
The Elements Required for Multi-Stakeholder Collaboration to Achieve Sustainable Agricultural: Based on Jarwo Super Application in West Java

✉ **Winda Anesty Ayunda & Indah Purwaningsih**
The National Research and Innovation Agency, Indonesia

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ABSTRACT:

The Jarwo Super innovation platform is identified as a framework for introducing Jarwo Super rice cultivation technology through the use of technological components developed for irrigated rice fields. This research examines the determining factors for the success of the collaboration process in producing agricultural innovation resulting from research and development in Indonesia. Using an innovation platform framework, this research conducted semi-structured interviews with relevant stakeholders, including researchers, policy makers, information disseminators, and local governments, to investigate multi-stakeholder perspectives. The Multi Channel Dissemination Structure (SDMC) of the Agricultural Research and Development Agency, which was created as a policy scheme starting with research, assessment, development, and application and feedback on technology, depicts actor collaboration. The findings of this study highlight the importance of three elements—demand-based participation (innovation evolution), capacity building, and commitment—for achieving multi-stakeholder collaboration. The first component, demand-based participatory, consists of implementation procedures, testing, evaluation, and research. further, the capacity building component indicates that a platform for experimentation, learning, and knowledge development is necessary for successful collaboration. The third factor is commitment which aims to encourage new developments, where the innovation platform can be a solution according to needs based on goals and vision and as a form of legitimacy for the innovation produced. We suggest that these factors can be of interest for practical application by experts to minimize uncertainty in innovation outcomes and increase the effectiveness of decision making.

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✉ Corresponding author :

Address : Gedung B.J. Habibie, Jl. M.H. Thamrin No. 8,
Jakarta Pusat 10340

Email : windaanesty05@gmail.com

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INTRODUCTION

Rice production in Indonesia is still beset by a number of issues, such as land conversion, degradation, availability of production infrastructure, and climate change. According to Octania (2021) National rice consumption in Indonesia is among the highest in the world, reaching 30.2 million tons in 2022. It is estimated that it will continue to increase along with the increase in population. In contrast, the production of rice has decreased recently in Indonesia. The disparity between the supply and demand of rice is expected to worsen as a result of rising demand and falling production (Octania, 2021).

The Indonesian government strives to achieve food security by ensuring that there is sufficient food available throughout the year and that all Indonesian citizens have access to it. However, in several emergency conditions, such as an outbreak or pandemic like Corona Virus Disease 19 (Covid-19), which has been faced by the global community, including Indonesia, food security can become a crucial issue. In one are, the needs of food must be met, not only to fill them up but also to increase immunity and healing. However, restrictions on individual activities and some global markets which have implications for reduced imports threaten food availability. Thus, meeting national food availability will depend on domestic supply. In 2020, the Government has issued major and strategic food policies (including rice) related to handling the impact of the Covid-19 pandemic. The government has attempted to produce 11 million tons of rice for public consumption to deal with the pandemic, where the rice food stock supplied domestically comes from Bulog, millers and traders. In fact, at that time, the prognosis for rice demand in Indonesia according to data from the Central Statistics Agency in 2020 reached 22 million tons. This is certainly not safe,

especially accompanied by panic buying and limited rice production from farmers due to the pandemic (Risfaheri, 2020).

This has an impact on the discourse of sustainable development that has risen in the last decades. Referring to the Global Agenda of Sustainable Development Goals, the development in agricultural sector is expected not only to end hunger but also to conserve natural resources and to secure socio-economic domains. Therefore, the most crucial factor in ensuring a steady, reasonably priced, and easily accessible supply of rice is domestic rice production (Octania, 2021). Utilizing agricultural resources is the key to increasing agricultural productivity so that limited resources must be allocated as efficiently as possible (Listiana et al., 2019). To increase domestic rice production, the government, farmers, and related stakeholders need to intensify their production systems and adapt to new changes that require continuous innovation (Teno and Cadilhon, 2011). An agricultural innovation system (AIS) has evolved over several decades as a result of agricultural innovation (Islam et al., 2013) to address food security and environmental sustainability at the same time (Zwane, 2020). At the national, sectoral, and technology-specific levels, AIS aims to comprehend the regulation of interactions amongst actors in the innovation system, the function of innovation policy, and innovation support institutions, such as R&D units (Schut et al., 2016)).

