using reference books, articles, journals, literature sourced from online libraries, other people's research results, and good seminar results. National and international.

The qualitative method is then carried out by descriptive analysis, which describes a condition clearly and is easy to understand, objective, analytical, and critical. Regarding the problem of clean water in the location used, literature data that supports this phenomenon then reviewed;

a. Information for the Development of Gunung Kidul 2020
b. Constitution Number 1 of 2014 Concerning Management of Coastal Areas and Small Islands,
c. Presidential Regulation of the Republic of Indonesia Number 59 of 2017 concerning the Implementation of Achieving the Sustainable Development Goals,
d. Guidelines for the Preparation of the Sustainable Development Goals (SDGs) Action Plan 2017,
e. Water Resources Law Number I7 of 2019,
f. Government regulations Number 32 of 2019 About the Marine Spatial Plan,
g. Presidential Regulation of the Republic of Indonesia Number 18 of 2020 National Medium-Term Development Plan 2020-2024.

Based on the laws and regulations used, only every paragraph or article related to water resources will be taken, especially water resources related to coastal areas. So it can be concluded that this paper aims to analyze the relationship between each rule and legislation with society 0.5. The following is discussion and analysis;X Based on the steps to achieve the development of Gunungkidul Regency, it has set several missions, one of which is the fourth mission, which is to improve adequate infrastructure to drive a strong economy based on regional potential. with the efforts of the Regional Government in developing inter-regional connectivity through improving conditions provision of

basic service infrastructure in the form of clean water, irrigation and even sanitation [12]

1. Based on the steps to achieve the development of Gunungkidul Regency, it has set several missions, one of which is the fourth mission: to improve adequate infrastructure to drive a strong economy based on regional potential. with the efforts of the Regional Government in building inter-regional connectivity by improving the conditions for providing necessary service infrastructure in the form of clean water, irrigation and equitable sanitation [12].

   Analysis of Society 5.0: related to drought conditions that often occur in Sidoharjo Village, infrastructure improvement so that the economy increases, one of which is an increase in water resources, it is known that Sidohrjo Village has water sources that the land is 50lt / sec, that means it must be taken into account the water needs of the population. And non-residents of the current water availability. The availability of this infrastructure directly encourages economic growth as expected. This achievement cannot only rely on the local government. It must still involve the surrounding community and local governments, who work together based on data information to build applications for using big data and the Internet of things (IoT).
2. Constitution Number 1 of 2014 Concerning Management of Coastal Areas and Small Islands, Management of the Coastal Zone and Small Island Pupau is coordinating planning, utilization, supervision and control of coastal resources and small islands carried out by the government and local governments, between sectors, between land and sea ecosystems, and between science and management for improving people's welfare. Continued in Article 26A paragraph 4 Letter b, point c, it is said that fishermen and fish breeders' access to fisheries activities, including access to drinking water or clean water [14]. **Analysis of Society 5.0**: Sidoharjo Village is included in the Coastal area which is currently experiencing a lack of water resources; it should be included in the priority agenda of the Regional Government, which then becomes the priority agenda of the Central Government, in implementation there needs to be coordination between the Community, PDAM, District / City Government, Academics. Then the utilization is managed by Karangtaruna in the community structure involving academics for the application of using big data and Internet of things (IoT), supervision is carried

out by Village officials based on a data dashboard and control by the District based on an integrated dashboard, as reports by the District using the dashboard to the Regency / City Government, so that a synergistic performance is formed where policy is centered by the community and for the community. The fulfillment of clean water supports all aspects of tourism, both in services for clean water for residents and non-residents or commercially; this directly spurs the coastal area's economic improvement so that the concept of society 5.0 is realized.

