

# Innovating Rural: A Comparative Analysis of Community-Driven Rural Innovation in North Sumatera and Yogyakarta, Indonesia

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Innovation in a new fast-growing industrial revolution era is crucial as a means to enhance public service quality and achieve development goals, particularly at region context where gaps of development and services commonly exist. Relevant regulations are made as guidance for innovation, yet, such successful innovation practices at region level, especially rural areas, has not been well developed due to complex problems related to rural governance, human capacity, and many other socio-economic issues. By narrowing analysis to a more specific innovation practice in rural areas (rural innovation), this study aims to determine community-driven rural innovation in order to provide an empirical analysis of the importance of community participation in developing rural innovation. The research locations are Sekip Village, North Sumatera and Panggungharjo Village, Yogyakarta. Those two are chosen to represent rural innovation from different contexts both demographically and geographically. This study uses a qualitative method with a comparative-case study approach to provide a comprehensive understanding as lesson learnt of rural innovation practices. By elaborating both empirical data and theoretical frameworks on innovation and community participation, this study focuses on particular aspects of rural innovation, including rural innovation principles (innovation embryo, innovation institution, innovation network, innovation culture, knowledge and technology adjustment), and the Arnstein's community participation ladder. The significant results of this study showed that Panggungharjo Village has successfully performed all rural innovation principles and made the best use of community participation as the leverage of rural innovation. Meanwhile, at the same time, such practice has not been successfully developed by Sekip Village. The research results concluded that, in Panggungharjo village, significant factors which

determine the success of rural innovation are innovation institution and the “delegate power” level of community participation ladder. In contrast, the low capacity of village government in developing innovation institution and the “placation” level of community participation have become the most inhibiting factors in achieving goals of rural innovation in Sekip Village.

**Key words:** Rural Innovation, Community Participation, Rural Development.

## Introduction

A promptly-changing industrial era 4.0 has compelled an advanced governance reform - particularly a multi-sectoral innovation at the central and regional government level. Innovation nowadays becoming substantial in achieving development goals ranging from national to rural regions. In contrast, the stuttering of multi-levelled government in responding to the innovation era may hamper the attempt of regional and rural development in achieving goals of innovation development. Gaps on local autonomy has segmented the degree of innovation development amongst regions, in particularly rural areas. As a respond, regional and rural government through the mandate of Government Regulation No. 38 of 2017 on Regional Innovation, also the Decree of the Minister of Village and Underdeveloped Regional Development and Transmigration No. 83 of 2017 on General Guideline for Rural Innovation Program be induced to meet the standard of innovation development at rural regions.

Innovation in rural contexts is such a unique practice, it is massively discussed, criticised, even appreciated. Rural innovation aims to cope with the issues of development disparity between urban and rural areas. It is expected to overcome inequalities and face structural challenges which generally remained as a national concern. In line with this fact, rural areas have a wide range of assets and resources and a strong potential for sustainable growth. Enhancing innovation will therefore be essential to mobilise their growth potential and promote well-being for rural dwellers. Even farther, the performance of national economies depends on the growth of many diverse, small and intermediate rural regions (OECD, 2018).

Committed to enhancing rural innovation, since 2015, central government has been allocating funds to all rural regions in Indonesia by targeting at least 2,000 independent villages to be well developed by 2019. According to the data, village funding has significantly increased from 20.8 trillion (IDR) in 2015; 47 trillion in 2016; 60 trillion in 2017 and 2018; to 73 trillion in 2019 (Ministry of Finance, 2019). As a result, more than 30 thousand rural innovations have been successfully developed through, while some have also been promoted in rural innovation. Financial resources are expected to be used significantly to achieve various development goals by initiating innovation.

In practice, as one of core strategies to achieve rural development goals, the success of rural innovation also relies on the determining principles for the success of rural development, including (1) community participation, (2) community responsibility, (3) the enhancement of community capacity, (4) infrastructure availability, and (5) environmental preservation (Ndraha, 1982). As stated, community participation is a fundamental aspect to assure innovation and development in rural areas. Such is the alike, theoretically, the urgency of community participation in rural innovation is concerned to be crucial, particularly on how rural people are able to be empowered, get to know about creating ideas and initiative while at the same time determine the sustainability of innovation. In this context, the quality of community participation in rural innovation becomes major in defining the degree of participation. As a means, a participation ladder analysis can be effective to ensure the level of community participation and arrange alternatives to avoid a manipulated participation (Arnstein, 1971).

