The Impact of Decentralization on Integrated Watershed Management (IWM): A Case Study in the Wanggu Watershed, Southeast Sulawesi, Indonesia

Thesis

Presented in Partial Fulfillment of the Requirements for the Degree Master of Science in the Graduate School of The Ohio State University

By

Alfian Alfian

Graduate Program in Environmental Science

The Ohio State University

2020

Thesis Committee

Dr. Douglas Jackson-Smith, Advisor

Dr. Eric Toman

Dr. Matthew Hamilton

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Abstract

The complex system of watersheds involves interconnections of water cycles, human behaviors, and the surrounding environment. Growing demand for water resources due to expanding populations throughout the world has led to the need for better management of watersheds. An increasingly popular approach involves collaborative management of watersheds that engages stakeholders and governance actors working at different scales. At the same time, watershed management has been impacted by a trend toward the decentralization of government services and decision making, particularly in developing countries. Decentralized watershed governance often faces problems including the transfer of authority from federal to regional and local government, building the capacity and resources of local stakeholders, institutional conflicts over management of the watershed, and development of policies and regulations that support local collaborative approaches.

Utilizing qualitative methods, this study builds on previous research on the necessary conditions and outcomes required for successful collaborative projects to explain the dynamics and outcomes associated with watershed management in the Wanggu Watershed, Southeast Sulawesi, Indonesia. Results found that many of the prerequisites for effective collaborative management exist at the provincial and local watershed scale. While there is evidence that processes have been put in place that supports collaborative management, particularly the role of a formal interagency

watershed forum at the provincial level, evidence of successful implementation of programs and actual improvements in watershed conditions was less common. Some factors limiting success include political dynamics and turnover, and changes in regulations that do not always empower local leaders. In addition, the success of decentralized watershed governance was shaped by the presence of international aid organizations that were critical convenors of program implementation and participatory processes at the local level.

Dedication

This study is wholeheartedly dedicated to my beloved family, who have been the source of inspiration and gave me strength when I thought of giving up, who continually provided their support and encouragement to finish this study.

Acknowledgments

I would like to express my sincere gratitude to my advisor, Dr. Douglas Jackson-Smith, who has been very encouraging and supportive since the first time he served as my advisor. His direction and guidance helped me greatly in progressing on this research, in particular, and through my academic life, in general. I would also like to thank Dr. Eric Toman and Dr. Matthew Hamilton as members of my thesis committee, for their supervision and advice.

In addition, I would like to thank all professors, lecturers, staff and fellow graduate students within the Environmental Science Graduate Program (ESGP) and School of Environment and Natural Resources (SENR), for providing a supportive, constructive, and pleasant educational environment during my time as a graduate student. Lastly, I would like to thank my home institution (DLHK Kota Kendari), the government of Indonesia, and USAID for the funding and administrative supports that made it possible for me to pursue my graduate degree.

Vita

2000 …… B.S. Chemistry, Halu Oleo University, Indonesia

2003 …… Administrator, NGO Yascita

2004 …… Finance staff, NGO Yascita

2006 …… Community Facilitator, NGO Yascita

2007 …… Program Manager, NGO Komunitas Teras

2013 …… Grants Officer, Chemonics International

2014 …… Capacity Building Officer, the Environment and Forestry Agency (DLHK) of Kendari City

2018 …… Graduate Student, Environmental Science Graduate Program (ESGP), The Ohio State University

Fields of Study

Major Field: Environmental Science

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Chapter 1: Introduction

In recent years, management of watersheds is becoming a crucial challenge driven by global concerns over declining water resources (German, Ayele, & Admassu, 2008). A growing population is placing new demands on freshwater resources, particularly in agricultural areas where water is needed for both farming and household needs (Nerkar et al., 2016). Watersheds are complex systems that reflect interconnections with water cycle processes, human behaviors, and the surrounding environment (Berger et al, 2007; Biswas, 2004, 2008). Both human interventions (e.g., land use change and deforestation) and climate change are contributing to an increasing frequency of extreme water-related events such as floods, droughts, and water scarcity (Allen et al., 2010; Biswas, 2004, 2008; Easterling et al., 2000; Muste and Mocanu, 2016; Lubell et al, 2016).

In developing countries, planning and management of watersheds has traditionally been implemented by centralized governments. This approach has been criticized for lacking flexibility, disempowering local actors, and insensitivity to cultural and biophysical differences across watersheds (Molle, 2009). In some areas, there has been a shift to more reliance on more local scales and processes, various actors, and interests (Agrawal and Ostrom, 2001; Molle, 2009). Decentralization of watershed governance often involves engaging a variety of state and non-state actors, including local communities, user groups, cooperative entities and other stakeholders at the micro and

meso level to develop joint environmental management schemes and initiatives (Meynen and Doornbos, 2002).

Changes in watershed management are part of a larger shift toward decentralization of governance across the world (Faguet, 2014). Some of this shift is being driven by a lack of local government capacity and to address existing problems resulting from unequal power among actors (Agrawal and Ostrom, 2001; Ansell and Gash, 2008; Bonnal, 2005). Specific to watershed management, a lack of coordination between upstream and the downstream authorities has contributed to ineffective management and differential impacts within watersheds (Berardo, Turner, and Rice, 2019). As a result, efforts to promote decentralization and public participation often encounter problems with integration across biophysical and jurisdictional boundaries (Molle, 2009).

Decades of research on integrated watershed management demonstrates that successful collaborative watershed projects benefit from the presence of several key conditions (Berardo et al., 2019; Leach & Pelkey, 2001; Lemos and Agrawal, 2006; Margerum, 1999, 2001, 2007; Stern, 2011; Wondolleck and Yaffee 2000). These include: 1) Adequate levels of knowledge and public awareness, 2) Sufficient financial support and resources, 3) Adequate representation of all the important stakeholders and decision-makers in the collaborative process, 4) Coordinated policy development and implementation across government agencies, and 5) Efforts to ensure the sustainability of collaborative organizations. Correspondingly, watershed collaborations have been successfully shown to foster a) the development of processes and procedures allowing

stakeholders to meet, discuss, and develop plans (Menerey, 2011); b) formulation of policies and program implementation; and c) improvement of environmental outcomes (Scott, 2015).

This study presents a case study of collaborative watershed management in Indonesia. It studies how the presence of these five supporting conditions have influenced outcomes on two integrated watershed management projects that operate at different scales: The Southeast Sulawesi Provincial Forum (SESPWF) and collaborations in the Wanggu Watershed in Southeast Sulawesi, Indonesia. It also explores how broader movements toward decentralization of governance in Indonesia have impacted dynamics in these collaborative watershed projects.

The central government of Indonesia issued regulations related to collaborative watershed management in 2012 through Government Regulation number 37 on Watershed Management, encouraging decentralized management of watersheds across the country. In Southeast Sulawesi, this regulation was implemented by establishing the SESPWF in 2013. This mandated forum engages relevant stakeholders at the provincial level (particularly representatives of government agencies, NGOs, and academic institutions). In 2018, it was renewed for another 5-year period.

While the SESPWF operates at the provincial level, their work has impacts on collaborative management of specific watersheds at a more local, district level (Alwi, 2012). One of these watersheds is the Wanggu Watershed (WW), which spans two districts, South Konawe Regency in the upstream and Kendari City in the downstream. The WW witnessed a large number of damaging floods between 2013 and 2015 (USAID-

APIK, 2018; BPBD Sulawesi Tenggara, 2018). The floods have been attributed to massive land use conversion from forest into agriculture, urban areas, and other land uses (Alwi and Marwah, 2015; Putra, 2017). These floods stimulated local and provincial government agencies and other key actors to use a more collaborative approach to watershed governance.

These two cases provide an opportunity to explore whether previous research on drivers and constraints to successful collaborative watershed management can help explain dynamics and outcomes in Southeast Sulawesi. Specifically, this study will address the following research questions:

1. To what extent were the five key conditions present or absent in the SESPWF and the WW collaborative projects?
2. How successful have these projects been in achieving three types of outcomes: a) initiating collaborative processes, b) implementing programs, and c) improving environmental conditions)?
3. How did decentralization support the emergence of conditions and outcomes, and how was decentralized watershed governance experienced differently by local versus provincial-level actors?

Chapter 2: Literature Review

Water is an important resource that affects human well-being. A growing world population places increased demands on fresh water supplies for multiple purposes including drinking water, household requirements, and irrigation (Nerkar et al, 2016). Therefore, governance of the resource substantively impacts the lives of billions of people. Biswas (2004) pointed out that the water problems can no longer be solved by government alone but can benefit from collaboration among local actors through decentralization of federal control over natural resources (Agrawal and Ostrom, 2001).

A number of studies have demonstrated that decentralized approaches can be more efficient, equitable, and sustainable than centralized management (Agrawal and Ostrom, 2001). A significant evolution in watershed management is reflected by a transformation of focus on water resources management and the hydrological cycle into an integrated approach of managing elements including biological, physical, and social aspects in a landscape within a watershed's boundaries (Haregeweyn et al., 2012; Muste & Mocanu, 2016).

In developing countries, the need of watershed management approach increases because of several factors such as environmental degradation, urban development pattern, demand of water, and poverty (Swallow et al., 2006). Many have advocated for an integrated watershed management (IWM) approach that can address the problems by integrating natural and human dimensions in its management by considering the

important role of social, economic, political, and environmental factors (Nerkar et al, 2016). IWM projects usually employ a collaborative approach that involves integration of multi-interest organizations, stakeholder participation, and decentralized governance focused on specific geographic areas (Margerum and Born, 2000; Genskow, 2009).

Conditions Associated with Successful Management of Watershed

There is a large growing literature on watershed management that focuses on conditions associated with successful collaborative management. Several key fundamental categories of 'supportive factors' have been identified as important to effective integrated water management (Berardo et al., 2019; Leach & Pelkey, 2001; Lemos and Agrawal, 2006; Margerum, 1999, 2001, 2007; Stern, 2011; Wondolleck and Yaffee 2000). A synthesis of this work points to 5 types of conditions that are associated with a greater level of success.

Knowledge and Awareness

Knowledge and understanding of water issues is a pivotal factor in successful watershed management and can influence decisions and behaviors (Dean, Fielding, & Newton, 2016). Natural resources management relies on good and reliable information about the current conditions associated with human interactions within the system that must be consistent with decisions. Local information is also crucial in identifying problems and future solutions (Dietz, Ostrom, and Stern, 2003). Even though local communities have been criticized for having insufficient required knowledge and skills to

manage watershed (Korfmacher, 2001), several studies show that community capacity for managing resources can provide a solid basis for a co-management and community-based natural resource management (Lemos and Agrawal, 2006). IWM approaches reward place-specific knowledge about the local natural resources (Lemos and Agrawal, 2006). Moreover, collaborative approaches can build understanding of the actors by integrating different forms of knowledge and expertise about watersheds through studies, participatory monitoring activities, shared data, and trainings (Ananda and Proctor, 2013). Drawing on these diverse bodies of knowledge can help support water conservation-related programs and policies (Dean et al., 2016).

Good knowledge of water resources management may not always ensure a better collaboration (Oremo, Mulwa, & Oguge, 2019). However, experience of natural events including droughts and severe rainfalls can increase local water-related knowledge and awareness (Dean et al. 2016). Increased awareness of water resource conditions can also increase through collective actions of actors engaged in water-related management (Muste and Mocanu, 2016). Engaging problems in water resources management together with social, economic, and environmental issues may not only require the involvement of local and regional actors, but, in some cases, may also merit input from national and international organizations (Biswas, 2008). In developing countries, international development projects are often well positioned to set up integrated approaches and involve all relevant actors to achieve their project goals in natural resources management (Child and Barnes, 2010). Involvement of multiple stakeholders including international donors, government agencies, and non-governmental organizations (NGOs) may lead to

an improved management of water resources (Gupta, 2014). In many cases, the international development agencies employed their own approaches which are more participatory than the existing top-down approach of the government (Thapa, 2001).

Adequacy of Representation

Research on collaboration generally provides evidence that engaging a broad cross-section of the stakeholders is important to the success of a collaborative efforts (Ananda and Proctor, 2013; Bodin, 2017; Scott, 2015). Indeed, collaborative natural resource management is generally explicitly designed to facilitate the participation of diverse stakeholders and decision-makers. Currently, watershed management has been significantly transformed to be more collaborative by integrating biophysical and social elements in a landscape-based water resources management and the hydrological cycle across administrative boundaries (Haregeweyn et al., 2012). This collaborative approach focuses on integration of multiple actors and encouraging participation of the stakeholders in a specific geographic area (Margerum and Born, 2000; Genskow, 2009). The current major shift in natural resources management from centralized to decentralized control offers the potential for broader participation of multiple actors including citizens (Lemos and Agrawal, 2006). Collaborative management of watershed typically involves federal, state, and local government, environmental organizations, local communities (Leach and Pelkey, 2001). Particularly when technical expertise and experience needed for watershed management is insufficient, integration of multiple actors in the development of plans and programs can be useful (Korfmacher, 2001).

Relatedly, two key principles presented by Stern (2011) for an effective collaboration including meaningful participation of stakeholders and involvement of both higher- and lower-level actors.

Successful resource management can benefit from active collaboration among stakeholders including the public (Duram and Brown, 1999; Johnson et al., 2002; Johnson, 2009). By involving diverse perspectives in a forum, it can help to build networks and trust among actors, develop understanding between communities and governments, and promote consensus in decision-making (Ananda and Proctor, 2015; Inguane, Gallego-Ayala, & Juízo, 2013).

While including a broad range of stakeholders has generally been to contribute to the success of collaborative efforts, some researchers have pointed out that it can introduce challenges for effective collaboration. For example, engaging too many interests can complicate the negotiation process, in which the bigger size of stakeholders' forum may lead to less shared-common perspectives, less personal trust, more time requirements, and domination of the process by some actors (Scholz and Stiftel, 2005).