3. Presidential Regulation of the Republic of Indonesia Number 59 of 2017 concerning the Implementation of Achieving the Sustainable Development Goals, Guidelines for the Preparation of the Sustainable Development Goals (SDGs) Action Plan 2017, in Annex VI It said, "The Global Goal is to ensure the availability and sustainable management of clean water and sanitation for all. The Global Goal by 2030 is to achieve universal and equitable access to safe and affordable drinking water for all. The National Goal of RPJMN 2015-2019 in 1.2 is to increase capacity raw water infrastructure to serve households, cities, and industry in 2019 to 118.6 m3 / s (2015: 51.44 m3 / s) and the supply of raw water for 60 islands " [15]. **Analysis of Society 5.0** The next step is the task of the Regional Government to propose to the Central Government that the priority of increasing the capacity of raw water infrastructure in Sidoharjo Village is the main program, managed optimally in cooperation between the community, the local PDAM, and the Regional / City Government. The problem of clean water in Sidoharjo Village should become a global goal of achieving sustainable development goals because it is a 2019 program. The global Goal of development utilizes integrated and comprehensive management to realize the guarantee of raw water or clean water for Sidoharjo Village people, ensuring that the discharge of water from underground water sources is stable 50 l / sec. This sustainability is developing into the sanitation aspect of the area, even though it is a priority for tourism areas, but is slowly being carried out to cover Sidoharjo Village. Realizing the Global target by 2030 in achieving universal and equitable access must go through *big data*. The Internet of things (IoT), a dashboard is formed based on a map of the raw water plan to clean water worthy of being said drinking water by the

community. For the community, the final target of this solution is the independence of the Village in stabilizing clean drinking water.

4. Sources of study The Water Resources Act states that conservation "Water Resources are implemented in springs, rivers, lakes, reservoirs, swamps, groundwater recharge areas, groundwater basins, water catchment areas, nature reserve areas, nature conservation areas, forest areas, and coastal areas. Listed in marine Spatial Planning is the allocation of Marine space in Water Areas into its main function along with directions for its utilization; in one of the paragraphs it is mentioned about Conservation Areas, further clarified in article 31 that Conservation Areas are established to protect the preservation of Marine, Coastal and Small Island ecosystems and maritime cultural customs that in the face of the imbalance between the availability of water which tends to decrease and the need for water that is increasing, water resources need to be managed with due regard to social, environmental and economic functions in harmony to create synergy and integration between regions, between sectors and between generations to meet the needs of the people water" [13]. To facilitate the mapping of water distribution, the road network's potential must be seen, as shown in Figure 2.

Figure 2. Mapping of Road Network Potential

Analysis of Society 5.0 Figure 2 shows that the road network in Sidoharjo Village is sufficient to support the distribution of clean

water, even though the local road network is limited to connecting to areas with tourism potential, but instead as a starting point for economic development in tourist sites to support the surrounding areas. A step to map the location of raw water must be drawn up to integrate between the existing and the planning. This means that underground clean water sources in the Slili Coast area need to be conserved by the Regional / City Government, together with the local community, academics, private investors if possible in self-help management, then the media as a link for the publication of potential resources owned by Sidoharjo Village, so that it is manifested in society 5.0.

5. Regarding the acquisition of rights, it remains to refer to the limitation of the carrying capacity of natural resources and the carrying capacity of the environment in supporting development is defined as the limit of the capacity of natural resources to support the lives of humans, other living things, and the balance between the two; as well as the ability of the environment to absorb substances, energy and/or other components that enter or are incorporated into it. The carrying capacity of natural resources and the environment's carrying capacity must be considered in every development planning process because it will determine rebuilding sustainability. Several parameters of the carrying capacity of natural resources and the carrying capacity of the environment that need attention include: (a) primary forest cover; (b) forest cover on peatland; (c) critical species habitat; (d) the extent of settlements in coastal areas affected by climate change; (e) disaster-prone areas; (f) water availability; and (g) energy availability [16]. **Analysis of Society 5.0,** based on land use can be taken The conclusion is that the land as a reservoir for rainwater is only 0.339% because 29.02% of the land is not utilized, is of dry type and rocky cliffs. Analysis of natural resources and environmental carrying capacity was carried out on parameters related to water resources based on land use in Sidoharjo Village as follows;

   1) based on primary forest cover in Sidoharjo Village is not available, so efforts must be made jointly and continuously between Karangtarusn, the farming community, supported by funding from the City Government to make land in the form of dry land made terraces so that it can be used as plantations and rainfed to form a large infiltration area.