Some factors also seem to be responsible for the dissolution of current innovation platforms: insufficient funding; irreconcilable partner conflicts; and unfavourable changes in the institutional and political environment. Recent studies have looked at the role of multi-stakeholder collaboration in sustainable agricultural development. Schut et al. (2019) proposes the concept of multi-stakeholder platforms as a strategy for fostering innovation and

collaboration in the field of agricultural research for development (Schut et al., 2019). Within the AIS, an innovation platform is a place where people come together to learn and adapt in order to tackle specific problems. By encouraging cooperation and communication among networks of several stakeholders, the innovation platform advances agricultural innovation (Ayunda et al., 2022). The government, industry, farmers, researchers, and other groups with diverse backgrounds and interests are represented by these multi-stakeholders. This group comes together to find possibilities, challenges, and innovative solutions to these challenges, whether they have to do with technology, institutions, or organisations that are part of a value chain or not (Schut et al. 2016). Furthermore, private governance is considered to advance the sustainable agricultural practices by bringing diverse stakeholders across agrifood system (Hoffelmeyer et al., 2022). In order the collaboration to bring more impact on the sustainable agriculture, defining internal and external factors to collaboration is important, such as priorities and management (Velten et al., 2021) as well as giving more space for knowledge sharing to farmers by creating an information platform (Ramanauskas et al., 2021)

However, there is few studies identify elements required to strengthen multistakeholder collaboration to enhance sustainable agricultural development through the introduction of new technology for productivity improvement. Collaboration and communication between different groups is needed in order to develop technology to achieve development targets. The involvement of stakeholders from various backgrounds (including politicians/policy makers) and inclusive member participation can encourage the success of innovation. This requires

flexibility and adaptive capacity throughout the innovation platform process. This study tries to fill the gap by taking Jarwo Super technology as a case study. The research question is formulated as: What are elements required for strengthening multi-stakeholder collaboration to achieve sustainable agricultural development based on Jarwo Super application in West Java?

It was identified that Jarwo Super (Ayunda et al., 2022) is a technological package that is developed to improve the agricultural sector's performance in different areas, particularly in rice production in irrigated land, which can attain 10 tons of dried rice per hectare (GKG/ha) annually (Ayunda et al., 2022). Government initiatives aims at achieving national food security are greatly aided by R&D institutions, which are the main actors in the nation's innovation system, and supported by other related stakeholders.

LITERATURE STUDY

Sustainable Agricultural Development

The United Nation has launched the 2030 Sustainable Development Goals (SDGs) to achieve a sustainable and resilient lives. The second goal (SDG2) of "Zero Hunger" aims to create food security and fulfil human needs and access to nutrition (D'Annolfo et al., 2021; Ramanauskas et al., 2021). The agricultural sector is not only responsible for the fulfilment of food-dependent communities, but also to implement a resilient agricultural practice which are not harmful to the environment (D'Annolfo et al., 2021; Ramanauskas et al., 2021; Cadilhon, et al., 2016; Velten et al., 2021), and considers economic and social domains in an integrated way (Velten et al., 2021). This effort is implemented through varied strategies and ranging from management, technological solution, and institutional domain (Velten et al., 2021).