Financial Support and Resources

Efforts to implement collaborative natural resources management require financial and labor resources to support the difficult work of coordinated planning and implementation. These include operational funds (e.g., travel expenses, meeting logistics, and communication), staff, and resources for facilitate collaborative events (Margerum, 1999; 2007) that are fundamental to enable participation by both government and

communities given the limited resources they often have (Lemos and Agrawal, 2006; Margerum, 2007).

The availability of resources influences the degree that stakeholders are able to engage in integrated management efforts. Some organizations may have inadequate qualified staff or available to attend meetings associated with collaborations and insufficient budgets to meaningfully support their participation in collaborative efforts. However, some kind of financial strategies might be taken through independent support or internal commitment of the actors to allocate resources from their own organizations (Margerum, 2001). Multi-stakeholder institutions that engage a variety of actors across sectors and government levels and have sufficient legal power, resources, and instruments are needed to integrate and facilitate different interests in dealing with a fragmented government system in watershed management by applying both bottom up and top down approaches. (Kramer, 2006).

Policy Coordination

While knowledge, representation, and resources are important, it is also critical that collaborative projects are able to support greater coordination of policy development and implementation across different agencies and organizations. The absence of proper coordination across authorities frequently leads to ineffective inter-jurisdictional watershed management (Berardo et al., 2019). Interorganizational coordination within natural resources co-management often requires commitment of multiple actors to interact and sharing information and resources (Margerum, 2001).

Complex governance efforts usually take place within forums consisting of a variety of actors that address diverse policy problems including water resources, transportation, education, and public health (Berardo and Lubell, 2016; 2019; Bodin, 2017). Coordinated policy development is shaped by three characteristics of forums: the development of formal and informal rules that govern joint decision making, patterns of interactions among policy actors through formalized channels, and the level of interconnections among the actors and issues involving cross- sectors and -level of governments (Berardo and Lubell, 2019; Stern, 2011). Strong collaborative forum procedures can improve trust and collective actions of actors leading to better and more effective policy (Scott, 2015).

Organizational Sustainability

The key challenge for any collaborative watershed effort is how to design an institution that can be sustainable. One approach is to set up processes for incorporating new scientific information and ongoing learning rather than following a specified set of rules. It is also helpful to develop an institutional adaptation plan describing how rules will be developed, the process of monitoring compliance, and sanctions applied to those found to be out of compliance (Stern, 2011). Formal rules and procedures developed jointly by participants can influence the degree and effectiveness of interaction between networks and organizations, these conditions may affect the actors' trust and participation in collective actions (Agrawal et al., 2013).

On the other hand, each institution involved in a partnership has its own internal interests and is likely to focus on its own strategy and leadership challenges (Margerum, 2001). Additionally, many institutions depend on grants to support their staff and maintain the operations of the organizations (Margerum, 2007). Sustaining these flows of resources to support the work of a collaborative effort are important to the sustainability of any collaboration.

Success in Watershed Management: process, behavior and implementation, and environmental outcomes

A growing number of studies have examined factors associated with successful collaborative watershed management. There has also been increased scrutiny of the metrics used to evaluate success. The Global Water Partnership (GWP) has argued that integrated management of water resources should promote "the coordinated development and management of water, land, and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems" (Biswas, 2008). While laudable, specific evidence of improved social, economic and environmental welfare is often lacking in studies assessing the success of watershed projects (Griffin, 1999; Menerey, 2011). Rather, researchers have emphasized the importance of intermediate outcomes that are necessary preconditions to meeting these broader goals, particularly the initial processes that are developed as a foundation to reach the implementation stages of any plans and programs.

Initially, most people would expect successful watershed projects to *develop processes and procedures* that allow diverse stakeholders and decision-makers to meet, discuss, and develop plans for coordinated management. Management of watersheds can benefit from multidisciplinary approaches to deal with the complex interactions within water basin systems (Menerey, 2011). An ideal watershed process integrates the goals and interests, needs, and requirements of a variety of stakeholders including government agencies, communities, private sectors, NGOs and academia (Malone, 2000). These processes might be in the forms of face-to-face discussions (Koontz and Johnson, 2004), establishment of social networks, sharing information, and flexible development of plans for collective action (Kim, Keane, & Bernard, 2015), and cross-boundary management (Emerson, Nabatchi, & Balogh, 2011), and may contribute to improving awareness of actors towards water resources conditions (Muste and Mocano, 2016).

Aside from establishing a good process and engaging key people, scholars have also identified the need to *implement decisions and plans* as a critical step in collaborative watershed management success. Lemos and Agrawal (2006) argue that effective management of watersheds will be reflected by evidence of shifting decision making from higher to lower levels and changing relationships of power and governance. In addition, the success of partnerships is determined by the degree of adoption and implementation of watershed plans, projects, and policies (Leach and Pelkey, 2001). Decentralized management has provided opportunities for local actors to play roles in decision-making, managing resources, implementing policies, and monitoring and evaluating outcomes (Erbaugh, 2019). Partnerships among relevant stakeholders

including state agencies, non-governmental institutions, and communities can support a more local-based and representative approach to carry out better inter-agency collaboration in pursuit of sustainable watershed management (Emerson et al., 2011).

Successful collaborations require effective management, which include at least three components, i.e., principled engagement, shared motivation, and capacity for joint action between actors at higher and lower levels of governance and decision-making (Dietz et al., 2003; Emerson et al., 2011). One of the factors related to effective collaborative watershed management is institutional development (Kramer, 2006). Formalization of groups of stakeholders and development of rules, policies, and procedures reflect efforts to institutionalize watershed management processes (Scott, 2015).

Some researchers have explored whether collaborative projects impact the attitudes and behaviors of stakeholders engaged in collaborative management (Lubell, 2004). Watershed resources degradation and natural events can increase concern and awareness of local actors and users (Sisay, 2015; Dean et al., 2016). Furthermore, joint actions of stakeholders in the processes influence an increase of awareness towards quantity, quality, and the ecological status of water resources (Muste and Mocano, 2016).

Finally, because successful collaborations should be able to address environmental problems in watersheds, several studies have looked for evidence that decentralized administration may *achieve better environmental outcomes* (Lemos and Agrawal, 2006), including water quality and habitat conditions, decreased runoff, and improved soil moisture and groundwater recharge (Ferreyra and Beard, 2007; Scott,

2015). Others have argued for integration and balance between ecosystem and socioeconomic goals (Oremo et al., 2019). As part of decentralization in managing natural resources in Indonesia, for example, community-based forest management (CBFM) is one approach that has allowed local managers and communities to preserve forest areas through social forestry program to simultaneously address both environmental and economic benefits (Erbaugh, 2019). For instance, the use of simple technology such as on-farm surface water storage for agriculture practices can increase food production without withdrawing more water from the ecosystems (Oremo et al., 2019). The CBFM is seen as an approach that support broader decentralization principle by empowering local community and involving local, provincial, and central government (Arifin, 2005)

Watershed Coordination in the Context of Decentralization

In many countries, particularly developing countries, decentralization can create problems for integrated planning and policy consistency. There are several barriers they face including a lack of coordination mechanisms, inadequate budgets for cross-disciplinary work, stakeholder participation, and the absence of incentives for working together. As a result, collaboration between individuals and interest groups is difficult to accomplish. Furthermore, collaboration also requires additional costs for coordination, equipped skills of the government officials who involve in the collaboration (PAGE, 2016).

Despite these challenges, decentralization seems like an appropriate choice for governing resource operation and participation efficiently, particularly in many developing countries because centralization concept only fits in limited sectors including economic disbursement, while in other sectors like social and environment, centralization has a weak control (Ali, 2013). Also, decentralization allows actors working at lower levels (e.g., provincial and district) to engage each other because the venues are more accessible and chances for interaction are bigger than those in a centralized governance context. They also share a greater similarity of goals and characteristics of problems (Ruddy, 2011). Decentralization of governance tends to support a variety of non-state management and co-management which allows institutional rearrangement involving local communities, user groups, joint environmental management schemes and initiatives, cooperative entities and other stakeholders at the micro and meso level. (Meynen and Doornbos, 2002).

Decentralization of government in Indonesia began in 1999 (Ruddy, 2011) when Law 5/1974 on Fundamentals of Governance in the Region was revoked by Law 22/1999 on Regional Governance (Sutiyo and Maharjan, 2017). More recently, Law 32/2004 has given local governments (e.g., provincial and district level) power to govern a broader range of responsibilities in areas of public services. More recently, Law No. 23/2014 specifies transition of central government power to the subnational government (Nasution, 2016). These successive changes in federal law have had consequences for the formation of regional autonomy such as provincial and district election for political offices including governors, mayors, regents, representatives to parliament, even heads of

village, as well as the establishment of certain technical agencies (Dinar et al., 2007). Meanwhile, the level of government decentralization itself is also influenced by regional financial conditions, human resource capacity, local politics and social demography (Margerum, 2007). The success of decentralization relies on the capacity of the local government to take over the transfer of authority and responsibilities from the federal government.

Decentralization of watershed management relies on a strong relationship between central and local parties to achieve successful goals (Dinar et al., 2007). Recently, in many countries, watershed management forums at the local level have played a crucial role that has been strengthened by decentralization (Berger et al., 2007). According to the United Nation Partnership for Action on Green Economy (UN-PAGE) (2016), a major challenge related to integration common to many countries currently is that planning institutions and processes still work along sectoral lines. Cross-sectoral approaches and coordination of strategies, policies, approaches and programmatic interventions are occasional. Moreover, decentralization of natural resources management requires support of financial, human resources, management system, and facilities, whereas many local authorities do not have them sufficiently. Correspondingly, institutions at the local level are often motivated more by economic development than environmental sustainability (Ali, 2013). The benefits of watershed management reform due to government decentralization are not as easy as expected, and obstacles related to inadequate capacity from local government and civil society can be a challenge (Bonnal, 2005).

In regard to watershed management, the federal government of Indonesia issued regulations related to collaborative watershed management in 2012 through the Government Regulation number 37 of year 2012 on watershed management which mandated the establishment of watershed forum in provincial level involving a variety of stakeholders such as central and provincial government agencies, non-governmental organizations, and academia (Alwi, 2012). This federal government's regulation then been followed up by the enactment of the Regional Regulation number 1 of year 2015 on watershed management in which two years in advance, in 2013, the provincial government established the Southeast Sulawesi Provincial Watershed Forum (SESPWF). These regulations become a legal framework for a joint collaboration of actors in sub-national level in the form of the SESPWF. A map of the province is shown in Figure 1.

Indonesia has made some progress in implementing the decentralization process; however, some argue that more efforts are needed to strengthen subordinates and increase accountability and capacity. There remain contradicting policies among the actors both vertically and horizontally (Kurauchi et al, 2006). Additionally, inequality of capacity and resources may create power imbalances among stakeholders that can lead to distrust or weak commitment to participate (Ansell and Gash, 2008). The benefits of watershed management reform due to government decentralization are not as easy as expected, and obstacles related to inadequate capacity from local government and civil society can be a challenge (Bonnal, 2005). Moreover, the absence of proper coordination among cross authorities leads to ineffective inter-jurisdictional watershed management (Berardo et al., 2019).

Figure 1. Map of Southeast Sulawesi Province. (Source: NGO Komunitas Teras)

Study Area

The Wanggu Watershed (see Figure 2) covers 45,377 hectares in Kendari City, Konawe Regency, and South Konawe Regency (Alwi, 2012; Putra, 2017). The Wanggu River flows through two districts, South Konawe Regency upstream and Kendari City in

the downstream. (Putra, 2017). Land use changes in the Wanggu Watershed from forest into agriculture lands, urban areas and other purposes have resulted in soil erosion, low infiltration, increased runoff, and flooding and droughts (Alwi and Marwah, 2015; Putra, 2017). The Provincial Disaster Mitigation Agency of Southeast Sulawesi Province/BPBD Sulawesi Tenggara reported that from 2006 to 2016 there were 19 flood events in Kendari and 23 flood events in South Konawe. Massive floods happened in 2013 and 2015 in which the overflow of water came from the Wanggu Watershed (USAID-APIK, 2018; BPBD Sulawesi Tenggara, 2018; Putra, 2017). These events resulted in substantial social, economic, and environmental impacts including loss of lives and properties, loss of livelihoods, ecosystem degradation, and infrastructures destruction. For the floods in 2015 alone, 9,818 people were impacted, 55.5 hectares of agriculture lands were submerged, and 2,448 buildings and houses damaged (BPBD Sulawesi Tenggara, 2018). These frequent conditions provide evidence that a different approach is needed to successfully govern the watershed.