2) The area of settlement in coastal areas affected by climate change, especially on the coast of Slili Beach, Sadranan Beach, Ngandong Beach, and Sundak Beach, because each residential area is very close to the coast, this must be taken seriously because it will have an impact on the stabilization of underground water sources.

3) Sidoharjo Village is experiencing a lack of clean water availability because the management of available water sources has not been optimal; optimization of availability must involve the local Karangtaruna, *Local water company* (PDAM) because this agency is a government tool that serves the distribution of clean water for the community, so that there will be synergy between the agency and the community, and supported by the Regional / City Government.

5. In Appendix I concerning Water Availability, it is estimated that the damage to forest cover will lead to scarcity of raw water, especially on islands with shallow forest cover such as Java, Bali, and Nusa Tenggara. Raw water scarcity has also begun to occur in several other areas due to global climate change that has hit most parts of Indonesia. Currently, water availability is classified as scarce to critical in most areas of Java and Bali. It is estimated that the area of critical water area will increase from 6 percent (2000) to 9.6 percent (2045), covering southern Sumatra, West Nusa Tenggara, and southern Sulawesi. For water scarcity not to hinder development, the national water-safe area needs to be maintained with an area of at least 175. 5 million ha (93%of Indonesia's total area), while water availability on each island must be maintained above 1,000 m / capita/year. Especially for Java Island, considering the threat of a water crisis is very worrying; the proportion of safe water areas needs to be increased significantly [16][16]. **Analysis of Society 5.0,** Seeing the land's potential in Sidoharjo Village, a karst area, it is necessary to examine it more clearly by mapping. It is more easily presented in Figure 3.

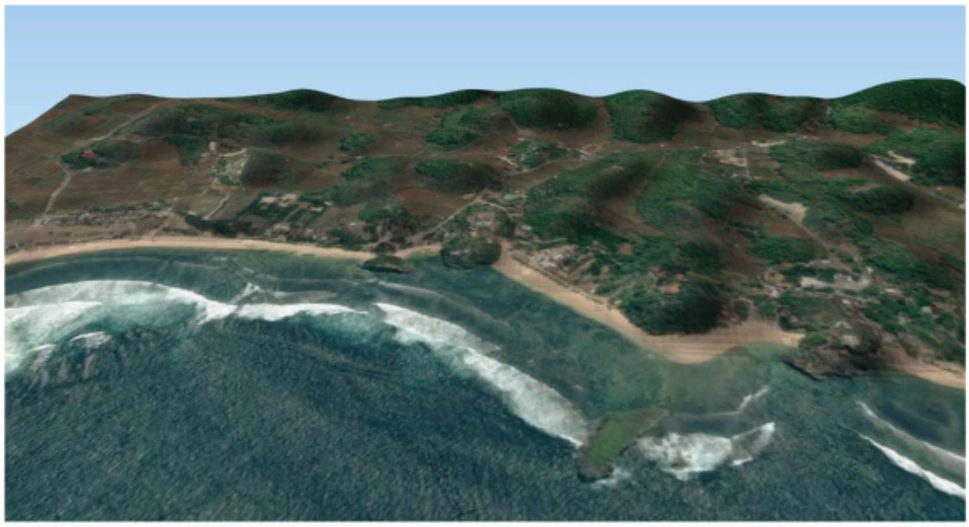

Figure 3. Land Potential in Sidoharjo Village

Based on Figure 3 shows the suitability of the land that Sidoharjo Village with an area of 1,604.29 ha, the percentage of village area to the district area is 15.29, with the division of land functions is the area of open land or paddy fields 5.44, dry land 1,428.54, buildings 141.2 Another 29.02, the results of the analysis of the location did not have forest cover, because it was plantation land, so it was indicated that the scarcity of raw water was increasing. Conditions like the above must be a concern of all systems that are in the concept of the penta helix on water scarcity with endurance (*resilience*) Water Resources, what is meant by a condition which ensures that a location has the availability of clean water which is greater than the need for clean water, both residents and non-residents. What is called the needs of the domestic population is the need for water that is used by the population to fulfill their daily life. Meanwhile, non-resident or non-domestic needs, namely water used to meet commercial area operations and public facilities [3]. Sidoharjo Village must formulate a concept Water Resources resilience which is carried out by the Penta Helix namely Government, Academics, Media, Community, Investors, makes mapping between the needs of non-domestic residents and the needs of domestic residents, to make it easier to map as shown in Figure 4

