

Collaborative Governance to achieve Village SDGs: A Case Study of Irrigation Systems in Krandegan Village

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Abstract

Krandegan Village strives to create a clean and renewable energy village, with one of the major programs is the transition from a diesel powered-irrigation system to a solar powered-irrigation system to achieve Village SDGs. This study aims to elaborate the collaborative governance among stakeholders involved within the village. The stakeholders' identification is based on Penta Helix perspective. The influential parties are the Village Government, the Business World, Universities, Non-Governmental Organizations, and the Mass Media. The role of the Village Government is to be an orchestrator to integrate existing stakeholders to jointly build the Village in a collective and inclusive way. The business world plays a role in providing resource support, especially the material to support the sustainability of the village irrigation system. The University contributes ideas and roles through research approaches and community service carried out by lecturers and students. NGOs function by managing donations from donors, maintaining the sustainability of supporting infrastructure for the village irrigation system, and coordinating the governance process of the irrigation system. Mass Media plays a role in delivering positive news and information related to Village to the public. Furthermore, parties within Krandegan Village can generally put Ratner's collaborative governance action planning into practice.

Keywords: SDGs, Collaborative Governance, Village, Penta Helix

Introduction

In accordance with the Presidential Regulation Number 59 of 2017 concerning the Implementation of the Achievement of Sustainable Development Goals (SDGs), the Government of Indonesia is also committed to achieving Sustainable Development Goals (SDGs), which are a global program stated in the document Transforming Our World: The 2030 Agenda for Sustainable Development. In the SDGs, there are 17 points that become goals that need to be met by member countries of the United Nations, including Indonesia, namely (1) No Poverty, (2) No Hunger, (3) Healthy and Prosperous Life, (4) Quality Education, (5) Gender Equality, (6) Clean Water and Proper Sanitation, (7) Clean and Affordable Energy, (8) Decent Work and Economic Growth; (9) Industry, Innovation, and Infrastructure; (10) Reduced Inequality; (11) Sustainable Cities and Settlements; (12)

Responsible Consumption and Production; (13) Tackling Climate Change; (14) Ocean Ecosystems; (15) Land Ecosystems; (16) Peace, Justice, and Resilient Institutions; and (17) Partnerships to Achieve the Goals. The seventeen goals can be categorized into four pillars: social development (goals 1, 2, 3, 4, and 5); economic development (goals 7, 8, 9, 10, and 17); environmental development (goals 6, 11, 12, 13, 14, and 15); and legal and governance development (goals 16).

Along with the issuance of the Presidential Regulation, the government needs to prepare the SDG Road Map, the SDG National Action Plan, and the SDG Regional Action Plan. With this mandate, SDGs were then directed to lower government levels, including at the village level. In the Regulation of the Minister of Villages, Development of Disadvantaged Regions, and Transmigration of the Republic of Indonesia Number 21 of 2020 concerning General Guidelines for Village Development and Village Community Empowerment, Village SDGs are mentioned and defined as:

"Integrated efforts of village development to realize [a and b] villages without poverty and hunger, [c] healthy and prosperous villages, [d] quality village education, [e] involvement of village women, [f] villages worthy of clean water and sanitation, [g] clean and renewable energy villages, [h] evenly distributed village economic growth, [i] Village infrastructure and innovation as needed, [j] A village without gaps; [k] Safe and comfortable village residential areas; [l] Consumption and production Village that is environmentally conscious; [m] Village as a climate change response; [n] Village that cares for the marine environment; [o] Village that cares for the environment on land; [p] just and peaceful Village; "[q] partnership for village development, [r] dynamic village institutions, and adaptive village culture."

From this definition, it appears that efforts to achieve national SDGs start at the lowest level of government, namely villages. This is because the problems of agriculture, poverty, and public welfare are closely related to rural areas, so achieving the SDGs from the bottom up is the right strategy (Permatasari et al., 2021).

In addition, most villages in Indonesia are based on agriculture, which is more than 73 percent (Arham et al., 2019). Therefore, the success of achieving the SDGs cannot be separated from the success of agricultural sector development. The success of agricultural production is greatly influenced by the availability of production factors or inputs, both in the form of agricultural land, farmer labor, agricultural equipment, seeds, fertilizers, as well as the availability of water resources. The effect and efficiency of using production factors to increase production yields are influenced by the type of irrigation available on the agricultural land (Guritno, 1993).