While decentralization has encouraged greater local control of watersheds, Local agencies in the area face a lack of financial resources, low capacity, inadequate participation in public decision-making, and challenges organizing collaborative responses to the floods (Ruddy, 2011; Faguet, 2014). Meanwhile, several internationally funded projects have initiated collaborative projects in the WW. These include a Canadian International Development Agency (CIDA)-funded Environmental Governance for Sustainable Livelihood Program (EGSLP), a CIDA-CIFOR-Winrock International-

Operation Wallacea Terpadu-Universitas Hasanuddin-National Planning and Development Agency of Indonesia-funded AgFor Sulawesi project (Ag4S), and a recent

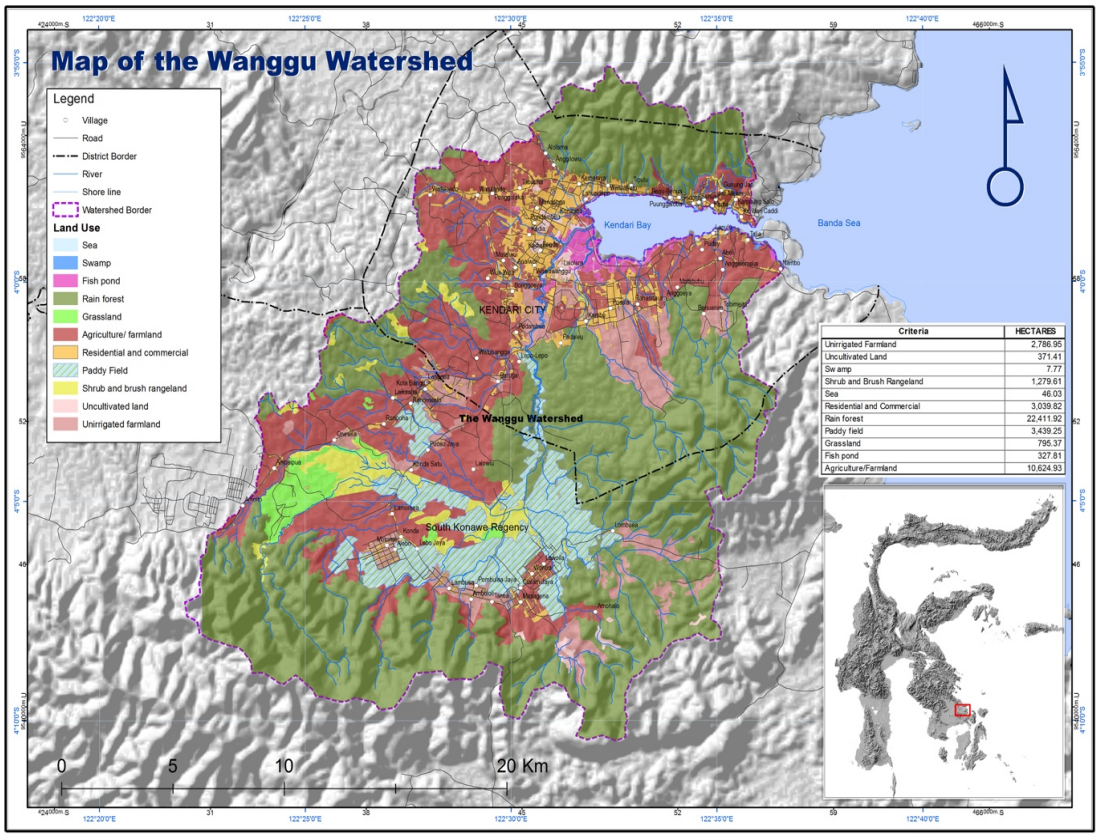

Figure 2. Map of the Wanggu Watershed. (Source: NGO Komunitas Teras)

and on-going USAID-funded Adaptasi Perubahan Iklim dan Ketangguhan (APIK) project. These projects are aiming to address rural development challenges in Southeast Sulawesi by enhancing livelihoods and enterprises, improving governance and strengthening sustainable environmental management, increasing awareness of climate change impacts and adaptation efforts. In implementing the programs, these international projects have involved a number of key stakeholders from different government levels,

cross-sectors and non-state organizations through joint program, collaboration with the SESPWF participants, and partnership schemes with local authorities.

Research Questions and Conceptual Model

Guided by the literature, my thesis addresses three key research questions.

1. To what extent were the five key conditions present or absent in the SESPWF and the WW collaborative projects?
2. How successful have these projects been in achieving three types of outcomes: a) initiating collaborative processes, b) implementing programs, and c) improving environmental conditions)?
3. How did decentralization support the emergence of conditions and outcomes, and how was decentralized watershed governance experienced differently by local versus provincial-level actors?

These questions are guided by a conceptual model that was developed from the literature summarized above. This model highlights the role that the presence or absence of five key conditions play in shaping outcomes on integrated management of watersheds. It also highlights how success can involve three distinct types of outcomes: process, program implementation, and environment. Finally, it illustrates the importance of considering how broader shifts towards decentralized governance (globally, and in Indonesia) enable or constrain efforts to improve collaboration in watersheds. (Figure 2).

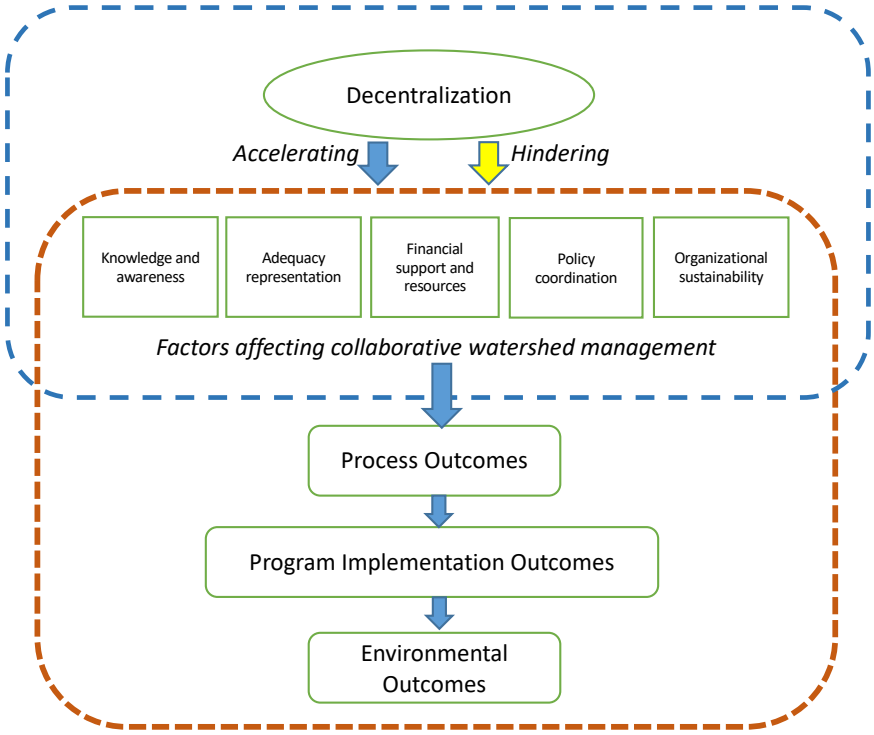

Figure 3. Conceptual model of factors shaping effective collaborative watershed management under conditions of government decentralization

The model provides a foundation for unpacking dynamics and outcomes associated with collaborative watershed management in Southwest Sulawesi. Specifically, I will explore whether the five 'factors' are present or absent in collaborative activities guided by the SESPWF (at the Provincial scale) and in efforts to promote coordinated decision between upstream and downstream actors in the Wanggu Watershed (at the local scale). The impacts of decentralization on the SESPWF reflects national-scale processes; impacts of the SESPWF on WW-level projects highlights ways that this plays out at the local scale.

Chapter 3. Methodology

Data Collection

To evaluate the degree to which the collaborative watershed management in Southeast Sulawesi represents examples of the five conditions and success outcomes, I conducted a case study of the SESPWF and WW, and used information from government's documents, project reports, study reports, and interviews with key informants to test a conceptual model grounded in the literature on successful collaborative management.

Specifically, I looked at whether the SESPWF and WW collaborative efforts had attributes of the 5 factors commonly linked to effective collaborative natural resource management: (1) Knowledge and awareness, (2) Adequacy of representation, (3) Financial support and resources, (4) Policy coordination, and (5) Organizational sustainability. I used multiple methods to assess the impact of decentralization and the presence or absence of these five attributes through analysis of qualitative data from key informant interviews, supplemented and validated with information from documents and reports by government agencies and non-governmental organizations.

Key informant interviews

Face-to-face individual interviews of key informants were used for to address the research questions. In total, 31 interviews were conducted in 2019 with a range of government officials, project leaders, non-governmental organization staff (NGO), academics, and community members who work on watershed issues at different scales: Southeast Sulawesi Province, Kendari City, and South Konawe Regency level. The

informants were recruited because they were identified as key stakeholders who were directly working on watershed management issues in the study area. This study divided the 31 informants into four categories:

1. Ten informants represented agencies and institutions that are members of the SESPWF and familiar with efforts to implement collaborative watershed in the province. These included staff from central federal agencies, provincial level agencies, NGOs, and academic institutions.
2. Another ten key informants represented provincial and district-level agencies which are not part of the SESPWF but that work in the WW.
3. I also interviewed leaders and staff of 3 international donor projects that work in the WW.
4. Finally, I interviewed 8 community leaders, farmers and other community members living in the two rural subdistricts (Wolasi, South Konawe and Baruga, Kendari City) most impacted by watershed planning efforts in the WW.

The semi-structured interview questions were designed to solicit feedback and data on each of the theoretically important concepts listed in Figure 2 above (See Appendix 1). This question guide helped reduce bias during the data collection and ensure that findings reflect actual conditions and achievements in the study area. Questions covered their knowledge and assessments of the SESPWF, their contributions to and evaluations of watershed management programs in Southeast Sulawesi Province including the Wanggu Watershed, and other related topics.

Interviews were conducted in person, delivered in Bahasa Indonesia and lasted from 30 minutes to a couple of hours. Interviews began with a brief introduction to the study, a discussion of confidentiality, and then were asked to sign a consent form before the interview took place. Interviews were recorded with the permission of the informant.

Document collection and review

Much of my work was informed by collecting government statistics about land use/land cover, water outcomes, and other relevant background variables, and from a critical analysis of documents, including project reports, minutes of project meetings, and internal document of technical agencies related to collaborative watershed management in this region. While in the field, I collected printed documents and electronic files from government agencies and the international projects (often in conjunction with doing the interviews). The documents include institutional profiles, study reports, factsheets, document of plan, laws and regulation scripts, and program reports. The researcher asked permission in advance to the authorized officials to copy the data.

Data Analysis

The recorded interviews were transcribed by hand, and then translated from Bahasa Indonesia to English for analysis. The transcripts were uploaded to NVivo v.12, identify and organize emergent codes and themes during the analysis (Miles, Huberman and Saldana, 2014; Ochs, 1979; Burck, 2005; Saldana, 2009). The next step involved clustering similar codes to construct a smaller number of categories then defining pattern

codes corresponding to research questions (Miles et al., 2014; Babbie, 2007; Bogdan & Biklen, 2007). I coded all of the interviews and matched with notes, the results were checked by colleagues to ensure reasonable validity and reliability (Babbie, 2007). Coding was reviewed by at least two members of the research team to ensure consistency and theoretical coherence.

The documents and statistics obtained from agencies and organizations were read critically to determine if information was consistent with claims made in the interviews. They were also used to understand the historical timeline of changes in government policies and watershed coordination activities and milestones.

Ethical Consideration

In compliance with the Ohio State University's Institutional Review Board (IRB), I completed the Collaborative Institutional Training Initiative (CITI) Human Subject Research training. This study was approved by the IRB before initiating the research. Informed consent forms were obtained from the informants. Participation in this study was voluntary and the informants were informed that they could withdraw at any time from the study without any implications. In maintaining the confidentiality of the informants, I kept all kind of files in the Buckeye-box and used numerical identity codes to distinguish each interviewee.

Chapter 4. Results

In order to understand the drivers and constraints that have contributed to successful collaborative watershed management in Southeast Sulawesi, I have organized my results into three sections based on the three research questions. In each case, I highlight the most common emergent themes that arose in the key informant interviews and supplement these with data from the documents and reports I collected while in the field.

The Presence of Key Conditions to Support Collaborative Watershed Management

As noted in my literature review, research on collaborative watershed management has identified five key clusters of conditions that can contribute to success or failure of projects. In this section, I explore whether or not these conditions are present in the SESPWF and the WW contexts. Specifically, informants were asked to describe their background knowledge of and experiences with the SESPWF and projects in the WW. Questions also probed for each of the five conditions (see Appendix 1), including whether or not local actors had sufficient knowledge and information to make good decisions, whether there was adequate representation of key stakeholders, whether their efforts had sufficient resources, whether efforts had been made to coordinate policy decisions by different agencies and organizations, and whether they expected these collaborative efforts to be sustainable into the future. For each theme, respondents often highlighted both positive and negative aspects of the collaborative context. The frequency

of informants who made positive and negative comments about each type of condition is shown in Table 1, categorized by the whether they were talking about the provincial forum (SESPWF) or the local Wanggu Watershed projects (WW). Only respondents who were familiar with the SESPWF were able to answer questions about the forum. However, since the headquarters for the Province is in Kendari City, nearly all respondents (whether or not they worked at the provincial or local level) were familiar with and able to answer questions about local Wanggu Watershed topics. As a result, the number of respondents in each column are not equal.

Table 1 Number of respondents citing the presence and the absence of five conditions

Presence or Absence of Five Key Conditions	**The SESPWF (n=10)**	**The Wanggu Watershed (n=21)**
	Number of respondents reporting presence/absence	
Knowledge & Awareness		
Presence / positive	10	20
Absence / negative	-	15
Adequacy of Representation		
Presence / positive	10	20
Absence / negative	10	11
Financial support and resources		
Presence / positive	10	17
Absence / negative	10	10
Policy coordination		
Presence / positive	10	20
Absence / negative	7	9
Organizational sustainability		
Presence / positive	10	3
Absence / negative	4	-

Five Conditions in the SESPWF

Knowledge and Awareness

All stakeholders involved in the SESPWF were knowledgeable about the SESPWF and its objectives. Knowing the objectives of the forum is an important indicator of institutionalization by the participants. The forum aims to provide inputs for the provincial and local governments to develop program. One provincial agency representative stated that:

> The forum itself can assess and give input to local governments what should be done by local governments, what programs and activities should be taken, the task of the forum is only to perform studies and provide input to the local government, both at the provincial and district level, because talking about this watershed, it is a cross-sectoral issue, not merely forestry task.

One scientist noted that "the important objective of the SESPWF in accordance with its formation is as a forum that provides input to policy makers." Other participants emphasized that the purpose of the SESPWF is to integrate all relevant stakeholders. A provincial official said, "the existence of the watershed forum we expected is the incoming programs will be established, programs or activities or projects in the watershed area that integrated the existing stakeholders." One academic expert also stated that "the main purpose of establishing this forum is actually to coordinate all of these stakeholders, because watershed management is a cross-sectoral program."