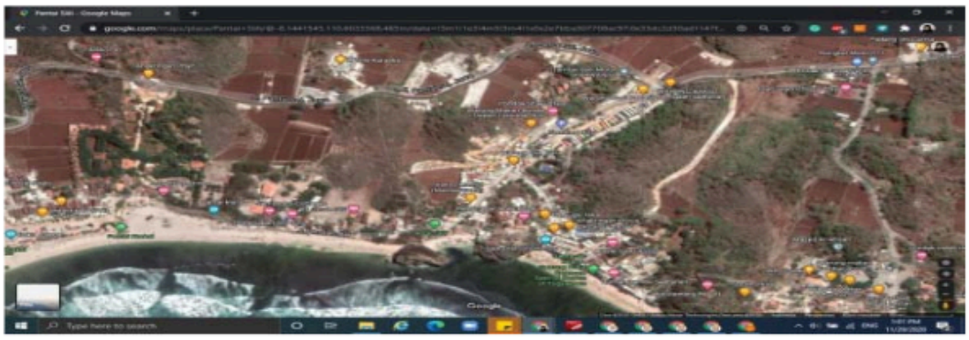

Figure 4. Mapping of Water Requirements

Figure 4 shows that the infrastructure of Sidoharjo Village is centered on the coastal area, namely Slili Beach, Sadranan Beach, Ngandong Beach, and Sundak Beach. The development of tourist areas can increase income from the local community's economic side; However, it causes an increased need for clean water; planning must be made so that increased tourism can support improving clean water infrastructure, resulting in the high synergy between sectors.

7. Increasing the quantity or water security to support economic growth is implemented with the following strategies: (1) strengthening forest areas with protection functions; (2) managing forests sustainably; (3) providing water for agriculture and inland fisheries; (4) providing raw water for priority areas; (5) maintaining, restoring and conserving water resources and their ecosystems including revitalizing lakes and green infrastructure; and (6) developing multipurpose reservoirs. Infrastructure support in water security includes the provision of raw water for priority areas focused on underdeveloped, frontier areas; outer islet; urban; strategic areas (KI, KEK, KSPN); the northern coast of Java Island; and water prone areas. The value of water productivity can be increased through the efficient use of water, especially in agriculture. Infrastructure with high economic value, such as the dam, is expected to provide full service. Besides meeting raw water needs, dams can be used for irrigation, flood reduction, and hydroelectric power generation (PLTA) [17]. **Analysis of Society 5.0**There is several things that need to be done in Sidoharjo Village to improve quantity or water resistance to support economic growth where. It is known that Sidoharjo Village has 4 (four) beaches, which are very potent in supporting the Village economy. Still, only 1 (one) beach has been managed by the Regional Government, namely

Sundak Beach. For a balanced development between existing beaches by the concept of society 5.0, it is necessary to do the following;

1) The dry land area is strived to become a forest or garden so that it is used by and for the community because it is based on land mapping in collaboration with academics, especially Agriculture so that it is suitable for plants that are suitable for the type of soil so that from this it can be used as a rainwater storage area.
2) Provision of water for agriculture with lThe area of paddy fields is 5.44 Ha. In water management, the distribution system is used. It can be done by inputting data to the dashboard so that the schedule for the distribution of irrigation water can be seen from each Android.
3) Maintenance, restoration, and conservation of Water Resources and coastal ecosystems can be

8. **Policy direction in sustainable groundwater and raw water management** accelerates the supply of raw water from protected water sources, increasing integration in drinking water supply, and utilizing technology in raw water management. Strategies to accelerate the supply of raw water from protected water sources include: (a) Additional raw water capacity from dams and other water sources supported by water quality safeguards; (b) Rehabilitation and efficiency improvement of raw water supply infrastructure; and (c) Implementation of groundwater conservation that is integrated with the raw water supply system and is supported by enforcement of groundwater extraction regulations. This strategy needs to be developed simultaneously to improve the Water Treatment Plant (IPA) and water distribution system (PLTA) [18].