In relation to irrigation, the Ministry of Agriculture, especially the Directorate General of Agricultural Infrastructure and Facilities, has a pipeline development program, pumping development, irrigation network rehabilitation, and reservoir development with funds from the State Budget (APBN) (Directorate General of Agricultural Infrastructure and Facilities, 2022). In addition to being sourced from the APBN and/or APBD (Local Government Budget), there are also village funds that can be used to build infrastructure, including irrigation, at the village level. The relationship between Village Funds and SDGs is relatively limited because most of the use of Village Funds related to achieving SDG Goal 9 (industry, innovation, and infrastructure) is almost 55%, while the second largest use to achieve SDG Goal 11 (sustainable cities and settlements) does not reach 10% of the Village Fund allocation (Permatasari et al., 2021). This shows the unequal use of village funds for SDG achievement and a greater focus on infrastructure development. Another potential source of funding is corporate CSR (Löwenstein et al., 2015). The choice of funding sources must pay attention to the sustainability of funding and the ability of farmers to pay for irrigation costs. From the various conditions mentioned above, local village actors play an important role in the context of collaborative governance. Collaborative governance is a government management that collaborates not only with the government

but also with stakeholders outside the government or state, and the decision-making process in policy formulation is oriented to consensus and deliberation and aims to improve the quality of public policies to serve the community better (Ansell & Gash, 2007; Astuti et al., 2020; Torfing & Triantafyllou, 2013). Ansell & Gash (2007) explained that collaborative governance consists of four perspectives, which start with the initial conditions, institutional design, leadership, and collaboration process. This perspective is relatively different from that offered by Ratner (2012), where collaborative governance is viewed from the perspective of sequential phases, namely, identification of obstacles and opportunities, debate of strategies to influence each other, and planning collaborative actions.

Some examples of collaborative governance contexts are the role of actors, namely the government, private parties, academics, non-profit organizations, and several other parties, in simultaneous collaboration to realize a smart city (Broccardo et al., 2019); there is also the involvement between public service users, authorities, companies, universities, and several other entities in the establishment of social initiatives in Brussels, Belgium (Temmerman et al., 2021). The involvement of parties in the framework of realizing collaborative governance often also involves stakeholders from several backgrounds who strive together to achieve goals. These stakeholders are comprehensively represented by the Pentahelix concept, which consists of the government, the business world, academics, non-government organizations, and the mass media (Astuti et al., 2020.)

However, in every collaboration, the leadership factor of a leader plays a role in many roles, as in more micro-scale areas of government such as the village government. The leadership of a village head plays a role in building the involvement of actors to carry out their respective roles for the achievement of village goals (Kushandajani & Permana, 2020). Therefore, it can be concluded that collaborative governance is a collaboration mechanism that involves many local parties in a certain area, not limited to the area, dimension, hierarchy, or private and government sectors.

From 74,961 villages in Indonesia, not many villages are aware of the importance of realizing SDGs in the development of their communities and village infrastructure. Krandegan Village, Bayan District, Purworejo Regency is one of the villages that has begun to consistently achieve the Village SDGs, thus this village was selected as a Village SDGs Pilot Project throughout Indonesia (krandeganbayan.id, 2022). Moreover, several achievements have been won by the village both at the regional and national levels. Krandegan Village is a village that is very successful in development because it is one of four villages in Purworejo Regency which is an independent village. In 2021, out of 469 villages in Purworejo Regency, there were no very underdeveloped or underdeveloped villages, 305 developing villages and 160 developed villages, and only four independent villages. Thus, the status of Krandegan Village as an independent village is elite, where this status is only achieved by 0.85 percent of all villages in Purworejo Regency. Furthermore, Krandegan Village was chosen as the 1st Winner of *Kampung Siaga* in Central Java in 2020. *Kampung Siaga Candi* is a form of appreciation in order to prepare the community to have the ability to overcome the impact of the Covid-19 pandemic (Koranjuri.com, 2020) In addition, Krandegan Village also had the opportunity to attend the Institute for Development of Economics and Finance (INDEF) Forum national event on Digital Village, won the 2nd place in the Provincial *Jogo Tonggo* competition, achieved Brilliant Village Finalist of the Village Ministry Program with BRI, earned Top 6 Finalist of *Bulan Bakti Gotong Royong* Village, reached Village Startup Finalist held by Central Java Province and it was often included in news on national television (Saidah et al., 2022).

Regarding the realization of SDG's Village, Krandegan Village strives to make efforts starting from the realization of the Partnership for Village Development and Dynamic Village Institutions and Adaptive Village Culture. Furthermore, since 2021, it has strived to become a clean and renewable energy village, with one of the major programs is the transition from a diesel powered-irrigation system to a solar powered-irrigation system (jatengprov.go.id, 2023). Therefore, Krandegan Village is interesting to be the object of research, especially in terms of *Collaborative Governance* which

supports the realization of Village achievements, especially in solar powered-irrigation governance in supporting the achievement of Village SDGs.

Based on the description in the Introduction that the Author's team has submitted earlier, this study has two problem formulations that need to be explored, namely:

1. Who and what is the role of the influential parties in the process of realizing SDGs related to the irrigation system of Krandegan Village?
2. What is the collaborative governance mechanism that occurred in Krandegan Village between 2013 to 2022, especially in irrigation system governance with the Ratner approach, 2012?