Some participants indicated awareness of the condition of the watershed as part of the forum's domain and knowing about watershed conditions is important for community

members in Southeast Sulawesi Province. One provincial officer stated, "this forum is striving for how we secure our watersheds, which in the end is for the benefit of the community." Therefore, the SESPWF members need to take into account the watershed as unit system of a landscape, as a scientist said:

> …it targets a shared understanding of the watershed and all activities within it. All stakeholders understand that the watershed is a unit system in a landscape unit, so each part of management is an important part of that system, because it must follow the rules of existing provisions.

Many informants in the forum believed that it is supported by sufficient data and information. One provincial agency also commented that "the forum was also supported by colleagues from university and the Sampara Watershed and Protected Forest Management Agency (BPDASHL Sampara) which have adequate data, which were helpful to assess whether the watershed must be restored or be maintained." A federal agency noted that "the data is sufficient enough because there are experts from each institution in the forum. We have comprehensive data about watershed and some experts on watershed." However, it is important to note that the SESPWF obtained data and information from its members because the forum does not itself generate data and information. One scholar confirmed that "the SESPWF does not have the right to produce data, the data are in the relevant agencies that are members of the SESPWF." Even though the forum members have sufficient data, there remain challenges with integration and coordination of the data to obtain comprehensive and updated data and information. One NGO activist noted that "the data and information were actually in the members,

now that needs to be coordinated." Accordingly, one provincial agency also commented that "the most important thing to do was how we integrate all information we have to get into the intended goals." Moreover, data and information from the international projects are available to support the SESPWF, and the forum is expected to facilitate data and information sharing among the agencies. One international project leader stated that:

> Two international projects had supported the SESPWF, they discussed who was going to administer the data and information that have been collected. Eventually, it went to each technical agency as the owner of the data and information. The sharing process might be occurring among them within the forum or with other institutions outside the forum.

In order to improve knowledge of watershed conditions, the SESPWF had disseminated data and information through mass media, as one provincial agency stated that "information of the watershed forum are field-, data- and fact-based and we frequently publish it through both the watershed forum and institutions as well as personal basis through writing publications in the media."

Even though the informants who participated in the SESPWF did not identify any serious problems with a lack of knowledge and awareness, the interviews did identify a need for the SESPWF to make extra efforts to get information out to the local actors particularly local agencies and communities. Accordingly, the forum requires the distribution and connecting the obtained data and information to lower levels of governments and policymakers. One scientist mentioned that "the information conveyed at the forum to policy makers at the regional level sometimes was not connected to what

it should be, some of them understand but some do not." Another academic expert said, "all relevant stakeholders should be on the same page of watershed management as a unit system of a landscape." In addition, an emerging concern is the SESPWF has not yet reached an operational stage of management. One local actor said:

> At the moment, the SESPWF only functions in terms of rules which are administrative in nature but have not yet reached the operational stage. They hope that the SESPWF was able to convey regulations made for an agreement which can then be implemented at the site level.

Adequacy of Representation

Collaborative watershed management is expected to engage multiple actors involved in the planning and implementation processes. All informants reported both positive and negative perceptions about this issue. Referring to the Ministry of Forestry Regulation 61/ 2013 on coordination forum of watershed management, all the SESPWF participants assumed that representation of stakeholders in the forum is adequate. One provincial agency stated that "the SESPWF membership was quite representative which consisted of government, university, and NGOs." The membership of this forum is based on profession, but it is limited for provincial level only. One scientist from a local university noted that "actually, there are no such restrictions of membership in the SESPWF was based on profession…but was at the provincial level." Also, one NGO activist said, "the SESPWF is indeed limited, because its working area was in the

Southeast Sulawesi province, it meant that automatically those who were involved in it were stakeholders in the Southeast Sulawesi administrative area."

On the other hand, in terms of cross-level representation, all informants also felt that representation from lower level stakeholders is still missing. One provincial agency official noted that "maybe some parties were missed regardless of whatever the considerations were, from this structure…I did not see any representation from the district or city within the watershed." A project leader also stated that:

> Since the watershed forum was established; the missing stakeholder was community. As a result, it seemed difficult to implement and monitor programs in the site, especially in regard with forest conservation, disaster management, forest fire, community empowerment, and so on.

However, the size of the SESPWF reflects the need to take into account the impacts on effective management. One provincial agency argued that "they just tried to think that the forum size should be small, if it was too big, it was not going to be focused and would not be too effective in carrying out the functions of this watershed forum."

Two different perceptions of participation emerged during the interviews: meeting attendance and involvement in the integrated programs. One NGO activist noted that:

> there are two activeness measures, that were how they hold meetings, and how they integrate their activities in issues of watershed management. If the indicator was attendance at the meeting, it was up to 80%, but for the indicator of activity implementation, it could not be measured yet, because the second period was still new.

This statement shows that the participants of the forum are quite active to attend the meeting.

In addition, each participant of the SESPWF has an equal chance to contribute. One scientist from a local university shared an impression that "all participants of the SESPWF have an equal voice within the forum." An NGO leader said this "forum employs a consensus method in making decision." Nevertheless, some forum participants commented on different levels of member participation. An NGO activist noted that "not all participants of the SESPWF are active." One federal agency representative pointed to challenges associated with a "the lack of leadership." An expert from local university mentioned the "weak coordination" because of sectoral ego affected the participation of the stakeholders. Some interviewees pointed out that several agencies play more active roles in the processes because their technical expertise was more directly related to water resources management, and because they had greater financial and human resources on these topics. One provincial agency representative indicated that "as for his knowledge, especially in government institutions, the most important institution was the Forestry Agency, the second was the River Management Agency-Regional IV (BWS IV), and BPDASHL Sampara was the third institution that played a role at most."

Financial Support and Resources

To run an institution, support of funding, transactional costs, and resources are needed. All the SESPWF participants believed that they both individually and the forum have fairly adequate budget, sufficient staff and expert, supportive policymaker,

equipment and facilities. One federal agency mentioned that "in 2019 his agency provided about 300 million rupiahs for the forum's activities, they have sufficient personnel who are experienced in composing plans of integrated watershed management." Accordingly, the SESPWF seems has capacity to maximize its performance. One provincial agency noted that "human resources were quite adequate, both institutionally and personally." The SESPWF participants show their commitment to support the forum. Based on the profiles of participating agencies collected during the study, it appears they have an adequate number of supporting staff at each institution. One provincial officer mentioned that:

> Talking about resources, we are good enough. Our human resources, we are able to support the SESPWF, why are we included because our human resources are ready to support this program. From the financial resources, we are ready to support the watershed.

Even though all participants from the SESPWF indicated resources were sufficient to get work started, they all also felt that additional funding and skilled staff are needed to support the work of the SESPWF. Some technical agencies had tried to gain more budget from other sources. One federal agency cited that "this forum was funded by BPDASHL Sampara, but again the funding was still limited. Current annual funding could only be used for meetings. We did not have budgets for carrying out activities. We have proposed to the Regional Planning and Development Board (BAPPEDA) or the local government itself to allocate funding for this watershed forum's activities."

Policy Coordination

Coordination among stakeholders can be crucial to collaborative approaches. This coordination is significantly influenced by the presence of any kinds of formalized forum across sectors or levels of government (Berardo and Lubell, 2019; Stern, 2011). In this study, the formal forum has already existed as the SESPWF, in which all participants of the SESPWF reported reasonably good levels of coordination and interaction among key actors in policy, planning, and programming decisions. As one of the provincial agencies stated "the SESPWF influences local government planning and policies through program synchronization." This is in line with the responsibility of the forum that is mandated to coordinate all cross-sectoral agencies and involving local governments. Another provincial agency official mentioned that "coordination among stakeholders in the province, districts, and villages has been established." However, participants differed on whether a sufficient level of cooperation had been established across sectors and agency boundaries.

Several informants pointed at the supportive legal frameworks that had been issued as evidence of policy coordination, including federal laws (e.g., Law 5/ 1990 on conservation, Law 11/ 1974 on irrigation, Law 13/ 1990 on natural resources conservation, Law 41/ 1999 on forestry, Law 26/ 2007 on spatial planning, Law 32/ 2009 on environmental protection and management, Law 23/ 2014 on subnational government, the Government Regulation 37/ 2012 on watershed management, and the Ministry of Forestry Regulation P61/ 2014 on monitoring and evaluation of watershed management), as well as regional regulations (the Regional Regulation 1/ 2015 on watershed

management and the Governor Decree 686/ 2018 on the SESPWF management board). Correspondingly, one provincial agency mentioned there are 9 drafts of governor regulations have been formulated as derivates of the Regional Regulation 1/ 2015.

Nevertheless, several informants contradicted the above statements. One provincial agency thought that "coordination across sector and administrative border has not been established yet." One academic expert commented that "the withdrawal of forest management authority from local to provincial level hindered coordination between these two levels of government". Another expert felt that "sectoral ego contributes to the lack of coordination."

Organizational Sustainability

All informants from the SESPWF agreed that this forum will exist into the future. An NGO activist stated that "the SESPWF can accommodate those who have an interest in the watershed and sectoral areas." As stated in the earlier sections that the forum is mandated by the federal government and supported by regional government, where the participants had coordinated and collaborated each other. Meaning that the SESPWF is a formalized forum that had developed management plans, programs, formal and informal rules, and was committed to investing in budgets and staff. One federal agency cited that "there was availability of financial support from federal government." To some extent, that implies that the SESPWF should last for the next decade as the main coordinator among parties. One informant mentioned that the SESPWF and its participants' programs promoted not only environmental protection but also empowering communities and

improving their economies. These conditions may contribute to a broader intervention and participation of all relevant stakeholders across sectors and boundaries to be involved in. However, one federal agency official assumed that the SESPWF placed more emphasis on conservation than on social and economic components.

A smaller subset of participants raised the question of whether lower level forums should be established. One provincial agency staff noted that "this time, they expect to empower it institutionally, afterwards, we might form the forum at the district level." Accordingly, one expert from local university stated that "there should also be separate watershed forums specifically for islands in the archipelago."

Five Conditions in the Wanggu Watershed

Knowledge and Awareness

A much larger group of respondents were knowledgeable about both the objective of the SESPWF and the WW projects as well as condition of the WW. A federal agency official noted that:

> the objective of the SESPWF was to sustainably manage the watershed ecosystem, we needed to do more efforts because floods occurred every year in the Wanggu Watershed…, it indicates that there were problems in the watershed, so it was necessary in this forum to handle this watershed, even though this forum was not limited to the Wanggu Watersheds only, but also to other watersheds in Southeast Sulawesi Province.

Another provincial agency also noted that "the SESPWF was formed to obtain an identification of how the Wanggu watershed situation was, including how the utilization of the watershed. That's why this forum was formed." One local agency official stated that "the Wanggu Watershed becomes a common concern of not only the local governments but also international projects in managing its environment and addressing the natural events."

A significant number of informants indicated a belief that the available data and information about the Wanggu Watershed are sufficient. The sources of data and information are varied. One local agency noted that "from what she knew, information about conditions or related to watershed conditions has been conveyed through studies, which came from academics, NGOs, which are part of the SESPWF." The SESPWF participants frequently performed monitoring and evaluation of the Wanggu Watershed performance. One provincial agency stated that "there are already monitoring and evaluation results where we can see how likely the Wanggu watershed performance until now." Documentation of water quality conditions in the WW is also available and accessible. A provincial officer informed that "they have water quality monitoring data of the Wanggu Watershed in 2018 and it will be continued in the following years to get time series of the water quality data by collaborating with a local university."

Some local-based actors more likely to mention the international projects as the source of generated data and information than the SESPWF. One district agency cited that "an international project and his agency conducted a field survey to collect data of potentials and existing constraints." The projects contributed to provide information

about the conditions of the watershed benefitted community as well as the local government in to develop plans. One local actor stated that:

> the international project provided information about predictable natural conditions so that this community could do what need to be done, besides, providing information about the impact of the disaster. Therefore, local government could also understand and know the information to develop plan, making decision, and allocating budget.

On the other hand, several informants felt that ***integration*** of data and information from several stakeholders including community becomes a challenge as a reference to reach a collaborative decision. One informant from provincial agency noted that:

> The performance of the Wanggu Watershed has been evaluated as of the impact of the floods in 2013 and the most recent in 2019. Also, information from community members and ground check by the government. Through these information sources, joint decisions are actually crucial.

Some efforts to increase awareness of actors to engage in collaborative actions have been facilitated by the international projects. One of them is establishing a specific environmental-related issue such as climate change and disaster risk reduction. A project leader said:

> They also formed a climate change and disaster risk reduction working group that consisted of government agencies, academia, local NGO, media, and private sector. Since then, this working group become a shared and updated information

venue concerning disaster and climate change including the Wanggu Watershed condition.

Another community member stated that they "obtain useful information and improved awareness towards the current condition of the Wanggu Watershed through trainings."

Adequacy of Representation

At the Wanggu Watershed level, all local actors believed that the WW projects included an adequate representative of stakeholders in the projects. One representative of a local agency mentioned that "all stakeholders in the upstream and the downstream area of the Wanggu Watershed are involved." The international projects appear to play a key role in engaging actors in the Wanggu Watershed level. One project leader said, "actually, during the project, all stakeholders were involved in including government, private sector, NGO, and community." Another project leader mentioned "in the Wanggu Watershed landscape approach, they involved the technical agencies including agriculture, environment, marine and fisheries, drinking water, transportation, development planning board, disaster management, and public work agencies." Another supportive statement from a local agency stated that:

> From his view, all interested organizations have been involved in the watershed management project in Wanggu. This was shown by meetings or discussion forums in city and provincial level that invited all interested organizations which did not forget sending participants from their respective institutions.