Related previous research on rural innovation showed that the use of community participation approach is substantial. In practice, community participation enforces rural people to be development catalyser in achieving goals of smart village development in Dlingo Village and Kulon Progo Village in Yogyakarta Province (Seftyono, *et.al.*, 2018). The urgency of community participation in terms of community capacity development is also highlighted in manual procedure for innovation village program, there are three main programs as targets of mid-term rural development planning, Ministry of Village and Underdeveloped Regional Development and Transmigration, which are, (1) institutional based entrepreneurship development program through the development of village-owned enterprise, (2) community capacity development, (3) infrastructure development and revitalisation (Sumpeno, *et.al.*, 2017).

Community-driven rural innovation relates directly to the process of change and social appropriation. It explicitly underlines that rural innovation can't be partially understood as vertical/hierarchical mechanism. Both conceptually and practically, community participation is major in managing rural innovation, enhancing rural competitiveness and achieving sustainability while promoting viable communities (Midgley, 1995). By concerning on this notion, this paper aims to provide analysis on how community participation and rural innovation is embedded. Under a qualitative framework, this study discovers a distinctive community-driven rural innovation practices in two research sites, Sepik Village and Panggungharjo Village. A comparative study in Sepik and Panggungharjo is intended to provide description and analysis on rural innovation practices. The theoretical base is the eight rungs of the citizen participation ladder (Arnstein, 1971) is also used to describe the level or degree of community participation which may significantly contribute to the

development of rural innovation, also enrich practical/empirical lesson of community driven innovation in rural areas.

### **Research Problems and Focuses**

The gap of rural innovation practices in Indonesia still remains a problem, therefore, an analysis of rural innovation best practice is necessary to provide lesson learnt and scientific reference on rural innovation practices. Despite the related regulation on innovation that has been made by governments, the practice of rural innovations, in some rural regions, still excludes the importance of the innovation embryo, innovation institution, innovation network, innovation culture, and knowledge and technology adjustment. Somehow, in rural innovation development, there is no clear identification on the degree of community participation, in which, by performing such an identification process, the false participation can be understood and anticipated. In accordance with these issues, there are two specific points of rural innovation highlighted in this paper as research focuses, which are:

- a. Identification and analysis of innovation practices concerning on innovation type, approach, and model in Sekip and Panggungharjo;
- b. Analysis of rural innovation principles practices in Sekip and Panggungharjo include (1) innovation embryo; (2) innovation institution; (3) innovation network; (4) innovation culture; (5) knowledge and technology adjustment (Darmoko, 2015);
- c. Analysis of community participation degree in Sekip and Panggungharjo (Arnstein, 1971).

### **Theoretical Framework**

#### ***Discussing Innovation and Rural Innovation***

Innovation currently becomes common trend a “buzzword”, one of alluring concept for governance. The definition and scope are varying. It meant to be a new product or service, process, method, policy and system (Muluk, 2008). It is expected to solve a problem, increase efficiency, and meet society demands. Theoretically, innovation has different approaches categorised as incremental, radical and transformative innovation (Muluk, 2008). Each category differs scope and impact of innovation, also the rural participation degree.

Defining innovation as policy and action is relatively related. Innovation policy refers to a set of policy actions that promote innovative activity in order to reach societal goals. While innovative activity refers to the creation, adaptation and adoption of new or improved products, processes and services (OECD, 2006). Innovation policy and innovative activity determined to be parts of rural innovation analysis, in particular, to present comprehension regarding the whole process of innovation. Rural innovation is defined as the introduction of something new (a novel change) to economic or social life in rural areas, which adds new

economic or social value to rural life (Mahroum, S., Atterton, J, Ward, N., Williams, A., M., Naylor, R., Hindle R., Rowe, F., 2007). Rural innovations are ideally driven by ‘rural demand’. Common rural-driven innovations are intended to be solutions for local community welfare - a rural economy growth, not to be a policy demand. Thus, conceptually, innovations are made to net rural people to the benefit of rural development which directly or indirectly escalates rural prosperity.