Multistakeholder Collaboration in Sustainable Agricultural Development

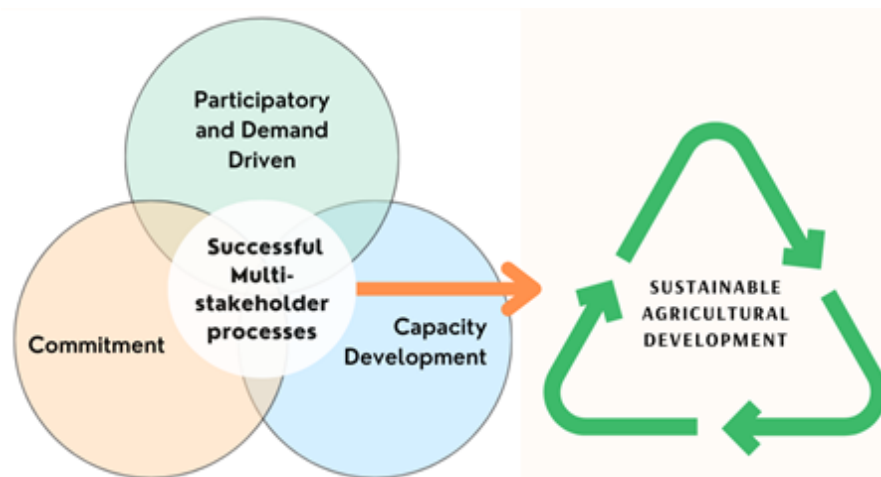
The attainment of SDGs demands a collective transformation which eventually needs multistakeholder engagement (Eweje et al., 2021). A more constructive relationship between policymakers, civil society (farmers, consumers), business community and academia/research institution are beneficial in seeking way to build sustainable agriculture by resolving challenges to food security, rural poverty and environmental degradation (Ramanauskas et al., 2021; “Rethinking Our Food Systems: A Guide for Multi-Stakeholder Collaboration,” 2023; Velten et al., 2021).

Cadilhon, et al. (2016) further explains that multi-stakeholder is terminology for dealing with problems by finding joint solutions (collaboration) for certain interests. Collaboration is considered important in providing solutions to problems that cannot be solved individually in the form of new innovations, effective collaboration, and new regulations, funding and incentive structures (institutional innovation or policies), to solve problems in the value chain that have not been solved

so far. in the collaboration process there will be resource sharing in the form of knowledge, resources, benefits and risks as well as commitment to overcoming common challenges.

Collaboration between actors defined by platform support functions requires a thorough examination of some factors to achieve successful multistakeholder collaboration. Referring to Iddo et al (2016), successful multi-stakeholder collaboration will be realized if it has three factors including participatory-demand driven to produce new innovations, capacity building and commitment. In order to establish a powerful and durable innovation platform, this study will concentrate on the elements that lead to successful actor collaboration.

This research will examine the factors that influence the success of the multi-stakeholder process. The aim is to prove that success is not only due to the level of readiness of product and process innovations being diffused, but also due to institutional support in the form of government policy intervention accompanied by commitment and the importance of increasing the capacity of members, especially farmers as technology users.



Source: Modified from Schut et al. (2016)

Figure 1. Multistakeholder Process Based on Analytical Framework for Innovation Platforms in Accelerating The Scaling Process of Government R&D Institutions in the Agricultural Sector.

RESEARCH METHODS

This research activity has been carried out from January 2020 to Oktober 2020 (for 10 months). This research focuses on the practices of government R&D institutions in implementing rice cultivation technology. The choice of agricultural product case studies is quite strategic in Indonesia, because apart from being the main food source, rice agricultural commodities have quite long political issues in their history and dynamics. Innovation platforms which are models of stakeholder involvement will be relevant to study in this research.

This research was conducted using a qualitative approach. Data collection was carried out through literature studies, secondary data collection, in-depth interviews, and focus group discussions/FGD.

- a. Literature studies were carried out to explore understanding and references about agricultural innovation system (AIS) concept, technology diffusion, platform innovation, process scaling and other related concepts.
- b. In-depth interviews were conducted with several key informants, including relevant R&D unit actors : Ministry of Agriculture (MoA) and Agricultural Research and Development Agency (IAARD), policy makers : Secretary of the R&D Agency, Director of PVTT, Director of Cerealia , Director of Seeds under the Technical Directorate of Food Crops, Head of PSEKP, Head of Assessment Institute for Agricultural Technology (AIAT), Head of BB Padi), researcher, extension officer, West Java Provincial Agriculture Service, District Agriculture Service. Indramayu, District Agriculture Service. Cianjur), and other relevant parties using the snowball technique.
- c. FGDs were conducted to explore innovation platform activities and to confirm the results of the interview.