Even though each actor has made contributions to the projects, the level of some actors' participation is still a challenge. One project leader stated that "he thought all stakeholders in the working group have their own contribution. However, the most involved participants were the government agencies compared to other actors." In the meantime, rotation of agency's officials also affects the level of participation certain institutions. One project leader cited that "the reshuffle of agency's managers and staffs hindered participation and coordination that have been built by previous officials."

Another challenge is integration of stakeholders' programs that was perceived by a few of interviewees. One of the local agencies mentioned that "talking about involvement, all of stakeholders have been involved, each tried to carry out the management of the Wanggu Watershed, but the external cooperation was limited, so it can be said that they still worked individually." Most of community members emphasized on the lack of knowledge and understanding hindered their representation and participation in the collaborative actions. One community member said, "the main problem was the lack of knowledge of the people, particularly farmers".

Financial Support and Resources

At the Wanggu Watershed level, most local actors stated that the projects were supported by sufficient personnel to implement programs. One local agency noted that her agency had "qualified officers" to run technical programs in the field. One international project cited that "they invested adequate funds and experts." An international project had encouraged the local government agencies to allocate funds for

gender-based program for fiscal year of 2019 including IDR 125,550,000 for a waste management program and IDR 133,340,000 for capacity building program for female farmers (USAID-APIK, 2019). While the community members voluntary provided personal budget and spare time to participate the projects of both local agencies and the international projects. On the other hand, several informants emphasized on need of additional funding support for operational activities and improved human resources. One provincial agency said, "just one example, for patrolling, they certainly need funds." Another provincial officer also mentioned that "management of the watershed needs good human resources; we need to improve human resources."

Policy Coordination

Almost the entire local-based stakeholders perceived a good coordination established between the upstream and the downstream actors in the WW. One informant from a provincial agency said, "an improved coordination across the administrative boundary was reached that was facilitated by the international projects and NGO." Several formal and informal partnership initiatives have been formed. One local agency staffer stated that "the international project had facilitated discussion and collaboration between South Konawe Regency in the upstream and Kendari City in the downstream, afterwards they ended up in an agreement for a collaborative action for the Wanggu Watershed."

Many informants mentioned Law 41/ 1999 on forestry, Law 23/ 2014 on subnational government, and Law 32/ 2009 on environmental protection and

management as the substantial legal basis for implementing watershed management programs. A few of them cited the Regional Regulation 1/ 2015 on watershed management, the Directorate General Regulation 6/ 2018 on partnership in watershed area, and Law 17/ 2019 on village development planning process. With respect to flexibility, one informant from provincial agency noted that "the regional regulation accommodated interests across administration border" between the upstream and the downstream areas of the Wanggu Watershed. One federal agency also cited that "the regulation was flexible enough to address problems in the watershed management." As one federal officer stated that "it was applicable in the district and community level." The local agencies, international projects, and community believed that these regulations were flexible to accommodate interests of diverse stakeholders.

In contrast, some interviewees felt coordination of multiple actors across jurisdictional boundaries was still limited. It resulted from the enactment of the Law 23/ 2014 on subnational government which the authority of forest governance is withdrawn from local government to provincial level. One local agency mentioned "the withdrawal of forest management authority from local to provincial level resulted in the passiveness of local governments." Besides, few community members did not know the regulations of watershed management. As the presence of the international project and the NGOs contributed in building coordination between the upstream and the downstream stakeholders, one local agency noted that "follow-up program for international projects should be developed to maintain the coordination and collaboration among the stakeholders."

Organizational Sustainability

Most informants believed that the Wanggu Watershed project initiated by the international projects will last in the future. One project leader mentioned that "the international projects were designed to engage local partner, integrating environmental, social, and economic aspects within the programs." In addition, the local governments had institutionalized the issues that have been promoted by the project by developing plans, programs, budgets, rules, and monitoring. One project representative noted that "the goal of the project was to institutionalize climate change adaptation and disaster risk reduction issues into the governments' program for follow-up actions". An international project had encouraged the local government agencies in Southeast Sulawesi Province to design an integrated program that can increase the level of participation and interaction among actors which eventually may improve their trust in collective actions. Another project leader also said that they had promoted integration of conservation program, business empowerment, and capacity building of community.

Observed Outcomes from Watershed Collaborations

For the purpose of assessing the success of both the SESPWF and the WW collaborative projects, interviewees were asked to identify the key project accomplishments they had observed and experienced, and to provide specific examples of any programs that have been implemented or impacts associated with the projects. They were also asked whether they observed any challenges or obstacles to effective collaboration and project implementation. Their answers were categorized into three types of outcomes in accordance with the conceptual model: process, implementation, and environmental outcomes.

The results are presented in Table 2, where the incidence comments pointing at positive and negative examples of outcomes in each of the three categories are noted. The presence of positive and negative outcomes is also reported separately for the SESPWF (which operated at the provincial level) and the local Wanggu Watershed collaborations (which operated at the district level).

Table 2 Number of respondents citing positive and negative examples of outcomes

Key themes	Sub-themes	The SESPWF	The Wanggu Watershed
Process outcomes			
	Engagement with stakeholders and key actors		
	Positive	9	2
	Negative	2	-
	Frequent and better coordination		
	Positive	5	5
	Negative	9	-
	Improved performances and better decision		
	Positive	4	3
	Negative	12	-
	Institutionalization and funding		
	Positive	3	2
	Negative	17	12
Implementation/ behavior outcomes			
	Implementing specific programs		
	Positive	9	7
	Negative	4	-
	Developing broad policy and regulation		
	Positive	6	-
	Negative	-	-
	Providing data and resources		
	Positive	4	2
	Negative	-	-
	Collaborative and integrated management		
	Positive	4	2
	Negative	-	-
	Increasing awareness of the SESPWF		
	Positive	2	-
	Negative	-	-
Environmental outcomes			
	Improved land cover		
	Positive	-	1
	Negative	1	-
	Improved landscape resilience aspect		
	Positive	-	1
	Negative	-	-
	Reduced disaster event		
	Positive	-	1
	Negative	-	-
	Availability water sources of the watershed		
	Positive	-	-
	Negative	-	1

Outcomes Associated with the SESPWF

Process Outcomes

When asked about what the most important outcomes have been from the SESPWF, informants were most likely to cite examples of process outcomes and less likely to mention the implementation and environmental outcomes. The result shows the process outcomes of the SESPWF are varied. A few interviewees stated the SESPWF is affecting a good institutionalization and operationalization of programs implemented by the stakeholders including the allocated funding source. These participants perceived that the governance system has a clear distribution of authority, promoting collaboration, and shared funding. It is clearly stated by one of the local government officials who said:

> So far, we are partnering with federal government in sharing financial support in the form of national budget and regional budget. In regard to performance, I think there are clear segregation of roles, functions and responsibilities between federal and local government.

On the other hand, more than half of participants perceived a lack of institutionalization and funding source allocation. The SESPWF seemed not to have sufficient power to run the management of watershed. One project leader cited that "the SESPWF doesn't have a sufficient power to manage and facilitating the decision-makers related to watershed issues."

A small number of participants perceived an active engagement of the relevant agencies and key actors in terms of the clarity of roles, participatory process of program, and providing input in planning and program design. In contrast, two participants from

local government perceived the low engagement of stakeholders and key actors. According to a one project leader, "the biggest challenge is how the sectoral agency which participate in the SESPWF are able to develop integrated programs and coordinate one another."

A sub-set of informants believed the SESPWF promotes a frequent and better coordination among cross-sectoral stakeholders and across the authorities' level. For instance, providing inputs in planning and program designing process. Nonetheless, almost one third of the participants commented on the dominance of provincial government and insufficient role of the key actors. One local government official stated that: "In managing such a cross-border resources, the provincial government plays role on it. However, there is lack of role of the responsible key actors, as a consequence, we, the local governments cannot do much."

Improved performance and decision-making processes in the past couple of years were only perceived by a couple of informants. One informant noted that "In most programs of the SESPWF, community had been involved participatively in terms of capacity building trainings and field activities implementation." However, more than one third of participants reported that the SESPWF exhibits some poor performances and decision-making processes. One provincial agency official who was not formally participating in the SESPWF felt that "the performance of the forum is not optimal yet and need to be improved in the future."

Implementation Outcomes

Overall, fewer informants presented evidence of program implementation or behavioral changes as examples of success for the SESPWF. Indeed, a sizeable group argued that implementation follow-through is one of the critical challenges facing the forum. Nearly one third of the participants agreed that the technical agencies have implemented specific programs based on their technical fields. Examples included forest restoration, water class assessment and monitoring, capacity building training, and a climate change adaptation and disaster risk reduction project. One academia and project leader mentioned that conservation was one of the programs implemented by stakeholders. Nonetheless, an equal number of informants felt that the SESPWF was still lacking in following through with implementations and pointed to poor performances of programs. One project leader assumed that the watershed was not managed properly as reflected by the continued occurrence of flood disaster events.

One of the obvious accomplishments of the SESPWF that was mentioned by stakeholders is the enactment of the regional regulation 1/ 2015 concerning the watershed management in the Southeast Sulawesi Province. One informant believed that this output was a legal basis of the forum and is seen as providing a strong foundation to govern the watershed in the province.

A few participants mentioned that providing and sharing data and information among stakeholders occurred between the upstream and the downstream managers. One local government official in the downstream said his unit has built a mutual coordination with another unit in the upstream area and is sharing regular reports with one another.

Collaborative and integrated management has occurred, even though there only a few informants mentioned specific examples. One informant corroborated that several agencies had built integrated programs based on their field, for instance, a conservation program implemented by the Forestry Agency, food production performed by the Agriculture, Food Crops and Livestock Agency, and the NGO empowered capacity of the community.

One informant highlighted the fact that there is an increased awareness of the SESPWF. A participant of the SESPWF cited that "there was an attempt to encourage an approach through educational media and the concept of governance in the village which is carried out in a participatory and village-based methods."

Environmental Outcomes

Few respondents could point to tangible environmental outcomes that could be attributed to the work of the SESPWF. A subset of participants argue that this may be a reflection of the fact that the SESPWF works at the provincial level and did not focus on any specific watershed. Additionally, as the SESPWF management is relatively new, achieving environmental outcomes require longer time to occur.

Outcomes in the Wanggu Watershed

Process Outcomes

In the Wanggu Watershed level, many of the informants provided examples of positive outcomes associated with the SESPWF. Institutionalization of the SESPWF in

terms of the improved awareness of stakeholders and communities has occurred, even though the improvement was insignificant. A local government official confirmed the improvement of the people awareness toward the Wanggu Watershed management. On the contrary, more than one third of informants felt the SESPWF had not succeeded to improve awareness of stakeholders and encourage better understanding of each actors' roles. One local government official mentioned that "it resulted from the unclarity of who does what, this is obviously an obstacle, because it associates with the change of agency officials who have that authority. When this change happens, they have to start from the beginning, holding meeting and making basic concepts."

A small number of respondents felt a more collaborative approach to stakeholders' programming had increased engagement of stakeholders and key actors. One local government agency said that "the international project promoted a better coordination and collaboration among stakeholders".

Evidence of frequent and better coordination as well as improved performance and better decisions at the WW level was provided by a small group of informants. They pointed to better involvement of lower level of government and multi actors, and facilitation of partnerships between the upper and lower parts of the Wanggu Watershed. One informant cited that "an international project worked together with the provincial and local governments to develop a collaborative governance in the Wanggu Watershed."

Implementation Outcomes

Some respondents identified some specific programs that had been implemented by technical agencies in the WW. For instance, forest and land management, construction of embankment, economic empowerment, and climate change adaptation and disaster risk reduction program. One informant stated that "restoration of deforested areas in the Wanggu Watershed has been implemented through collaboration of local government, community and international projects."

Accomplishments like making data and information more available were listed by a few informants. One local agency staff mentioned that "they were prepared and disseminating information to other stakeholders." Likewise, collaborative and integrated management were not mentioned by many informants. One local government official did note that, "city government, the international project, and provincial government have worked together to develop a collaborative management of the Wanggu Watershed."

Environmental Outcomes

Evidence of environmental improvements was shown in the Wanggu Watershed level such as improved land cover through conservation programs and improved landscape resilience aspect through climate change adaptation and disaster risk reduction program. A federal agency participant was convinced that land cover of the Wanggu Watershed increased through restoration program of multi-purposes tree species (MPTS). Another international project leader stated that the climate change adaptation and disaster risk reduction projects had already improved the landscape resilience of the watershed. An

international project's report of fourth year stated that they had reached 1,195 beneficiaries (829 men and 366 women) through capacity building and community assistantship programs (USAID-APIK, 2019). Similarly, a provincial agency reported that "the biggest achievement was that during the natural disasters that occurred in almost entire Southeast Sulawesi region was not happened in the Wanggu watershed area." Another thing is that, in the Wanggu Watershed level, one stakeholder believed that citizens were facing a diminishing water source for those who lived in the Wanggu Watershed, particularly for drinking water. Based on the document of Water Class for the WW performed by the Provincial Environmental Agency, the water quality of the watershed is in the second segment, that means the water is intended for recreation, freshwater fishpond, irrigation but not for drinking water (Dinas Lingkungan Hidup Provinsi Sulawesi Tenggara, 2018).

The Dynamic Management of the SESPWF and the Wanggu Watershed projects under Decentralization

In order to evaluate the dynamic management of the SESPWF and the WW projects in under decentralization, the informants were asked about the impacts of collaborative efforts on people working at different levels of governance. In particular, they were asked how the SESPWF affected each actors' ability to do their job, coordinate decision-making in the WW, and improve watershed programs and outcomes. Of particular interest was the impacts of decentralization (as exemplified by the SEPWF and other local collaborations) on the five conditions and three outcomes listed above. During the coding process, the various responses were categorized to identify the most common

emergent themes. Eventually, the five main themes that emerged from that process represent a combination of all five conditions and three outcomes (Table 3). In each case, informants provided examples of both positive and negative impacts. In this section, I present examples of both types of feedback across several key topics and compare responses by people who work at the provincial- and local-level.