Responding to the high demanding-era, the OECD Policy Statement on Enhancing Rural Innovation has achieved the conclusion that a “digital dimension” is mandatory for rural innovation. The basic idea is that “innovation will be critical for the future competitiveness and sustainability of rural economies”. Other significant aspects are infrastructure, human capital, and partnership among public, private, not-for-profit and educational organisations as defined to be rural innovation ecosystems (European Regional Development Fund, 2019). Concisely, the contribution of network and technology is urgent. Darmoko (2015) asserts five main principles of rural innovation, including, (a) innovation embryo; (b) innovation institution; (c) innovation network; (d) innovation culture; (e) knowledge and technology adjustment. Referring to the conceptual discussion of innovation and rural innovation, the analysis of rural innovation in this paper determined to be specified on: (1) type of innovation (Muluk, 2008), (2) approaches of innovation (Muluk, 2008), (3) analysis of five innovation principles (Darmoko, 2015).

### ***Community Participation: Leverage of Rural Innovation***

Innovation as a catalyst for rural development is fundamentally a community process. Yet, a foregoing understanding followed by dynamic argument on the traditional innovation concept deduced that a conventional innovation merely focuses on the material innovations for efficiency based economic purposes. Meanwhile, in the midst of the contemporary industrial revolution 4.0 era, the terminology of innovation acquired more attention as it evokes social effects and sustainability issues. Conceptually and more practically, innovation in the context of rural development is perceived both as conventional and contemporary innovation, it does highlight the urgency of economic purposes and the deliberative process of community empowerment. In short, rural innovation relies on not only material innovation but also social, ecological, as well as technological innovation.

As it is previously researched, active community participation is essential to empower and bring about sustainable community development at the grassroots level (Phologane, 2014). Not only in Indonesia, far in rural areas of Poland, a research presented in The 2<sup>nd</sup> World Sustainability Forum entitled “Community Participation and Empowerment in Sustainable Rural Development in Poland” concluded that the low citizen participation appears the significant obstacle to vital local democratic cultures, it is true that different levels of

community participation linked to the real impact on decision-making (Strzelecka, 2012). It clearly indicates that community participation can achieve greater citizen satisfaction in their community. By using the same framework, this study uses eight rungs of citizen's participation ladder (Arnstein, 1971) in order to describe community participation in rural innovation as described below.

**Table 1:** Eight Rungs of Citizen's Participation Ladder

8	<i>Citizen Control</i>	<b><i>Degree of Citizen Control</i></b>
7	<i>Delegate Power</i>	
6	<i>Partnership</i>	
5	<i>Placation</i>	<b><i>Degree of Tokenism</i></b>
4	<i>Consultation</i>	
3	<i>Informing</i>	
2	<i>Therapy</i>	<b><i>Non-Participation</i></b>
1	<i>Manipulation</i>	

**Source:** Arnstein (1971)

Specified to the context of rural innovation, the description of each participation ladder is explained below.

**Table 2:** Community Participation Ladder in The Context of Rural Innovation

8	<i>Citizen Control</i>	Communities have a strong control on the performance of the village government in managing rural innovation, even they are able to evaluate the performance of village administration and policy
7	<i>Delegate Power</i>	Village government delegates authority to the community to make decisions regarding the substance and technical issues of rural innovation
6	<i>Partnership</i>	Village government treats community as partners in working together to formulate and implement a work program
5	<i>Placation</i>	Village government listens and receives various criticisms and suggestions from the community, but the authority still carries out the original plan
4	<i>Consultation</i>	At this stage there is dialogue between the two parties on various issues of rural innovation, suggestions and criticism were accommodated but the final decision was in the village administration
3	<i>Informing</i>	Village government conveys the vision and mission also work program of rural innovation program to the community, yet, the community can only receive information and no feedback occurs

2	<i>Therapy</i>	Village government conveys the vision and mission also work program of rural innovation to community representatives, while the community can only listen
1	<i>Manipulation</i>	Village government educates or selects representatives of the community to accommodate the aspirations, yet the community is totally unaware of any decision taken by the village government

## Method

### *Research Approach*

Qualitative method was chosen as a research base to predominantly accentuate inductive approach by emphasising the use of words rather than quantification in the process of data collection and analysis (Alipour, Vaziri, & Ligay, 2011). The use of qualitative method assessed to be appropriate because of the nature of this type of research is an exploration of “what is going on” in specific situations regarding the issue of innovation and community participation in modernised rural development (Miles & Huberman, 2005). In this qualitative research, in order to address issue of rural innovation which is unique, numerous diverse, there is need for an alternative, complementary scientific approach which is both contextually sensitive and comparative in scope. Thus, a comparative approach is chosen to be a means to explore community-driven rural innovation by focusing on the enhancement of innovation programs and participation analysis with the following objectives:

- to acquire knowledge regarding rural innovation practices in research sites by deliberating data and information from relevant literatures;
- to explore and identify the extent of community participation and how it is understood and implemented;
- to identify reinforcing and constraining factors of rural innovation;
- to determine whether community-driven rural innovation truly represents social welfare or merely becomes “a pseudo bottom-up innovation” for particular formality.