Based on the object, this research is limited to one village, namely Krandegan Village, Bayan District, Purworejo Regency. The village was chosen because it is a very successful village in terms of development because it is one of the four villages in Purworejo Regency that is an independent village. In 2021, out of 469 villages in Purworejo Regency, there were no very underdeveloped or underdeveloped villages; 305 developing villages and 160 developed villages; and only four independent villages. Thus, the status of Krandegan Village as an independent village is elite as this status is only achieved by 0.85 percent of all villages in Purworejo Regency.

This study takes a perspective on 2 periods: period 1 is from 2013 to 2021, when the application of diesel powered-irrigation is carried out; and period 2, which is from 2021 to 2022 (the data collection period), when the initiation for the transition from diesel powered-irrigation system is changed to solar powered-irrigation system. In Period 1, the research team provided perspectives on the focus of the realization of Village SDGs on points 17 and 18, namely Partnerships for Village Development and Dynamic Village Institutions and Adaptive Village Culture. In Period 2, in addition to the previous 2 points, Krandegan Village began to enter the area of point 7 of the Village SDGs, namely realizing a clean and renewable energy village, with energy transition efforts to support irrigation.

Literature Review

Collaborative Governance

The term "collaborative governance" refers to a way of government management that directly involves stakeholders outside the government or state and is oriented toward consensus and deliberation in the collective decision-making process that aims to make or implement public policies and public programs (Ansell and Gash, 2007). Collaboration is an activity that fundamentally lies in managing social networks. Social networks are the communication nodes of stakeholders. From this understanding, it can be concluded that collaboration theory is an analysis of the governance process with a point of view on social networks. The focus of collaborative governance is on creating accommodative public policy and handling any public issues. Public institutions have a great orientation toward policymaking; the goal and process of collaboration are to achieve a degree of consensus among stakeholders. Collaborative governance requires the realization of social justice in fulfilling the public interest.

In Figure 1, Ratner (2012) stated that there are three focus phases or three stages in collaborative governance, which include the following:

1) Identifying Obstacles and Opportunities

This initial phase is the phase of listening. At this stage, the stakeholders collaborate to determine the various types of obstacles that will be encountered during the collaborative process. At this stage, each stakeholder explains the problems of the others, and the remaining stakeholders listen to the explanations. Then, they consider the opportunities for solving each identified problem, such as the solution to the problem that will occur. Each stakeholder has an equal authority in determining policies for each identified problem and identifying opportunities in the form of accomplishments that can be obtained from each party. This phase consists primarily of listening to each other's problems and opportunities to capitalize on each problem explained by each stakeholder.

2) *Debating Strategies for Influence*

During the dialogue phase, stakeholders involved in collaboration engage in dialogue or discussion about the obstacles described in the first phase. Discussions between each stakeholder involved include discussions about the steps selected as the most effective steps to solve the problem. Then, the discussion involves the parties who can support the resolution of problems in the previously described collaboration.

3) *Planning Collaborative Actions*

After going through the stage of listening to the problems that will be faced in the process of collaboration and discussing the determination of effective strategies to anticipate problems, the stakeholders involved will now begin to plan the implementation of each strategy that has been discussed in the previous stage, such as the initial steps that will be carried out in the process of collaboration between stakeholders. This stage comes after going through the stage of listening to the problems that will be faced in the process of collaboration and discussing the determination of effective strategies to anticipate problems. The next step is to identify the measurements of each process that is carried out and to determine the steps that must be taken to keep the process of collaboration going over the long term.

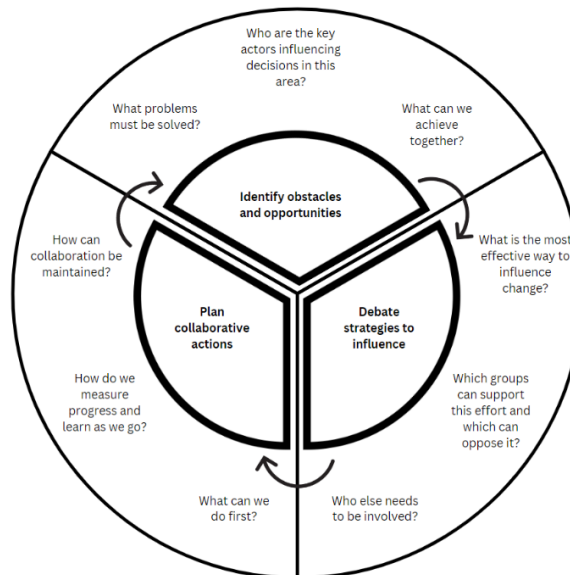


Figure 1. Three Stages of *Collaborative Governance Assessment and Action Planning*
Source: Ratner, 2012

Specifically, the Ansell & Gash framework, 2012 provides a more comprehensive perspective to realize collaborative governance, where there is an identification of initial conditions among stakeholders involved, institutional design, and leadership that can facilitate collaborative governance. However, Ratner, 2012, provides a deeper perspective of the sequential phase in the efforts to realize collaborative governance, although it does not specifically mention which actors need to be involved. The sequential phase includes identifying obstacles and opportunities, debating strategies to influence each other, and planning collaborative actions needed between stakeholders. Therefore, this study tries specifically to apply analysis using Ratner, 2012 with a modification of Penta Helix to analyze the actors involved in collaborative governance.