Table 3 Number of respondents citing positive and negative examples of the impacts of decentralization on the SESPWF and the WW projects management

Key themes	Sub-themes	Provincial-based agencies	Local-based stakeholders	Total
The Impacts of Decentralization on the SESPWF and the Wanggu Watershed Projects				
	Enhancing capacity and awareness			
	Positive	4	8	12
	Negative	4	10	14
	Providing funds and resources			
	Positive	5	14	19
	Negative	2	2	4
	Promoting coordination, representation, and partnerships	7	16	23
	Positive	7	7	14
	Negative			
	Development of plans, programs, regulations, and organizational sustainability			
	Positive	8	11	19
	Negative	10	8	18
	Promoting environmental preservation			
	Positive	1	6	7
	Negative	4	15	19

Enhancing capacity and awareness

Some provincial level informants indicated that socialization, training, public consultation, and program expose events reflect efforts to enhance capacity and awareness of community and other stakeholders. A federal agency official mentioned that they "engaged all relevant stakeholders in public consultation meetings and planning activities" to provide an adequate information about the program as well as gaining feedback from others. One federal agency official noted that they had engaged multi stakeholders from the community in a "public consultation meeting." A couple of provincial agency respondents cited efforts to increase capacity and awareness of actors through socialization and program implementation. Despite these efforts, a significant number of provincial interviewees still felt that the capacity and awareness of local actors were lower than they expected. Some stated that awareness among community members is still lacking. Others said socialization and awareness programs were insufficient.

Socialization, training, public consultation, and project demonstration activities were mentioned by local stakeholders less frequently than regular meetings as the ways of improving capacity and awareness of stakeholders. A few local agency staff mentioned efforts to increase capacity and awareness of actors through socialization and program implementation. One local official noted "the role of international project in changing lay people's mindsets." Another referred to a technical training program as an attempt to increase capacity of stakeholders.

Overall, almost half of the local-based informants said that stakeholder capacity and awareness remained low. One local agency representative noted that "there is

misunderstanding of local leaders and misinterpretation of policy-makers" regarding what watershed management supposed to be. As a consequence, misunderstanding "makes the local governments tend to be ignorant." The existing illegal logging practices in a way of basic needs fulfilment had showed the lower awareness of community towards conservation of forest as buffer zone. One community member mentioned "the need of alternative livelihoods for illegal loggers" might become as an effort of increasing awareness.

Providing funds and resources

Half of provincial-based interviewees noted that the SESPWF and its technical agency participants have provided funds, human resources, and data and information for local projects. A federal agency official mentioned that "the federal government allocates funding for the integrated watershed management plan in the Wanggu Watershed." One federal agency's official working in the local watershed stated they had "allocated budget for integrated watershed management plan and provide accessible document of watershed management plan (RPDAS)." Likewise, a provincial agency official noted that technical institutions in the SESPWF have shareable important data." For example, documentation of water classes in the Wanggu Watershed can help with local decision-making process. One provincial agency's official mentioned that they "facilitate funding for developing plans, implementing environmental monitoring and controls, and providing data of water class in the Wanggu Watershed."

Nevertheless, a minority of provincial-based actors felt that "funding support is still inadequate" and that they were still "lacking infrastructure for watershed management." A few informants were concerned about undistributed data, problems with research implementation, and inadequate human resources.

While most local actors were appreciative of support from the SESPWF, it is noteworthy that more than half of the local-based actors mentioned that international projects working in the WW had also provided funding support, human resources, and data and information. Importantly, local informants were more likely to cite examples of contributions from international projects than help from the SESPWF, because international projects mostly worked at district level. For instance, one local official noted that "the international project provided human resources and financial support." Another local agency officer said, "the international project provided updated information and assistance for disaster mitigation in the Wanggu Watershed." Another mentioned that "the international project facilitated preliminary surveys and studies, organized series of meetings, and implemented the climate field school program." Some pointed at the large amount of available data on sustainable agriculture practices, facilities and infrastructures, and the farmer counseling program. One local official stated that their "data and work plan resulted from studies of the international project and the agency provided supporting materials for the project." A staff for a provincial management unit which works at the district level mentioned that "the projects had supported the installation of an early warning system in the village."

A number of local community members pointed at the climate field school, disaster management programs, organic farming, and social forestry programs (all implemented by international projects) as evidence of changes in watershed management. One mentioned that "the international project and NGO partners facilitated procurement of the early warning system facilities, water level, and radio information system." Meanwhile, a few local stakeholders felt that important data was not yet distributed well, and that local governments lacked sufficient power to manage cross-border watershed issues.

Promoting coordination, representation, and partnerships

More than half of provincial-based participants perceived that better coordination and collaboration was taking place among stakeholders during the past couple of years. The SESPWF is mandated to build coordination among all relevant stakeholders in the upstream and the downstream parts of the WW. A SESPWF's technical agency member noted that the agency promotes "coordination between the upstream and the downstream agency and community in the Wanggu Watershed through agriculture counseling program was performed by the extension officers."

Nonetheless, a significant minority of provincial level informants disagreed that coordination and collaboration among actors have improved. Some noted that different levels of authority can work as a constraint for cross-border coordination. One stated that "the absence of cross-boundary coordination resulted from different levels of government." Another official was convinced that "there was an inadequate

representation of the lower level government in the watershed forum." A couple of government officers mentioned that the interest of local government and sectors was hindering coordination.

At the WW level, more than two-third of local participants mentioned that coordination and collaboration among stakeholders in the upstream and the downstream portions of the WW had improved in recent years because of the existence of the SESPWF as a mandated forum. A community member confirmed that "they were involved in program coordination of stakeholders." Not all of these improvements were linked to the SESPWF. Some local informants mentioned efforts by an NGO and international project staff to promote regional partnerships within the Wanggu Watershed area. One local government official noted that "international projects facilitated cross-boundary coordination." Another confirmed that "the project carried out gradual coordination activities." Engaging stakeholders in a public consultation meeting represented another attempt to build coordination. Better coordination and collaboration were also improved by contributions from another similar forum (e.g. Water Resources Management Coordination Team/ TKPSDA). Nevertheless, some local informants reported that coordination and collaboration among actors was slow to improve because the ego of local government officials and sectors was still restricting mutual coordination. A few local government officials validated this statement when the reported that meetings were less intensive and there was less direct coordination between the local governments since the cross-jurisdictional coordination of watershed management was taken over by the provincial government. Overall, most of the local government agencies perceived that

international projects contribute more than the SESPWF in building coordination and facilitating collaboration across sectors and borders.

One interesting observation by a local official was that "the occurrence of natural events encourages the willingness for a partnership between the upstream and the downstream districts." All interviewed community members mentioned that the improved coordination and cooperation among stakeholders had been facilitated by the international projects in which they are involved. One stated that "international projects have improved communication and collaboration between community and governments."

Development of plans, programs, regulations, and organizational sustainability

With respect to the dynamic decentralized watershed management experienced by the SESPWF, informants who worked at the provincial level frequently mentioned that the forum contributed by developing plans, programs and relevant regulations. Under decentralization in the Indonesia system, federal regulations on watershed management were issued, then were articulated through subnational-based regulations to address local issues. One academic expert mentioned that "the regional regulation (Perda) 1/ 2015 was enacted by provincial government for watershed management, including the Wanggu Watershed containing cooperation between the districts within the watershed." Similarly, an informant who works with the provincial development board said that "they had attempted to integrate and synchronize plans and programs of districts with provincial level through the mid-term development plan (RPJMD)" and regional regulation of watershed management through Perda 1/ 2015. The RPJMD document stated that the

fifth goal is maintaining safe conditions in the carrying capacity of the environment for the sustainability of people's lives (Pemerintah Provinsi Sulawesi Tenggara, 2019). One NGO activist said, "…we emphasized understanding landscape patterns and developing plans in one village for the agriculture and forestry sectors." Furthermore, the activist noted that "this goal is then articulated to mainstream watershed issues in the government's spatial plan." Since then, several programs of technical agencies have been developed, such as agriculture counseling programs, community assistantship, water quality monitoring, and forest restoration.

More than half of provincial-based stakeholders commented that the existence of the SESPWF as a federal mandated-forum has not brought yet fully integrated management in the region. Cross-border coordination is ruled by the provincial government, and under Law 23/ 2014, forest management authority has been withdrawn from local government and shifted to provincial level, resulting in a reduction of responsibility by the local authorities. A few provincial officials mentioned that the rotation of qualified officials because of political shifts is an impediment to collaboration. In addition, local government interest hinders synchronization of program across sectors and administrative border. Furthermore, politics and regional elections had contributed to gaps across sectors and levels of government. One official of provincial government said that the "regional elections affected the rotation of personnel and official." A scientist from a local university observed that "political issues impacted leadership on technical agencies, less professional management, and sectoral interest of agencies."

Similar to provincial level respondents, half of the local-based actors provided examples of how decentralized governance processes had contributed to a more collective approach to watershed management in the WW. The SESPWF had assisted the local government to develop plans, programs and relevant regulation. A provincial government official confirmed that they were involved in "developing the Wanggu Watershed management planning." One local-based agency staffer noted that "the SESPWF developed and implemented forestry programs." One informant from local government said, "they had supervised village government's program and budget plans and provided guidelines for village governance, development, and grants management." Several other programs were mentioned by local actors including environmental service programs, improved rice cultivation, organic farming, water quality monitoring, and a tree planting program.

On the other hand, a subset of local informants disagreed that the SESPWF or Wanggu Watershed projects had yet achieved better collaboration in the Wanggu Watershed level. Some local agency staff mentioned that the political situation, policy changes, and reshuffling of officials hindered coordination among stakeholders. One interviewee from a local agency said, "cross-border coordination is ruled by the provincial government." A couple of local informants mentioned a lack of local responsibility associated with the withdrawal of forest management authority from local government to provincial level through the Law 23/ 2014. One noted that "this condition makes the local governments tend to be more passive." Problems with unsynchronized

policy and unintegrated programs were often mentioned by local informants as disadvantages associated with continued fragmented governance of natural resources.

Promoting environmental preservation

The SESPWF collaborative watershed programs are considered to promote environmental preservation. Social forestry and forest restoration programs were a primary focus of federal and provincial forestry agency projects designed to increase forest land cover in the deforested area within the Wanggu Watershed to address the flooding problems. As such, representatives of government agencies at the provincial level commonly reported that the forest restoration program had increased land cover in the upstream area. A document from BPDASHL Sampara reported that this agency planted up to 120,000 seedlings of Jabon (*Anthocephalus cadamba*) and Sengon (*Paraserianthes falcataria*) for community groups in the upstream and the midstream parts of the Wanggu Watershed (BPDASHL Sampara, 2019).

Nonetheless, a minority of provincial informants challenged the idea that environmental improvements had yet occurred. In fact, one provincial agency stated that "water quality and quantity have been diminished because of urban development." One NGO activist mentioned that "flooding and landslide still happen." A report of the Provincial Disaster Mitigation Agency of Southeast Sulawesi Province/BPBD Sulawesi Tenggara stated that from 2006 to 2016 there were 19 flood events in Kendari and 23 flood events in South Konawe. Another international project report cited that massive floods happened in 2013 and 2015 in which the overflow of water came from the

Wanggu Watershed (USAID-APIK, 2018; BPBD Sulawesi Tenggara, 2018). One academic expert also noted that "land use change for agriculture and urban development are also still happening."

Social forestry and forest restoration programs were frequently mentioned as examples of successes by a couple of local-based informants. These forestry agency's programs had promoted the increase of land cover in the critical area within the Wanggu Watershed. One local government agency noted that "the forest conservation had decreased deforestation, sand mining, and river pollution," another provincial agency which works at a local level stated that "flood events were reduced," and one project leader noted that "climate field school improved landscape resiliency." A community member stated that these programs "aimed to protect the forest by authorizing the village including the community to manage forest as a part of the watershed management." Nevertheless, nearly two-third of the local informants were unable to provide evidence of improved environmental outcomes at the local level. One local official mentioned that "destructive practices still exist causing deforested area, disaster events, ecosystem damages, and natural resources losses." These conditions were confirmed by other several local agencies and community members. One local agency official noted that "land use changes still occurred because of urban development." Others mentioned some evidence of environmental degradation including "the extinction of aquatic species because of water pollution", and "land conversion for agriculture and the use of pesticides." Additionally, continued flooding problems were mentioned by significant numbers of informants at the local level.

Chapter 5. Discussion and Conclusion

Achieving an ideal level of collaborative watershed management in Indonesia remains a big challenge. A growing population has placed new demands on land, water, and forest resources. The evolution of water resources management has been complex. Watershed management is typically associated with administrative boundaries based on hydrological boundaries (Schneider et al., 2003). However, fragmented governance systems often result in uneven implementation of regulations across federal to regional and local governments. In response, Indonesia has moved toward greater decentralization and local control of watersheds. However, the trajectory of this transition has not been as flawless as was expected. Previous research has shown that several factors can contribute to more successful collective action in watershed management. This study explores whether these five supporting conditions are present in Southeastern Sulawesi, and whether they are linked to the success of watershed management outcomes implemented across two different governance levels.

The Presence of Key Conditions to Support Collaborative Watershed Management

Overall, it would appear that most of the conditions associated with successful collaborative watershed management are present to some degree in the study area. These conditions are experienced in different ways by stakeholders depending on the availability of resources they have and the political situation in regional and local scale.

Therefore, collaborative processes are dynamic depending on these factors which eventually will determine the degree of accomplishment of integrated management of watershed in Southeast Sulawesi Province.