To make it easier to analyze is presented in Figure 5.

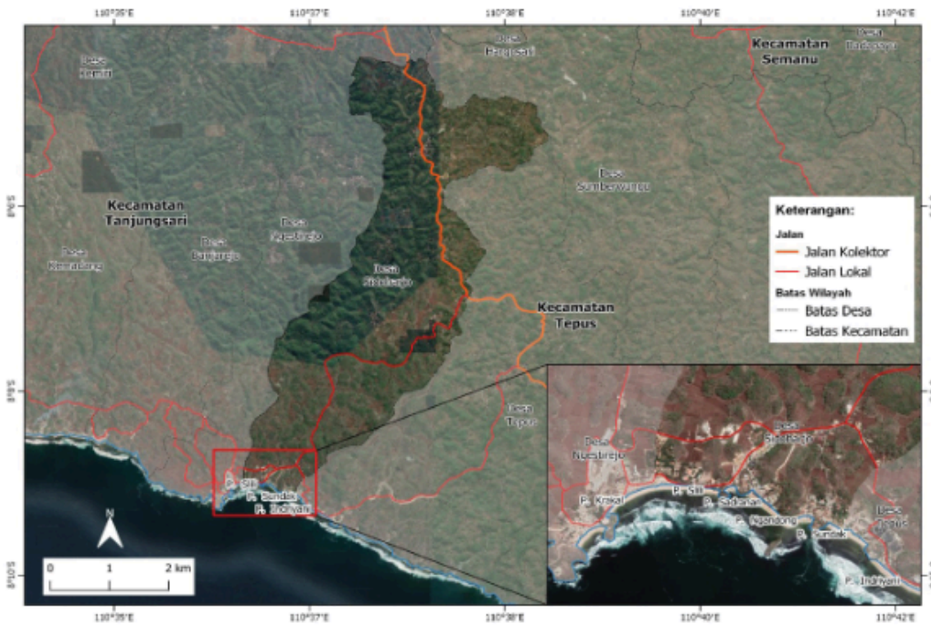

Figure 5. Mapping of Water Distribution based on Road Network

Analysis of Society 5.0, the problem of clean water in Sidoharjo Village in the existing conditions has not been managed optimally, so it is necessary to hold groundwater conservation in underground water sources, one data and one map are needed as shown in Figure 1. It is known based on Figure 5 that the location of Sidoharjo Village is passed immediately held increasing the capacity of raw water together with academics so that the concept of improvement can be made by making simulations based on data, then rehabilitating the clean water distribution system, increasing the efficiency of infrastructure so that raw water capacity increases, all big data-based systems, and Internet of things (IoT). Based on **Policy direction in the management of groundwater and raw water,** There are several targets for 2024, but the only realistic ones for implementing Desa Sidoharjo are:

1) construction of a new irrigation network because the irrigation network in Sidoharjo Village is not yet available. The irrigation network can increase yields of rice fields that were initially rainfed.
2) the area of protected areas, forests as water storage areas,
3) production forest area,
4) increasing the availability of domestic and industrial raw water.