Penta-Helix in Collaborative Governance

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The Penta Helix concept is presented from the narrative in which the parties and stakeholders in a cooperative effort to accomplish specific goals are identified. However, as shown in Table 1, this idea was first inspired by the triple helix and quadra helix. The stakeholders in a case are to be the following: the government, business, academia, non-governmental organizations, and the media. The Penta Helix model can be used as an alternative to multi-stakeholder problem solving when stakeholders have different areas of interest in a particular situation (Lindmark et al., 2009).

Table 1. Stakeholders on the Triple Helix, Quadra Helix and Penta Helix concepts

<i>Triple Helix</i>	<i>Quadra Helix</i>	<i>Penta Helix</i>
Government	Government	Government
Business	Business	Business world
Academician	Academician	Academician
	Non-governmental organization/Civil Society	Non-governmental organization/Civil Society
		Mass Media

Source: (Astuti et al., 2020)

The Penta Helix concept consists of the following stakeholders (Figure 2):

[1] Government; This group represents public service providers; it can be central, regional or village governments. However, it is also not limited to that. There are various organizations funded by the public, such as hospitals, parliament, police, military, and so on (Astuti et al., 2020).

[2] The Businesses; This group consists of various backgrounds from the side of business areas, such as corporations, lawyers, accountants, and other professionals who can operate at the local, national, or international level. The importance of this group will depend on the impact of the issue/problem or project on them. Will it have a positive or negative impact? Will it provide a new market potential or new competitors?

[3] University; The University group offers academic practitioners such as architects, engineers, scientists, doctors, geographers, educators, and public administrators who have relevant knowledge and experience for the project or policy development. Universities and research organisations will provide constructive and relevant perspectives on project development. In addition to local practitioners, national and international actors such as research organizations, or consultants can provide additional valuable knowledge and experience.

[4] Non-governmental organizations; These groups are founded by individuals or groups of people who provide voluntary service to the society without a profit motive. This organization or community is involved in the maintenance of behavior and efforts to regulate the sociocultural constructions contained within the society. They encourage harmonious relationships and mutual

respect for the interests of each member of the group. This attitude can contribute to the creation of a conducive environment for the project and policy development.

[5] Mass Media; This group represents media, whether in digital and/or printed. Their interests will be driven by important issues and need to be known by the wider community through the media they have.



Figure 2 Penta Helix Concept
Source: (Lindmark et al., 2009)

The concept of Penta Helix will later be used in the discussion to answer the first research question.

Village Sustainable Development Goals'

This Village Sustainable Development Goals is a mandate from the Regulation of the Minister of Villages, Development of Disadvantaged Regions, and Transmigration Number 21 of 2020 concerning General Guidelines for Village Community Development and Village Community Empowerment. Broadly speaking, the points contained in the Village SDGs are a description of Presidential Regulation Number 59 of 2017 concerning the Implementation of the Achievement of Sustainable Development Goals, but the scope is lowered to the Village level. Village SDGs are defined as mentioned in Introduction part.

The goals to be achieved serve as guidelines for the Village Government, Village Consultative Body (*Badan Permusyawaratan Desa (BPD)*) and Village communities in determining the direction of Village Development Planning policies, as well as priority Village Development programs and/or activities, and are expected to be achieved by December 2030. According to Iskandar, A. H. (2022), to accelerate village development, the SDGs must be implemented through cooperation and synergy. Village SDGs are anticipated to be able to define the direction of the village development, make it easier to guide the development, and to measure the development's positive effects and negative impacts.

Research Methodology

The research was conducted in Krandegan Village-Bayan District, Purworejo Regency. This research is a qualitative research. The research primary data and information were obtained through in-depth interviews enriched with literature studies. In-depth interviews are used to obtain more detailed information about a person's thinking and behavior; and to explore new problems comprehensively. The interview was conducted in a guided mixed languages (Bahasa Indonesia and Javanese local language), making it a semi-structured interview. Research materials in the form of secondary data were obtained through village activity reports and mass media news; and the primary data were obtained from interviews and field observations.

Informants are parties in general, whether from the village government, Village's Consultative Body (BPD), farmers, or parties from the Agriculture Office who are selected through *purposive sampling techniques*. Informants were chosen because they were considered to have the necessary information in this research, were directly involved in community activities, and were parties who had contributions and links to the research location, especially in terms of irrigation governance aspects to support the realization of the Village SDGs. The selection of the second informant and subsequent informants is determined using snowball sampling.