Almost all respondents working at both the SESPWF and WW levels were fairly knowledgeable about collaborative projects, project objectives, and watershed conditions. Most felt that there is adequate data and information to guide management decisions, though these data were generally not generated by the SESPWF itself, but are gathered and made available by the forum participants (including a variety of technical government agencies, NGOs, and academics which performed studies, monitoring, and assessments). At the local level, international development projects significantly contributed to the provision and sharing of data and other information collected from their preliminary surveys and studies. However, most informants suggested that the SESPWF needs to make extra efforts to reach and involve local actors (like farmers and community leaders). These attempts are important as the local information is needed to identify problems and finding solutions (Dietz et al., 2003). Integration of these different forms of knowledge and expertise through collaborative forums and projects has potential to build a good understanding of relevant stakeholders towards watershed management (Ananda and Proctor, 2013). Despite the availability of data and information, there remain challenges in integrating and distributing data from different sources and connecting them to lower level governments and policymakers.

All the SESPWF participants appear satisfied with the breadth of representation of different organizations and interests since it is stipulated in the federal regulation

37/2012 on watershed management. From the forum members point of view, representation is defined as involvement of different types of agencies and professions mentioned in the federal regulation. The SESPWF itself has representativeness from federal and provincial agencies, NGO, and academia. That said, some respondents pointed to a lack of adequate representation of lower-level governance actors and community members. Overall, collaborative watershed projects in the study area engaged a fairly diverse group of actors (federal, state, and local government, environmental organizations), but has not yet found a way to involve more local community representatives (Leach and Pelkey, 2001). On the other hand, people seemed more satisfied with how well these groups were represented in projects implemented at the local district level, where local informants mostly experienced expressed satisfaction with the representation of stakeholders in WW projects, particularly including communities in the upstream and the downstream areas of the watershed.

Both the SESPWF and the WW projects appear to be challenged to find the best balance of including all interested parties and keeping meetings and processes viable. Efforts to expand representation in the forum to include lower level actors remain controversial. Scholz and Stiftel (2005) argued that the bigger size of a forum may reduce the level of shared-common perspectives among participants, diminish personal trust among actors, increase time requirements, and allow more domination by certain stakeholders.

Even though most SESPWF participants felt their level of participation was sufficient, some stakeholders argued that outside of attending meetings, actual

involvement in integrated programs is still lacking. Despite the equal voice of each stakeholders, a lack of leadership, weak coordination among actors because of sectoral interests, and dominance by several agencies were cited as factors that limit participation in integrated programs. Meanwhile, at the WW level, the lack of knowledge and understanding seemed influenced the degree of participation of the communities in the projects.

The degree of stakeholders' involvement in integrated governance efforts is determined by the availability of resources they have (Margerum, 1999, 2001, 2007). The SESPWF participants believed that their budgets and staff are generally sufficient to carry out their technical programs and they have committed to support the forum by allocating funds and delegating representatives. Nevertheless, some felt these resources were inadequate to maximize the impact of SESPWF's works. Likewise, the level of financial support and human resources from local agencies and stakeholders was seen as fairly adequate. Communities also invested their own budget and time to be involved in the WW projects. However, additional resources are still needed to effectively run the projects. Generally speaking, budget and staff support remains a challenge to collaborative watershed management in the study area.

All the SESPWF participants and most local actors reported a reasonably good level of coordination among actors in developing watershed policy, planning, and programs. There appears to be a number of supportive and flexible legal bases at both the federal and regional level. Additionally, collaborative approaches employed by either the SESPWF members and the international projects have been able to support greater

coordination across agency sectors and institutions (Berardo et al., 2019). However, policy and regulation changes continue to influence the degree of coordination between provincial and local governments.

Finally, institutional sustainability is a key challenge for collaborative actions in watershed governance. As the SESPWF is a mandated forum by the federal government, the rules and procedures are clearly stipulated in the legal regulations. These components affect the degree of interaction and trust among actors in collaboration (Agrawal et al., 2013). Because support from the federal government has been strong, watershed efforts at the provincial level are less dependent on grants and support for project staff, which should increase the effectiveness of joint actions (Margerum, 2007). Accordingly, technical agencies which participate the forum appear to be committed to continue investments of budget and staff to support the SESPWF and integrate environmental, social, and economic aspects of their programs. Meanwhile, at the WW level, the presence the international projects and institutionalization of their efforts into local government agencies' plans and programs suggests that these collaboration efforts are also reasonably sustainable. From the interviews and document analysis, it was apparent that local agencies had allocated fairly significant budgets to support programs related to watershed management at either the provincial or local level.

The Outcomes of Watershed Collaborations

While many of the conditions associated with successful collaborative watershed management appear to exist in Southeast Sulawesi, the SESPWF and WW projects' main accomplishments appear to be focused on establishing processes and/or early implementation of activities. Evidence of significant improvements in watershed environmental conditions is much more difficult to find at this stage. As noted in the literature review, ideal watershed collaborative management projects should incorporate the common goals and interests of actors who work across different sectors and at different levels of governance (Malone, 2000). Leach and Pelkey (2001) pointed out that a successful collaboration is determined by the degree of adoption and implementation of developed plans, programs, and regulation. In this respect, most participants in the SESPWF report that a supportive watershed governance system has been established through legal frameworks implemented under Indonesian decentralization programs. Key features include clarity of transfer of authority, promoting partnerships, and shared funding. Interaction among actors have been established through meetings and discussions (Koontz and Johnson, 2004), the development of social networks, efforts to share information (Kim, Keane, & Bernard, 2015), initiatives to address cross-boundary management (Emerson et al., 2011), and joint programs and monitoring to address the complex interactions within watershed systems (Menerey, 2001).

Nonetheless, there appear to be a number of issues that have hindered active involvement of all key actors, including the dominance of provincial government, insufficient role and responsibility of stakeholders, and weaknesses in management and

decision-making processes. Under the decentralized government system, the determination of regional budgets, human resource capacities, local politics and social demography can all influence dynamic watershed management processes (Margerum, 2007). Several informants reported that local politics and elections had contributed to the reshuffling of officials within government agencies, which has frustrated efforts to develop effective collaborations. Moreover, the withdrawal of forest management authority constrains smooth coordination between provincial and local government officials. Meanwhile, international projects have been able to design more integrated approaches that allows multiple types of stakeholders to be involved in management as well as initiating partnerships between the upper and lower basins of the WW.

These challenges in developing effective processes have influenced the implementation of SESPWF programs. Most provincial and local informants pointed to both joint and individual sectoral programs (e.g., forest restoration, riverbank embankment, food production, and organic farming) as evidence of success. It was clear that the SESPWF and WW projects had successfully disseminated data and information, monitored and assessed water quality conditions, implemented capacity building trainings, and started climate change adaptation and disaster risk reduction projects and partnerships. Other evidence of implementation success mentioned by several provincial and local participants was the enactment of Regional Regulation 1/ 2015 on watershed management.

Ultimately, watershed collaborations are motivated by a desire to address problems with water quality, habitat conditions, runoff, and groundwater recharge

(Ferreyra and Beard, 2007; Scott, 2015). The broader scope of work and the implementation of new management processes of the SESPWF have limited its ability to achieve tangible environmental outcomes, and many outcomes might require longer time to occur. At the WW level, however, local actors frequently mentioned examples of environmental improvements, including improved land cover from forest restoration programs, and enhanced landscape resilience as evidenced by decreased flood events in certain areas of the WW. One international project described a significant number of project beneficiaries. More than 1,000 people have increased their knowledge and capacity to manage land to adapt to climate change and disaster impacts (USAID-APIK, 2019). Based on water quality reports, however, the diminished source of drinking water in the WW seems to be an emerging challenge in the near future if the watershed continues to be poorly managed (Dinas Lingkungan Hidup Provinsi Sulawesi Tenggara, 2018).

The Dynamic Management of the SESPWF and the Wanggu Watershed Project under Decentralization

Overall, decentralization has impacted the dynamic management in both the SESPWF and the WW. Broadly, the system had positively accelerated collaboration among actors. On the other hand, to some extent it may affect the level of participation of lower level stakeholders.

Transfer of authority to the lower level is one of the characteristics of decentralized government system (Koontz et al., 2004). The federal law of watershed management has been successfully articulated at the subnational level through regional

regulation that is applicable for the provincial level but also for the local level. Provincial-based stakeholders through the Provincial Planning and Development Agency report that they had facilitated the synchronization of plans and programs across sectors and levels of government through the mid-term regional development plan (RPJMD). Some programs have been developed by provincial-based technical agencies to be implemented at the district levels through community assistantships, agriculture counseling programs, water quality monitoring, and forest restoration. However, these programs were not completely integrated across sectors as some technical agencies still implemented their individual programs without fully coordinating with other sectors. It appears that the SESPWF can do more to facilitate integration of the plans and programs of its participants.

In some ways, decentralization has shifted control away from some local authorities. The recent federal Law 23/ 2014 on subnational government withdraws the forest management authority from local government and assigns it at the provincial level. In this way, it can be said that more centralized governance of natural resources at the regional level has occurred. This condition has resulted local governments becoming less motivated and aware of efforts to manage watersheds collectively. These dynamics are exacerbated by political divides and regional elections that often contribute to the reshuffling and replacement of key officials. In spite of these shortcomings, most local actors perceived a positive impact of decentralization because they obtained more assistance from provincial-based agencies in developing their plans and programs and implementing joint programs.

Nearly all provincial-based participants reported that to some extent, they have adequate funding, staffs, and data and information to implement their programs. In addition, the federal government provides some budgetary allocations to support the work of the SESPWF and implementation of its technical-related programs at the local level. However, this level of support is not sufficient to accelerate the more collaborative efforts of multi-sectoral agencies and multi-level of governments.

The presence of international projects appears to help bridge this gap by providing additional resources to perform integrated watershed management, particularly in the WW. These projects play important roles to support local actors in providing resources that are needed to engage broader stakeholders. Preliminary assessments and studies implemented by these projects had provided important data and information for local stakeholders to use when they developed plans and programs. The partnership scheme between the upstream and the downstream authorities that was facilitated by the projects had become a big accomplishment. Because this collaborative effort required frequent coordination and supporting resources, it might not be accomplished by the provincial forum alone as it does not engage local government in their forum and has limited resources.

Overall, stakeholders in both the SESPWF and the WW projects emphasized how decentralization has promoted better coordination and collaboration among relevant actors. The SESPWF is mandated to coordinate all stakeholders involved in the forum. Even though the membership of this forum is limited to the provincial-based institutions

only, additional interests (particularly local community actors) have been integrated through the work of international projects.

The occurrence of natural disasters appears to have encouraged local governments to become more engaged in watershed collaboration efforts in this study area. Dean et al., (2016) noted that experiencing natural events can increase knowledge and awareness of people toward water-related issue. In Southeast Sulawesi, the level of knowledge, understanding, and awareness was linked to the degree of participation of stakeholders in collaborative management. Cross-level attempts for improving these components have been carried out either by federal, provincial, and local governments or international projects, academia, and NGO. Many respondents in the SESPWF and the WW projects pointed to efforts to increase capacity and awareness of stakeholders through socialization, trainings, data and information sharing, public consultation, and program implementation (Ananda and Proctor, 2013).

Community-based approaches and integration of social, economic, and environment aspects in collective action require the involvement of multiple levels of government and sectors (Biswas, 2008; Muste and Mocanu, 2016). In this study, I found that integrated approaches have been employed by both government agencies and the international projects. Nevertheless, several of my local informants mentioned continued problems with environmental degradation practices through deforestation, land use change for agriculture and urban development, mining, and water pollution, as well as disaster events. Based on Mid-Term Development Plan of Southeast Sulawesi Province, local economic empowerment and investment remained the second prioritized objective.

Local and provincial government officials seek to create a favorable environment for economic growth by increasing productivity of commodities, infrastructure development, and market (Pemerintah Provinsi Sulawesi Tenggara, 2019). It is in the context of this economic development work that we see efforts to promote environmental preservation including social forestry and forest restoration programs as well as climate field schools.

Based on the aforementioned findings, some recommendations might be appropriate to strengthen the management of Wanggu Watershed including proposing an establishment of a more formal governmental watershed management organization at the local level that would involve local-based actors, building and maintaining partnerships between upstream and downstream authorities, and engaging communities in more external collaborations with international projects, NGOs, and universities.

Generally speaking, this study confirmed relationships between conditions and outcomes from collaborative watershed projects identified in previous literature. The presence of five conditions in some circumstances contributed to increasing efforts to promote coordination and program implementation across sectoral and jurisdictional boundaries under decentralized regulations. Supportive federal and regional regulations, availability of resources, and the formalized forum influenced the performance of the provincial and local-based actors to develop more collaborative approaches in achieving outcomes. Despite the withdrawal of forest management authority from local to provincial level which limited the power of local government to manage forest resources, the intervention of international projects and the occurrence of natural events both contributed to increase the partnership between the upper and lower basin of the WW.

The integrated approaches employed by the projects and several participants of the SESPWF help address the need for problem-related funds, expertise, and other resources that were commonly lacking in a fragmented government system.

A Re-examination of the Conceptual Model

It is obviously that decentralized governance system had impacted on performance of watershed management in regional and local level. The presence of five key conditions contributed to the achievement of process, implementation, and environmental outcomes. However, this study found that the presence of the conditions is not merely become the single factors that play roles in achieving the outcomes. The existence of international projects was important in fostering a dynamic collaborative management process in the Wanggu Watershed. Their projects had supported the key actors in both provincial and particularly local level to be more involved in collaborative actions. In addition, achieving early outcomes (process) may not always lead to later implementation and environmental outcomes. For instance, the frequent coordination and better engagement of the stakeholders does not lead to an improved environmental condition that requires a fair amount of time to be achieved.

These finding lead to a reassessment of the conceptual model presented above. Figure 4 below shows a revised model in which the five conditions may influence the achievement of process, implementation, and environmental outcomes separately and the role of international projects influence both the conditions and the outcomes. This updated model also reflects the role of international projects as an important external

factor that foster the dynamic management of collaborative watershed governance under a decentralized system.