### *Justification of the Case Study Area*

Sepik Village is chosen to be one of research’s sites in order to represent rural innovation uniqueness in North Sumatera. Sekip Village is located near Medan, the largest and most modern city across Sumatera. For its strategic location, Sekip is expected to develop innovation which is able to truly represent the dynamism of development in North Sumatra province. However, according to the latest statistical data in January 2019, despite various advances and modernisation that has been common in the city of Medan, somehow, North Sumatra province ranked second as province with the highest poverty number after Aceh province (Statistics Indonesia, 2019). Referring to these facts, research on rural innovation in

Sekip considered necessary in order to know how rural innovation is developed in the midst of economic disparity.

Far in the highlands of southern Java, Panggungharjo Village is categorised as one of the smart villages in Yogyakarta and has been repeatedly winning the national village competition since 2014. This village also well-known for its eco-entrepreneurship “oil waste management program” is one of the leading programs of the village-owned enterprises “Panggung Lestari”. Research on rural innovation in Panggungharjo is expected to provide the best lesson learnt on rural innovation practice across Yogyakarta Province, which in this case, Yogyakarta ranked first for the highest human development index in 2017, and ranked second in 2018 (Statistics Indonesia, 2019). The success of Panggungharjo may also represent the portrait of local wisdom and sustainable rural development, not only in Yogyakarta, but possibly also Java in general.

### ***Data Source and Collection***

As part of the general qualitative method, this study used the primary and secondary data collection method. The primary data were collected through fieldwork research or observation and interview. To acquire comprehensive information, the researchers have interviewed 15 persons including 2 village heads in Sekip and Panggungharjo, 2 representatives of village government of Sekip Village and Panggungharjo Village, 2 representatives of Community Empowerment Office in Deli Serdang Regency and Bantul Regency, 2 representatives of Ministry of Village and Underdeveloped Regional Development and Transmigration, Indonesia. The source of secondary data is literature, articles and journals as well as village government websites.

### ***Data Analysis***

Data analysis techniques used are as follows (Sugiyono, 2015):

1. Data reduction — a part of the analysis process to shorten, make focus, discard things that are not necessary and organise data so that it can be significantly sorted. In this process, the researchers collected and classified data (field notes and interview results) based on each category of the rural innovation principle and also sorted the data in tables according to the two research locations.
2. Data display — the arrangement of information that allows researchers to easily understand facts and phenomenon of rural innovation and its principles; it is also how conclusions can be drawn systematically. The researchers displayed the data in text and tables to easily make comparative description for each case study area.

3. Conclusion/verification — the rechecking data or data review to find any irrelevant data, re-discard the unnecessary data, re-organise and re-add data which claimed to be necessary. This final step is major to determine how the data analysis has provided comprehensive solution for the research problems.

### **Findings and Analysis**

#### ***Rural Innovation Practice in Sekip and Panggunharjo: Perspective of Innovation Types, Approach, and Model***

Sekip Village is well known as an innovator of “Mobile Library” in Deli Serdang region. Sekip has a main program called a “Sekip Library” which is supported by “Sekip Mengaji” or “Holy Qur’an Reciting” and “Mobile Library”. The idea of innovation is an education-based innovation program. In the perspective of innovation type, the innovative activities in Sekip can be categorised as a new product or service, process, and method. The approach used to develop innovation is incremental which partially made a few changes and had an impact.

Far from Sekip, Panggunharjo has made an achievement that is out of the ordinary. The national best village in 2014, Panggunharjo has contemporary rural innovation performed diversely, which are “Community Based Solid Waste Management namely KUPAS (Kelompok Usaha Pengelola Sampah)”, “Jelantah/Oil Waste to Biodiesel (Oil Waste Management)”, “Eco-Cultural Based Tourism namely Kampong Mataraman” and “Village Owned Cooperative namely SWADESA or Swalayan Desa”. Rural innovation in Panggunharjo has complied all innovation types including new products or services, processes, methods, policies, and systems. Radical approaches are used to ensure the dramatic changes and impacts of innovation are intended to alleviate poverty and increase social welfare while at the same time empower community.