The research team began with an interview with the Head of Krandegan Village (KD), and from KD, the next informant candidates were presented with his respective reasons and authorities. The interview process was conducted in November 2022. Table 2 is some of the informants that the research team successfully interviewed. However, the process of collecting and confirming information is also carried out after November 2022 through private line communication.

Table 2. List of Research Informants

No	Initial Name	Role	Code	Information
1	DN	Village head	KD	Has a role in determining strategic irrigation governance policies to support the achievement of the Village SDGs.
2	NF	Irrigation Committee Coordinator	KPI	Is responsible for regulating and ensuring the irrigation process of rice fields runs smoothly and is evenly divided.
3	AS	Member of the Irrigation Committee	API	Assists in organizing and ensuring that the process of irrigating rice fields is streamlined and evenly distributed.
4	PY	Chairman of BPD	KB	Acts as a representative of the community in exercising control over the running of the village government.
5	CS	Coordinator of Field Agricultural Disseminators	KPPL	Responsible for disseminating agricultural programs in Bayan District and surrounding areas.
6	WY	Staff of Field Agricultural Disseminator	PPL	Assists the dissemination of agricultural programs in Bayan District and surrounding areas.
7	FD	Head of Local Farmers' Association	KG	Coordinates and accommodates farmers' aspirations to be conveyed to related parties, which is commonly related to irrigation.

Research data and information in the form of interview results are processed through the processes of transcription, data qualification, and analysis. Research information is analyzed descriptively to provide an overview of research subjects based on the data. The study presented observational data without testing the hypothesis. The credibility of this research is fulfilled using triangulation techniques of research data sources, namely through three stages of checking: first, triangulation of data sources, namely comparing observational data, in-depth interviews, and documentation. Second, theoretical triangulation, which compares empirical data with theoretical studies that have been developed and recognized for their truth. Third, researchers conduct data analysis to obtain valid and reliable data.

Results and Discussion

Brief Profile of Krandegan Village

Krandegan Village is one of the villages in Bayan District, Purworejo Regency, Central Java Province. Geographically, Krandegan Village is bordered by [i] North: Tanjungrejo Village, Bayan District; [ii] South: Pogungkalangan Village, Bayan District; [iii] East: Tanjungrejo and Pogungkalangan villages, Bayan sub-district; [iv] West: Pringgowijayan Village, Kutoarjo District (Krandegan Village Website, 2022).

Krandegan Village has an area of 161 Ha, with a total population of 2984 people, the majority of whom work as farmers. To support agricultural activities in Krandegan Village, based on data from BPS Purworejo Regency (2021), Krandegan Village is being categorized as a village with adequate rainfall. Within a year, Bayan Subdistrict, Purworejo Regency quantitatively receives rain for 275 days annually. Krandegan village also does not have a village reservoir. Therefore, Krandegan Village utilizes rainfed land (PurworejoNews.com, 2021). Furthermore, Krandegan Village was chosen as the 1st Winner of *Kampung Siaga* in Central Java in 2020. *Kampung Siaga Candi* is a form of appreciation in order to prepare the community to have the ability to overcome the impact of the Covid-19 pandemic (Koranjuri.com, 2020). In addition, Krandegan Village also had the opportunity to attend the Institute for Development of Economics and Finance (INDEF) Forum national event on Digital Village, won the 2nd place in the Provincial *Jogo Tonggo* competition, achieved Brilliant Village Finalist of the Village Ministry Program with BRI, earned Top 6 Finalist of *Bulan Bakti Gotong Royong* Village, reached Village Startup Finalist held by Central Java Province and it was often included in news on national television (Saidah et al., 2022).

Identification of the Actors and Their Roles

Government – The Orchestrator

In the context of this study, government stakeholders are limited to village governments and institutions formed within the scope of authority for running/supporting village government, namely the Village Consultative Body. In Law No. 6 of 2014 regarding Villages, it is stated that the Village Government is the Village Head or other names, assisted by Village officials as a component of the administration of the Village Government. While the Village Consultative Body (BPD) is an institution that carries out government functions, where its members are elected democratically based on the regional representation. In addition, Article 26 specifies that the Village Head is responsible for organizing the Village Government and implementing Village Development, Village community development, and Village community empowerment.