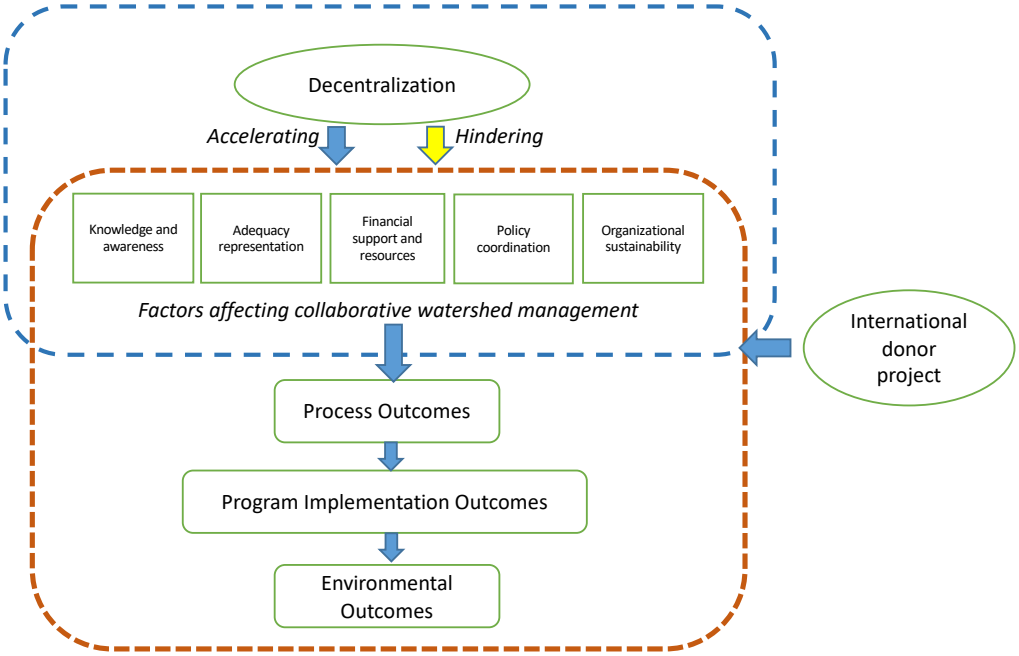

Figure 4. A revised conceptual model of factors shaping effective collaborative watershed management under conditions of government decentralization

Limitations and Implications for Future Work and Policy

The system of watershed management in Indonesia, particularly in the Wanggu watershed, Southeast Sulawesi, Indonesia seems to be constantly in transition because of complexity of decentralized governance and political situation. Inevitably, the transfer of authority from federal to regional and local government has generated new challenges. These require the involved actors to be more prepared for any required resources, integrated approaches, partnership schemes, and flexible rules and procedures that allow for broader participation of stakeholders.

Nevertheless, because of the wide range of this topic, not all aspects of watershed management could be covered by this study. This study focused only in one watershed, and future research should engage several watershed cases to compare the drivers of effective watershed management, particularly contrasting situations with and without international project involvement. Additionally, it would be useful to expand consideration of partnerships between multiple watersheds, and to explore how transaction costs affect the degree of participation and interaction between the higher and lower level decision-makers. Last but not least, it would be interesting to collect data on the perceptions of civil society actors on the importance of water and other natural resources as well as their willingness to take actions to protect them.

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Appendix A. Interview Guides

SOUTHEAST SULAWESI PROVINCIAL WATERSHED FORUM (SESPWF) PARTICIPANTS

Role and Participation in the SESPWF

- Can you describe how you and your organization have been involved in the SESPWF?
  - What are your roles and responsibilities in the SEPWF?
- How has the SESPWF process been going so far?

Evaluate 5 Factors Associated with Collaborative Management (SESPWF)

Knowledge and Awareness

- From what you know, how would you describe the most important objective of the SESPWF?
  - What problem was it designed to address?
- Does the SESPWF have adequate information about watershed conditions to guide its decisions?

Adequacy of Representation

- Which organizations or stakeholders are most involved in the SESPWF?
- Is participation in the SESPWF limited or can any organization participate?
- Has the SESPWF gained participation from all the relevant agencies and stakeholders?
  - Which organizations or stakeholders have the most weight in decision making?
  - Do you feel that any important groups or stakeholders are missing from the process?
- What are the key barriers preventing more people or groups from participating?

Financial Support and Resources

- Does the SESPWF have adequate resources to do its work effectively?
- Do you feel your organization has had sufficient money and staff to participate in the SESPWF?
  - What kind of resources has your group invested to support your work?
- What kinds of new resources would be required to help you work more effectively with the SESPWF?

Policy Coordination

- Has the SESPWF been able to coordinate decisions between different agencies (Forestry, Agriculture, etc.) and across different levels of government (Provincial, District, Subdistrict)?
- Does the SESPWF have adequate legal frameworks to support its work?

- How much flexibility does the SESPWF have to give control to local (District/Subdistrict) leaders to make their own decisions?
    - Do laws or policies allow for flexibility in management for distinct geographical areas? How? Which element do not?

Organizational Sustainability

- Do you think the SESPWF is here to stay? Will the SESPWF likely be the main way watershed management decisions are made in Southeast Sulawesi over the next decade?
- How well has the SEPWF been able to incorporate social economic, as well as environmental issues in decision making?

SESPWF outcomes

- What are the best things that have been accomplished by the SESPWF so far?
    - Can you give specific examples?
- What are the biggest challenges to the SESPWF?
- From your perspective, how effective has the SESPWF been in promoting collaborative management?
- How has participating in the forum or collaborating with other organizations in watershed management impacted you and your organization?
- To what extent has the SESPWF been able to improve watershed conditions in the province?
    - Specific examples?
- What do you think could be done to make the Southeast Sulawesi Watershed Management forum function more effectively?

Information About Watershed Coordination in The Wanggu Watershed

- How involved are you and your organization in watershed management decisions in the Wanggu Watershed specifically?
    - If none – skip past this stuff; if any – proceed!
- What are the main challenges related to watershed management in the Wanggu Watershed?
- Have you or your organization been involved in coordinating decisions between the upper watershed and lower watershed?
- How well are these challenges being addressed?
- What factors (if any) might threaten the future of collaborative watershed management in this area?
- In what ways has the SESPWF influenced watershed decision-making and coordination in the Wanggu Watershed?
- How likely is it that coordinated watershed management in the WW can continue in the future?
- What would be required to make sure that it does continue?
- Is sufficient information available for informed decision making?

- Are there sufficient human resources available for informed decision making?

FOR AGENCY PERSONNEL NOT DIRECTLY INVOLVED IN SESPWF (but who work in WW)

- How involved are you and your organization in watershed management decisions in the Wanggu Watershed specifically?
- What are the main challenges related to watershed management in the Wanggu Watershed?
- Do you feel that your organization has sufficient staff and money to make good watershed management decisions (or implement watershed management policies and programs) in the Wanggu Watershed?
- How well coordinated are decisions between the upper watershed and lower watershed in the WW?
  - What programs have been helpful in increasing coordination of watershed decisions?
- Have you or your organization been involved in efforts to better coordinate decisions between the upper watershed and lower watershed in the WW?
  - How well are these challenges being addressed?
- Are all the important organizations and stakeholders involved in coordinated watershed management projects in the Wanggu Watershed?
- What laws and policies help support coordination of watershed decisions in the WW?
- What laws and policies get in the way of effective coordination of watershed decisions in the WW?
- What factors (if any) might threaten the future of collaborative watershed management in this area?

SESPWF impacts

- Are you aware of the SESPWF?
- How knowledgeable did you feel about the SESPWF?
- In what ways has the SESPWF influenced watershed decision-making and coordination in the Wanggu Watershed?
  - Have they provided new resources?
  - Have they provided new information about watershed conditions or programs?
- How has the SESPWF impacted the work of your organization?
- From your perspective, how successful has the SESPWF been overall?
  - What have been the biggest accomplishments of the SESPWF?
  - What have been the biggest challenges associated with the SESPWF?

International Project impacts

- How familiar are you with efforts by international NGOs to improve watershed deision making in the Wanggu Watershed?

- In what ways has the SESPWF influenced watershed decision-making and coordination in the Wanggu Watershed?
  - Have they provided new resources?
  - Have they provided new information about watershed conditions or programs?
- How has the international project impacted the work of your organization?
- From your perspective, how successful has the SESPWF been overall?
  - What have been the biggest accomplishments of the SESPWF?
  - What have been the biggest challenges associated with the SESPWF?

Overall

- In what ways has decision-making in the WW become more coordinated in the last 5 to 10 years?
- What are the most important improvements in watershed programs in the WW?
- To what extent have the problems associated with uncoordinated decision-making been solved?
- To what extent has water quality been improved? Flooding been reduced?
- What do you think is the most important thing that could be done to make the Wanggu Watershed management work more effectively?

FOR INTERNATIONAL-FUNDED PROJECT STAFF

Knowledge and Awareness

- Can you describe your organization's work in the Wanggu Watershed?
- From what you know, how would you describe the most important objective of the project?
  - What problem was it designed to address?
  - How have you addressed those problems?
- How has your project promoted coordination and communication with other stakeholders in the upstream and the downstream?
- Does your project have adequate information about watershed conditions to guide its decisions?
  - What new kinds of information would be most helpful to get?

Adequacy of Representation

- Which organizations or stakeholders are most involved in your project?
- Is participation in your project limited or can any organization participate?
- Has your project been able to get participation from all the relevant agencies and stakeholders?
  - Which organizations or stakeholders have the most weight in decision making?
  - Do you feel that any important groups or stakeholders are missing from the process?

- What are the key barriers (if any) preventing more people or groups from participating?

Financial Support and Resources

- Does your project have adequate resources to do its work effectively?
  - What kind of resources has your group invested to support your work?
- What kinds of new resources would be required to help you work more effectively?

Policy Coordination

- How well has the project been able to coordinate decisions between different agencies (Forestry, Agriculture, etc.) and across different levels of government (Provincial, District, Subdistrict)?
- Does the project have adequate legal frameworks to support its work?
- How much flexibility do local government (District/Subdistrict) leaders have to make their own decisions?
  - Do laws or policies allow for flexibility in management for distinct geographical areas? How? Which element do not?
- Has your project promoted any new policies or legal frameworks to operate effectively?
  - If so – what kinds? How?

Organizational Sustainability

- Do you think the work of your project is here to stay? Will your efforts still guide how watershed management decisions are made in Southeast Sulawesi over the next decade?
- How well has the project been able to incorporate social economic, as well as environmental issues in decision making?

SESPWF impacts

- Are you aware of the SESPWF?
- How knowledgeable did you feel about the SESPWF?
- In what ways has the SESPWF influenced watershed decision-making and coordination in the Wanggu Watershed?
  - Have they provided new resources?
  - Have they provided new information about watershed conditions or programs?
- How has the SESPWF impacted the work of your project/organization?
- How does your project coordinate with SESPWF?
- From your perspective, how successful has the SESPWF been overall?
  - What have been the biggest accomplishments of the SESPWF?
  - What have been the biggest challenges associated with the SESPWF?

Overall Outcomes:

- What are the most important improvements in watershed programs in the WW due to work by your project?
- How many people/ hectares have been impacted by your project?

- In what ways has decision-making in the WW become more coordinated in the last 5 to 10 years?
- To what extent have the problems associated with uncoordinated decision-making been solved?
- To what extent has water quality been improved? Flooding been reduced?
- What do you think is the most important thing that could be done to make the Wanggu Watershed management work more effectively?

FOR WW COMMUNITY MEMBERS

Overall:

- What do you think are the biggest problems or challenges in the Wanggu Watershed?
- How well coordinated are watershed management decisions between the upper basin and lower basin of the WW?

Knowledge and Awareness

- Are you aware of any recent efforts to improve coordination of watershed decisions, policies and programs in the Wanggu Watershed?
- What specific projects have been implemented in your area?
  - Whose projects are they?
  - What problems were they designed to address?
  - What have they done?
  - How well have they addressed those problems?

Adequacy of Representation

- How involved have you been in efforts to promote coordinated watershed decision-making in the WW?
- Have these projects included all the relevant agencies and stakeholders so far?
  - Which groups might be missing?
- What are the key barriers (if any) preventing more people or groups from participating?

Financial Support and Resources

- Do you have adequate money or staff resources to make good watershed decisions now?
- What kinds of new resources would be required to help you work more effectively?

Policy Coordination

- How much flexibility do local government (District/Subdistrict) leaders have to make their own decisions?
  - Do laws or policies allow for flexibility in management for distinct geographical areas? How? Which element do not?
- Has there been any significant change in law or policy that improves your ability to make good decisions?
  - If so – what kinds? How?

SESPWF impacts

- Are you aware of the SESPWF?
- How knowledgeable did you feel about the SESPWF?
- In what ways has the SESPWF influenced watershed decision-making and coordination in the Wanggu Watershed?
  - Have they provided new resources?
  - Have they provided new information about watershed conditions or programs?
- How has the SESPWF impacted you or your organization?
- From your perspective, how successful has the SESPWF been overall?
  - What have been the biggest accomplishments of the SESPWF?
  - What have been the biggest challenges associated with the SESPWF?

International Program impacts

- Are you aware of recent efforts of international NGOs to promote improved watershed management in the Wanggu Watershed?
- How knowledgeable did you feel about these projects?
- In what ways have these projects influenced watershed decision-making and coordination in the Wanggu Watershed?
  - Have they provided new resources?
  - Have they provided new information and technical assistance about watershed conditions or programs?
- How have these projects impacted you or your organization?
- From your perspective, how successful have these projects been overall?
  - What have been the biggest accomplishments?
  - What have been the biggest challenges?

Overall Outcomes:

- What are the most important improvements in watershed programs in the WW in recent years?
- In what ways has decision-making in the WW become more coordinated in the last 5 to 10 years?
- To what extent have the problems associated with uncoordinated decision-making been solved?
- To what extent has water quality been improved? Flooding been reduced?
- What do you think is the most important thing that could be done to make the Wanggu Watershed management work more effectively?