9. The discourse on water resistance results from UN-Water that there are several critical elements in common for water safety. Below is a summary of the core elements needed to achieve and maintain water security, as found in the various published definitions: (1) Access to safe and adequate drinking water at an affordable cost to meet basic needs including sanitation and hygiene, and safeguarding health and welfare; (2) Protection of livelihoods, human rights, and cultural and recreational values; (3) Conservation and protection of ecosystems in water allocation and management systems in order to maintain their ability to deliver and maintain the functions of essential ecosystem services; (4) Water supply for development and socio-economic activities (such as energy, transportation, industry, tourism); (5) Collection and treatment of used water to protect human life and the environment from pollution; (6) Collaborative approaches to transboundary water resources management within and between countries to promote sustainability and cooperation in fresh water; (7) Ability to deal with uncertainties and risks of hazards related to water, such as floods, drought and pollution, among others; (8) Good governance and accountability, as well as paying attention to the interests of all stakeholders through: an appropriate and effective legal regime; transparent, participatory and accountable institutions (9). Well planned, operated, maintained infrastructure and capacity building (6) Collaborative approaches to transboundary water resources management within and between countries to promote sustainability and cooperation in freshwater; (7) Ability to deal with uncertainties and risks of hazards related to water, such as floods, drought, and pollution, among others; (8) Good governance and accountability, as well as paying attention to the interests of all stakeholders through an appropriate and effective legal regime; transparent, participatory and accountable institutions (9). Well planned, operated, maintained infrastructure and capacity building (6) Collaborative approaches to transboundary water resources management within and between countries to promote sustainability and cooperation in freshwater; (7) Ability to deal with uncertainties and risks of hazards related to water, such as floods, drought, and pollution, among others; (8) Good governance and accountability, as well as paying attention to the interests of all stakeholders through an appropriate and effective legal regime; transparent, participatory

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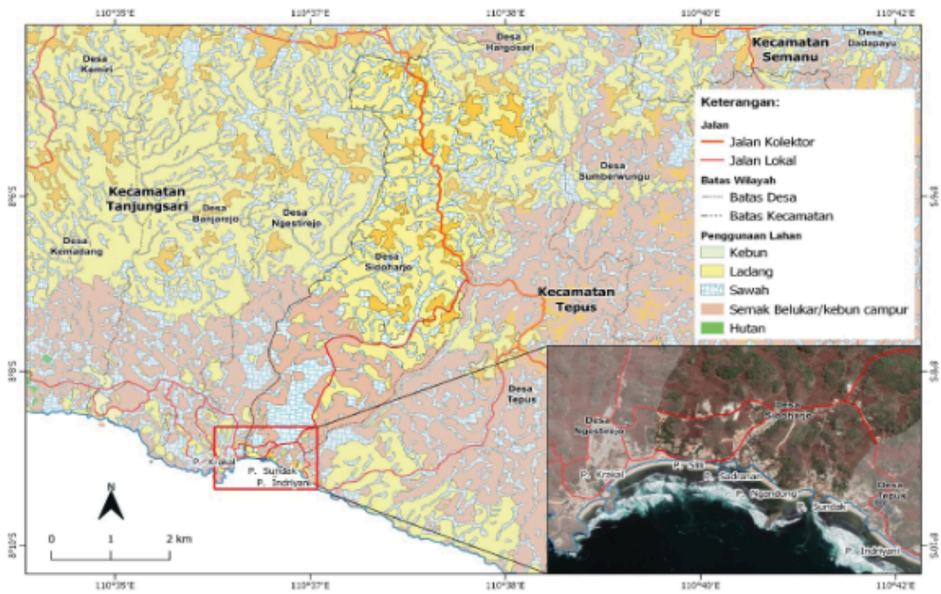

Figure 6. Mapping of Raw Water Resistance

Conclusion

Based on Policy direction in the management of groundwater and raw water, There are several targets for 2024, but the only realistic aspect of the implementation of raw water supply for Desa Sidoharjo is;

1) construction of a new irrigation network because the irrigation network in Sidoharjo Village is not yet available. The irrigation network can increase yields of rice fields that were initially rainfed.
2) area of protected areas, development of areas as water storage areas,
3) the area of a production forest area, apart from being a water storage, can also improve the community's economy,
4) increasing the availability of domestic and industrial raw water as an effort to support the water balance concept.

The best solution to solving the drought problem in Sidoharjo Village is to formulate a water balance concept to measure what factors should be developed. Simultaneously, the variables are used to formulate water balance, namely, components of clean water needs and components of clean water availability. All efforts are made with the synergy of Penta Helix and the realization of a balance between technology and wise policies for and for society to realize the society 5.0 era.

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