Since 2013, KD has served as the leader of Krandegan Village, and he has stated that sustainable village development efforts are always made. This was initiated in 2013 when KD intended to propose himself for the position of Leader of Krandegan Village. The objective of the campaign is to provide farmers in Krandegan Village with free irrigation facilities the next year. KD, observing that most Krandegan Village's inhabitants are farmers, is aware of the significance of irrigation to the viability of his agricultural land. However, the fundamental question is whether this irrigation can operate without operational costs. Where do the funds to handle this situation come from? Krandegan Village residents will receive free irrigation until recent condition, so the answer is plausible. Several of the sources we interviewed, namely KD, KPI, API, and KG, confirmed this. Even NF and the US unanimously say, (*spoke in local language*) "nggih mas, awale niku namung setunggal tahun, nanging dugi seprene tasih gratis" (free translation: yes Sir, initially it was (estimated) only one year (in 2013, when KD ran for Village Head), but even now it is still free of charge). This will be discussed specifically in the Business section.

Unquestionably, KD's leadership and initiative play a significant role in the overall procedure in Krandegan Village. KB stated, "KD is such a tenacious and friendly leader (having a good networking

to invite contributions to build Krandegan Village).” In addition, besides fertilizer and seeds, a good irrigation system that reaches extensively and can provide operational relief is a basic need for farmers, which KD precisely addresses (information from KPPL and PPL). During 2013-2019, KD focused on achieving the goals of SDGs 17 and 18, which are titled Partnerships for Village Development and Dynamic Village Institutions and Adaptive Village Culture, respectively.

The Village Government acts as an orchestrator to integrate existing stakeholders to build the Village collectively and inclusively (specifics will be discussed in the next subchapters). The Krandegan Village Government invites and contacts related parties on a regular basis, whether they are from universities, the businesses, the media, non-governmental organizations, or the village citizen itself. Along with the process of enhancing the existing irrigation system, village institutions have also been revitalized effectively. “Absolutely correct, practically in the first period, our focus is on the internal improvement of the Village Government, in terms of work culture, human resources, etc.,” KD stated.

The Krandegan Village Government did not enter the fields associated with the formation of clean and renewable energy villages until the Village SDGs were introduced in 2020 and 2021, respectively. This is persistently pursued by the Village Government under the direction of the Village Chief (info from KD). However, the operation of this Solar Powered-Irrigation System presents obstacles. The fundamental question posed by the community is as follows: “Does solar powered-irrigation system have the same capacity as the diesel powered-irrigation system, both in terms of the ability to draw water from the Dulang River (the river used to irrigate the Village irrigation system) and the range of water flow?” (Findings from KPI, API, KD, and KG). KD believes that, by design, the Solar Powered-Irrigation System will continue to irrigate as effectively as the Diesel Powered-Irrigation System. However, researchers have not been able to measure this because the Solar Powered-Irrigation System has not operated yet at the period of data collection.

On the other hand, BPD also performs its role well, which consistently provides input to the Village Government, which is not limited to governance but also related to other issues in the community, including in this case the Village Irrigation System. KB said that related parties need to maintain the trust of the public and donors by providing regular reports on the use of funds. In addition, it is also necessary to examine the Cost and Benefit of transitioning the Diesel Powered-Irrigation System to the Solar Powered-Irrigation System, so that it remains in the interest of the community that benefits. This shows the involvement and collaboration of both related parties within the Krandegan Village Government.

The Business World – The Inspiring Donation

In terms of the village development in general and the irrigation system of Krandegan Village in particular, the Business Actors play a crucial role. In the context of this study, we stipulated that the business world consists of parties with businesses that generate economic profits, whose operational areas are not limited to Krandegan Village, but who are willing to contribute both materially and immaterially to Krandegan Village.

Within the scope of Krandegan Village, the Business World has become one of the most crucial stakeholders since 2013. Consistently, all our informants said that there was one Private Party (code: PW) that consistently financed the entire operation of the Diesel Powered-Irrigation System. Not only that, apart from the Irrigation System, there are several community self-reliance projects in Krandegan Village that also received a helping contribution from PW.

PW is an independent party that is affiliated with KD personally, not institutionally and has an emotional attachment to Krandegan Village. So, the relationship between KD and PW is relatively fluid and not rigid. Apart from that, the factor of religiosity from both parties should also not be ruled out.

In the hadith, at one-point Sa'ad bin Ubadah asked the Prophet PBUH, "O Messenger of Allah, what is the paramount donation? He replied, giving water." (HR. Abu Dawud).

According to the hadith above, a contribution to the sustainability of the Krandegan Village Irrigation System is one of the most important forms of *zakat*. So, until the time this study was conducted, PW continued to make consistent contributions to Krandegan Village. KB explained, "And he does not expect a mutual return from the village government or residents in general."

This may also inspire private parties in Krandegan Village to contribute as much as they can and no matter how small. For example, KPI and API convey, when the diesel water pump was not working well, the repair service providers in the village were not even willing to be paid for the services.