Besides innovation types and approaches, one of determining factors considered to be crucial is the innovation model. By developing the reinforcement-based innovation model, community and the authorities in Panggunharjo were able to: (1) recognise initiative/change initiatives; (2) review progress and identify obstacles; (3) determine further interventions; (4) develop an action plan for change; and (5) monitoring and evaluating the results/impacts of innovation. On the other hand, the use of replication-based innovation model in Sekip describes that community and the authorities were able to: (1) recognise the characters of innovation that will be replicated; (2) recognise the need for innovation in the village to be replicated; (3) make modifications as needed; (4) gathering support from various parties; and (5) implementation and monitoring of innovation results/impacts.

***Rural Innovation Practice in Sekip and Panggungharjo: Perspective of Innovation Principles***

**Table 3:** Analysis of Rural Innovation Principles in Sekip and Panggungharjo

Innovation Principles	Availability		Analysis
	Sekip	Panggungharjo	
Innovation embryo	-	√	<ul style="list-style-type: none"> <li>- The embryo of innovation is interpreted as a seed or the forerunner to the early development of innovation as a new product, process, method, policy, and system. Innovation embryo can be developed independently by individuals/groups sourced from internal and external forces. Good innovation embryos certainly come from the internal environment of the organisation in which ideas of innovation are purely from individuals/groups within the organisation.</li> <li>- Innovation embryo in Sekip Village was externally obtained. Innovation idea was only limited to an adoption without any modification.</li> <li>- Unlike Sekip Village, Panggungharjo was more capable in developing innovation embryos. Innovation ideas acquired from the internal and external organisations with modifications and new creations. In this context, Panggungharjo has succeeded in developing embryo of innovation by involving community participation.</li> </ul>
Institution	-	√	<ul style="list-style-type: none"> <li>- Institutional innovation defined as the main strength of innovation. Institution ensures that ideal innovation must be supported by the formation of innovation management structure, division of role and authority as well as clarity of responsibility. By strengthening innovation, organization can maintain the sustainability and usefulness of innovation.</li> <li>- Rural innovation in Sekip was institutionalised. There was no structure that divides roles and responsibilities in managing the innovation. Somehow, the division of role was hierarchical and less deliberative.</li> <li>- Institutional innovation in the Panggungharjo was well planned and executed by village government.</li> </ul>

			Panggunharjo has promoted village owned-enterprise ( <i>Badan Usaha Milik Desa</i> ) to manage rural innovation activities.
Innovation network	-	√	<ul style="list-style-type: none"> <li>- Innovation network means interaction amongst stakeholders in innovation ecosystems. Innovation network focuses on the institutional relationship, it describes how people in innovation institution communicate, solve issues, and share the benefit.</li> <li>- Sekip has no network that shows the process of interaction in institutional perspective. Interaction only occurs without managerial process.</li> <li>- Panggunharjo has succeeded managing synergy through cross-sector collaboration and actors such as Financial and Development Supervisory Agency, Bantul Regency Archive Office, karogis.com, and University of Janabadra, and a multi-national company PT. Tirta Investama (Danone Aqua).</li> </ul>
Innovation culture	-	√	<ul style="list-style-type: none"> <li>- Innovation culture is an attempt to transform innovation as habit in everyday life. Strengthening the culture of innovation can be interpreted as an effort to make innovation as a lifestyle of modern society, carried out and improved its quality continuously.</li> <li>- Community initiatives and participation in Sekip identified low with less-massive impact. In contrast, the strengthening of innovation culture in Panggunharjo has shown an increasing trend. Village leader figure was acclaimed to be able to transfer innovation culture to the wider community.</li> </ul>
Knowledge and technology	√*	√	<ul style="list-style-type: none"> <li>- Science &amp; technology intervention is one of the factors driving the success of rural innovation. Moreover, in the 4.0 era, digitisation continued to penetrate to the very bottom government level, namely the village government.</li> <li>- The utilization of science and technology in the development and management of innovation in Sekip was not optimal. Information distribution is still based on conventional approaches or door to door mechanisms. There also was no village website and internet-based service in Sekip.</li> <li>- Conversely, Panggunharjo was able to recognise</li> </ul>