University – A formidable think-tank

Since the beginning of KD's leadership in Krandegan Village, KD has proactively involved the University in the development of its village. Starting from UIN Pekanbaru, Muhammadiyah Purworejo University, Surakarta State University, Polytechnic of State Finance STAN, and several other universities. The involvement of stakeholders from the University is not limited to research led by lecturers and academics; it also involves students from these campuses. Activities that are generally carried out are related to research, for example, the prototype of the Solar Powered-Irrigation System involving campus academics, and there is also a Community Service involving lecturers and students. Some of the projects that have been carried out are studies on the sustainability of the irrigation system of Krandegan Village conducted by the Community Service Team of the University of Muhammadiyah Purworejo. Related competency backgrounds also vary, ranging from the Faculty of Agriculture, Faculty of Engineering, Faculty of Economics or Business and other competency backgrounds that are also proactively involved in the development of the Krandegan Village Irrigation System.

The involvement of the university and the willingness of the campus elements involved contribute a positive impact for Krandegan Village. This embodies the fact that, in general, universities can become strong think-tanks in the collaborative efforts to realize village ultimate goals.

NGOs – Cooperative Farming Communities

Non-Governmental Organisations (NGOs) in the context of this study are focused on parties who represent the interests of farmers and are not formally bound to the village government. In this case, researchers limit NGOs to two interest groups related to the Village Irrigation system, namely the Sido Makmur Local Farmers' Association (Gapoktan) and Irrigation-Handlers Farmers, also often referred to as the Irrigation Committee.

Krandegan Village has three farmer groups and is part of the Sido Makmur Association (information from KG). Although 150–200 farmers in Krandegan village use irrigation (KPI and API), most of them (60 percent) work as sharecroppers rather than as landowners (information from KPPL and PPL). Additionally, the community has a history of culturally and traditionally cooperating to preserve the effectiveness of the village's agricultural support infrastructure (KB). The village's request for free irrigation has greatly benefited the farming community (KG). Farmers who are members of the Association specifically do not mind, even tend not to care, about efforts to switch from the Diesel Powered-Irrigation System to the Solar Powered-Irrigation System, but the most important thing is that it is remain free of charge (KG, KPI). This demonstrates that the community still does not see the need for an urgent transition to environmentally friendly energy sources, and instead sees the operational cost of irrigation as a priority that must be addressed. Therefore, it is necessary to make educational efforts to inform the community of the urgency of achieving the SDGs,

particularly in the area of clean and renewable energy villages. The local farming community is actively collaborating to achieve its shared objectives.

Furthermore, Irrigation-Handlers Farmers (PPA) were formed to manage PW's donation funds, maintain the sustainability of supporting infrastructure for the Village irrigation system, and coordinate the governance process of the Krandegan Village irrigation system (KPI and API). This PPA runs independently and is fronted by around 3 personnel, where 1 person is for maintenance and purchase of gasoline and 2 people oversee to ensure the flow of water reaches the entire rice field area in Krandegan Village.

Village governments through KD are regularly able to "ngemong" (establish relationships culturally and not only formally) to any involved parties, especially those from farmers. Although there were several problems, for example in terms of the duration of the process of flowing water from one plot of rice to another, the village government, and the main parties of PPA were able to provide real evidence of any improvement and responsiveness efforts. This can create such a community-based development, driven by strong interaction and collaboration among stakeholders to support the development of the village (Megawati et al., 2022).

Mass Media – where there is sugar, there are ants

The function of mass media is to deliver news and information to the public more quickly and massively. This is well realized by KD, "God willing, when we succeed in making sugar, many ants will come", he said. The statement illustrates how the positive achievements of Krandegan Village need to be disseminated and informed to the public in general, so that many parties are interested and willing to be involved in village development. In addition to the official website of Krandegan Village which lists various information that can be accessed by the public, the Village Government also attracts online media such as <https://purworejonews.com/>, <https://purworejo.sorot.co/>, and becomes a locus for research for several NGOs, so that the research report can also be accessed by the public (Data Journalism Hackathon 2021). This shows that the Village Government is consistently able to use the function of mass media optimally.

Collaborative Governance Mechanism according to Ratner, 2012

Ratner, 2012 said that in *collaborative governance* there are three phases, namely [1] identification of obstacles and opportunities; [2] Debate strategies to influence; and [3] Plan collaborative actions. In each phase, it is expected that all stakeholders can discuss and exchange ideas about alternative solutions to existing problems. Each party involved has independence and freedom of opinion to create good collaboration. In the context of Villages, in accordance with Law No. 6 of 2014 concerning Villages, the opportunity for the creation of a forum that can bring any involved parties to be able to discuss and exchange ideas is very wide, because it is mandated that there is a need for regular Village Deliberations. In accordance with Article 54, it is stated that Village Deliberation is a consultative forum attended by the Village Consultative Body (BPD), Village Government, and elements of the Village community to deliberate strategic matters in the implementation of Village Government. This village meeting is held at least once a year. Krandegan Village has regularly held this Village Deliberation (info from KD and KB).