			<p>strengths and respond to the challenges of technological modernisation. Panggungharjo has succeeded developing and managing electronic/online-based innovations ranging from websites to applications. Still, Panggungharjo was also able to absorb global issues, especially the issue of sustainable development. For example, KUPAS has implemented the values of green development by carrying out waste management. Through SWADESA, rural community promoted local economic potential. Meanwhile, Kampong Mataraman successfully developed a community-based nature and cultural/historical tourism. To conclude, Panggungharjo dignifiedly adapting to the advancement of science and technology while still maintaining local wisdom.</p>
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Note: √\* = Partially found

In accordance to the conceptual and empirical study above, the findings revealed that in Sekip, the practice of rural innovation hasn't met the standard or principle of innovation, in this case, Sekip has failed developing innovation embryo, innovation institution, innovation network, and innovation culture as foundation of rural innovation. In contrast, Panggungharjo has successfully implemented all the principles of rural innovation including creating innovation embryos, strengthening institutional innovation, developing innovation networks, civilizing innovation, utilising science and technology and absorbing global issues in the development rural innovation. Panggungharjo has also shown great attainment in preserving nature and culture while still following the dynamics of modernisation. Besides that, one of good practices of rural innovation in Panggungharjo is the ability of the rural authorities in managing village funds which generally been considered vulnerable to abuse and inefficiency. Despite the pessimism of the practitioners and academics regarding the effectiveness of village fund management, Panggungharjo has faced challenge to be able to manage village funds and account for them properly.

***Analysis of Community Participation in Rural Innovation: A Comparison***

**Table 4:** Analysis of Community Participation Mechanism in Sekip and Panggunharjo

Participation	Locus		Analysis
	Sekip	Pang-gung-harjo	
<i>Participation in Decision Making</i>	√*	√	According to this type of participation, community constantly involved in decision making process and follows organisational policies. Participation in decision formulation aims to give wide space to the public to express and aspire their opinions in assessing plans or program to be determined. Community is also given the opportunity to criticize the on-going policy and innovation activities. In Sekip and Panggunharjo, community participated in Village Planning and Development Deliberative Forum, while rural community in Panggunharjo also actively involved in “Rembug Desa”. However, in Sekip, community participation seemed to be ineffectively performed during the initiation of rural innovation. The participation itself is less specific and less sustainable in terms of Sekip innovation development program.
<i>Participation in Implementation</i>	√	√	In Sekip, community participated as follower who enjoyed rural innovation. Participation in implementation, in this case categorised as pseudo participation. In Panggunharjo, the role of the community in implementing community-driven rural innovation might be categorised very well. Community collectively played as team who directly involved in the innovation, as such collectors of waste, compost processors, women waste bank managers, and tour guides in Kampoeng Mataraman.
<i>Participation in Benefit</i>	√*	√	Community is required to take part in gaining advantages of rural innovation. In Sekip, benefit of “Sekip Library” was limited to common group of children. Sekip Library innovation was poorly utilized by groups of adults. However, benefit of “The Holy Quran Reciting” program was optimally

			obtained by massive community members. Village government successfully piloted a health program “Pro-poor Health Card Service”. As one of advantages of rural innovation, pro-poor health program was funded by village revenue. Besides that, community enjoyed greenery, utilised biogas for cooking, and enabled to develop business opportunities.
<i>Participation in Evaluation</i>	-	√	In Sekip, there was no clear mechanism related to the evaluation process by the community to ensure the accountability of village government in managing rural innovation. Meanwhile, Panggungharjo used two approaches of evaluation, firstly a technology base to perform accountability through village website and forum base through “Rembug Desa”, a means of rural community discussion.

Note: √\* = Partially found

The absence of community participation in evaluation process relates closely to the unavailability of innovation institution as a means of control. There was no mechanism and particular forum to facilitate inputs and complains from community. In this context, a closure evaluation system may hamper the effort of community-driven rural innovation in pursuing goals. As responds, community and rural authority must capable to identify challenges and supporting factors which are diverse, such as the un-institutionalized innovation, low community initiative, replication (only)/reinforcement-based innovation model, and low quality of human resource capacity (insufficient number of rural apparatus), leadership, and financial assistance. Meanwhile, analysis of community participation also involves the identification of participation level as described in this following table:

**Table 5:** Community Participation Ladder Identification in Rural Innovation

Research Locus	Level of Participation Ladder	Knowledge	Benefit	Involvement
<b>Sekip</b>	Placation	Community does: - have information regarding innovation; - have curiosity to get more understanding.	Community does: - have information regarding the advantage of innovation; - not optimally gain the benefit.	Community was involved in developing innovation by following instruction
<b>Pang-gung-harjo</b>	Delegated power	Community does: - have information regarding innovation; - have curiosity to get more understanding; - have awareness to get involved.	Community does: - have information regarding the advantage of innovation; - optimally gain the benefit; - optimise the outcome.	Community was involved in developing innovation by generating self-awareness

Describing how innovation managed in rural areas is central to revitalise the rural economy structure. Yet, the shortcomings are real, it is hard to succeed in rural innovation engaging in a sustained mode of technological advancement without a skilled and knowledgeable rural community. Concerning this issue, human resource management has become a core strategy to ensure innovation sustainability in Panggungharjo. This has led village government of Panggungharjo to create innovation policy and innovative activities in a less hierarchical program.

Innovation policy is set to be a strategy of rural innovation in Panggungharjo. By more focusing on human capital, Panggungharjo was able to promote innovative activities in attaining societal goals. Innovation policy is performed as “Village Regulation” is a means to support rural innovation activities in Panggungharjo. Those refer to the creation, small touch of innovation adaptation and adoption of new or improved products, processes and services. Conversely, Sekip has limited capability to create innovation policy. Innovation program “Sekip Library” is still struggling to promote education based innovative activity.

Rural innovation ideally is supported by a rural innovation system that can be interpreted as a unity of stakeholders, institutions, relationships, networks, interactions and social processes. The nature of rural innovation is institutionalised, a part of daily life in rural regions; small in

scope but wide in impact. Some policy instruments will therefore have a broader scope concerning innovation advantages on welfare and empowerment. Within this context, different cases of rural innovation found in Sekip and Panggungharjo. Innovation ecosystem development in Sekip was poor. The quadruple helix innovation model was ineffectively executed. There was no integrated partnership amongst business and academic practitioner in rural innovation. Meanwhile, Panggungharjo has successfully developed innovation ecosystems by managing a quintuple helix innovation through collaboration amongst village government, business, academic practitioners, civil society, and also environment (media is included).

The research result has concluded that community participation crucially determined the quality of rural innovation in Sekip and Panggungharjo. The major point in this regard is that rural government/rural authorities had no allowance to impose programmes on community creating a dependency syndrome due to non-participation of the community. Rural government in Sekip seemed to be a bit dominant in implementing a top-down approach in their rural innovation initiation/decision making process. Sekip innovation is more about structural innovation program initiated by rural authorities. As such, innovation implemented was less effective, fragmented and very short of the dynamism required to achieve the desired results. In other words; among some of the reasons for such failure is a lack of community participation in the initiation, conception, monitoring and execution. In short, participation by the rural community in development projects, as such innovation projects are seen as important in the success and sustainability of rural development projects in rural community (Monday, J., A, Usman, T., A., 2019).

Innovation in Panggungharjo meant to be structurally different; a perfectly mixture of top-down and bottom-up approach. The institutionalised innovation allowed community to own authorities. Through the development of village owned enterprise, in Panggungharjo, community mobilisation and participation being viewed as both a goal of development in which rural resources and opportunities be equitably distributed, and as a way of facilitating and energizing the development effort by means of involvement in innovation decision making. Good practices of innovation in Panggungharjo has led by good understanding that the lack of empowerment amongst rural people leads to their vulnerability and thus most development projects tend to benefit the benefactors rather than the beneficiaries (Monday, J., A, Usman, T., A., 2019).

## **Conclusion**

Sekip and Panggungharjo have a different history of rural development. These villages also have distinctive local wisdom and socio-cultural values of Java and North Sumatra. Achievement of rural innovation identified to be influenced by the innovation development at



the region level which meant as regional innovation in Deli Serdang Regency and Bantul Regency. In this case, Panggungharjo rural innovation program have also considered to acquire support from Bantul Regency which has been awarded several times for governance innovation program. In summary, the success of innovation is not necessarily determined by the internal forces, but also externally. The creation of a conducive innovation environment within a broad scope can support the progress and sustainability of rural innovation. The replication-based innovation model in Sekip Village must be supported by political attempt to increase capacity building at various levels; including widening space for community to get involved in a less-hierarchical innovation policy, improving the quality of human resources, and ensuring the innovation be institutionalised. On the other hand, Panggungharjo, which has succeeded developing various innovations with a strengthening model is facing challenges to keep working up the degree of novelty in innovation, as well as the issues of innovation sustainability.



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