Table 3. Krandegan Village Collaborative Governance Action Planning Model

Collaborative Governance Action Planning (Ratner, 2021)		Village Government	Business World	University	NGO's (Gapoktan & PPA)	Mass Media
Identify obstacles and opportunities	What are the main problems that need be solved?	policies and initiatives	resource support (material and non material)	Contributions of ideas and development models	irrigation management	Massive dissemination of actual information
	The realization of a sustainable and environmentally friendly irrigation system					
	Who are the key actors influencing decisions in this area? *) (√) shows level of influence	√√√	√	√	√	√
	What can we achieve together?	Sustainable and environmentally friendly irrigation system				
Debate strategies to influence	What is the most effective way to influence change?	Consistency in creating sustainable and environmentally friendly irrigation systems				
	Which groups can support this effort and which can oppose it?				√	
	Who else needs to be involved?	Regional Government, related ministries/institutions, internal village parties who may be involved, i.e., youth organizations, PKK (Family Welfare Empowerment), etc				
Plan collaborative actions	What can we do first?	Rules for village irrigation governance; preparing a communication pattern if there are problems; execution				
	How do we measure progress and learn as we go?	Measure water discharge and area irrigation level, level of response if problems occur, maintenance of irrigation supporting facilities and infrastructure				
	How can collaboration be maintained?	Irrigation system governance is created by involving all related parties; Irrigation systems can accommodate the interests of the parties involved				

Source: Processed by Author

However, not all stakeholders are present at the forum; consequently, additional coordination outside of the forum is required (info from KB). Therefore, Table 3 is a simulation of the sequential points of action planning for collaborative governance in Krandegan Village. This simulation assumes that all parties involved can get together and discuss issues together.

In the process of determining potential challenges and opportunities, the most important challenge that needs to be addressed is figuring out how to implement an irrigation system that is both sustainable and kind to the environment in order to meet the standards set forth by the Sustainable Development Goals (SDGs). As a result of this objective, each stakeholder unquestionably possesses a focus area in which they can contribute to the solution of the problem. For example, the Village Government can contribute to the formulation of policies that will solve the problem, and it is also able to accommodate the interests of most related parties. In addition, there is a requirement for the implementation of strategic initiatives in order to accelerate the development of an irrigation system that is both sustainable and kind to the environment.

Furthermore, in the process of debate strategy to influence, it is necessary to anticipate that there are parties who can support or oppose this effort, which is none other than the farmers themselves. At the beginning of the Diesel Powered-Irrigation System process, there were several farmers who doubted about the free irrigation system. Questions that arise in the community, such as "Can it be?" and "How long can it last for free?" (info from KPIs and APIs). However, the Village Government, Business World (PW) and Irrigation-Handlers Farmers are collaboratively and consistently able to answer these challenges well, and ensure the sustainability of the free irrigation system.

In the Planning Collaborative Action phase, the fundamental point needed is related to the rules of the game for village irrigation management. Although of course in the initial process, not all parties will understand and agree, but if it is consistent and with a good approach, undoubtedly all parties will be willing to respect the consensus or rules of the game (info from KPIs and APIs). "It was hard at the beginning, there were many protests from farmers, for example related to the flow of water that had not reached their rice fields, water pump that had problems although not often, and so on", said KPI and API. But slowly but sure, these potential challenges can be well-handled by the Irrigation

Committee. Of course, the challenge in the future is how to ensure the management of this irrigation system still commit to accommodate the interests of the parties involved, and consistently be able to become an irrigation solution for farmers in Krandegan Village.

Conclusion

Collaborative Governance in a consistent and structured manner can be seen during the Krandegan Village Government process, especially in the context of realizing a sustainable and environmentally friendly Irrigation System. The influential parties in the process of realizing the SDGs, especially those related to the Krandegan Village Irrigation System, are the Village Government, the Business World, Universities, Non-Governmental Organizations, and the Mass Media. The role of the Village Government is to be an orchestrator to integrate existing stakeholders to jointly build the Village in a collective and inclusive way. The business world plays a role in providing resource support, especially material to support the sustainability of the village irrigation system with minimal operational costs for farmers. The University contributes ideas and roles through research approaches and community service carried out by lecturers and students. NGOs function by managing donations from donors, maintaining the sustainability of supporting infrastructure for the village irrigation system, and coordinating the governance process of the irrigation system in Krandegan Village. Mass Media plays a role in delivering positive news and information related to Krandegan Village to the public more quickly and massively.

Parties within Krandegan Village can generally put Ratner's collaborative governance action planning into practice. The parties in Krandegan Village begin by identifying challenges and opportunities, developing influence strategies, and formulating joint actions. The consistency and sustainability of this good irrigation management will face challenges in the future, particularly regarding institutional issues in villages where Village Leaders will change on a regular basis.

However, this study has not been able to quantify the additional implications and challenges that will impact the relevant parties in the creation of collaborative governance after the implementation of the Solar Powered-Irrigation System after a certain amount of time has passed.

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