The case study was determined purposively by considering the availability of existing research resources during the current pandemic. Due to limitations in data collection, activities were only carried out via online media (zoom meetings) with in-depth interviews and FGDs with the main actors from each locus.

The research limits its scope by taking West Java province as a case study. Then, to deepen data exploration, two district level locations were selected (Indramayu and Cianjur). Determination of case studies is based on several considerations, including the capacity of the main R&D organization in the agricultural sector and which already has product/technology results that have been implemented to users and the community. In addition, as a government R&D institution, the selected case study considers other aspects such as the importance of institutional context in the technology diffusion process, so that the actors involved are not only internal parties, but external parties are also involved in the process.

RESULT AND DISCUSSION

In West Java, the implementation of integrated technology components in the Integrated Crop Management (PTT) approach concept has shown a real influence and contribution to increasing rice yield (productivity). These components include the availability of high-yielding and good quality (VUB) seeds and the application of Jarwo Super technology. The alternating planting pattern in Jajar Legowo (Jarwo Super is a lowland rice production optimization system resulting from innovation by Agricultural Research and Development Agency (IAARD) (Indonesia: Balitbangtan) which implements integrated rice cultivation technology based on the Jajar Legowo planting method. The development of the Jarwo Super technology package involves the roles of various actors

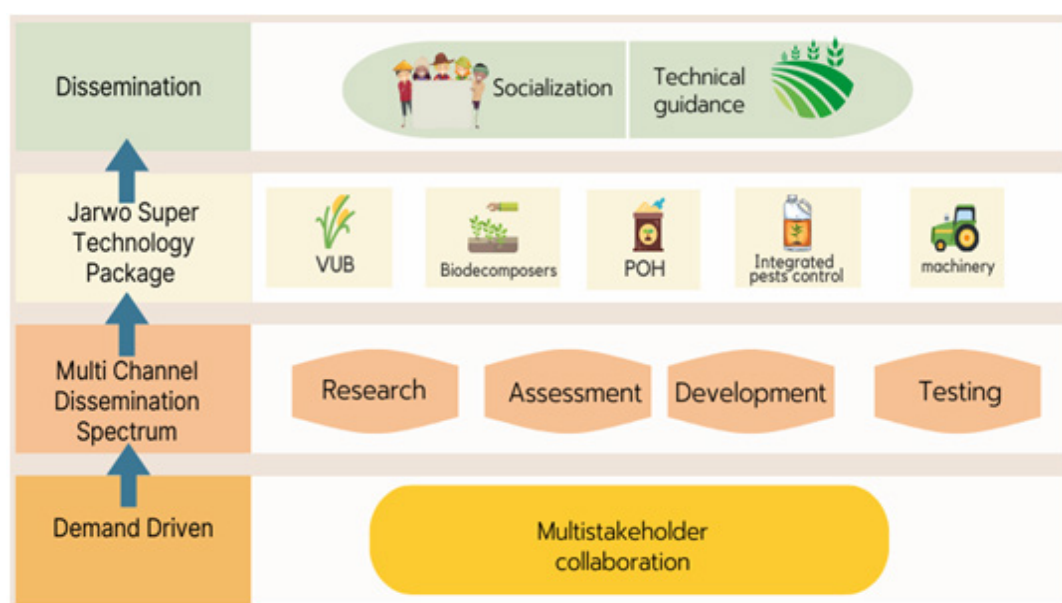
who are interrelated and dependent on each other.

The operational role of the Jarwo Super is to integrate different stakeholders in the irrigated rice production sector in order to increase rice productivity. IAARD describes the involvement of multi-actors in developing Jarwo Super into a Multi-Channel Dissemination Structure (SDMC). every actor is involved in the policy scheme starting from research, assessment, development and implementation as well as feedback on the technology that has been developed According to the IAARD (2016), Jarwo Super uses a variety of innovative cultivation technologies as part of its production system, including the jajar legowo planting system, balanced fertilisation, the use of organic fertiliser (POH), biodecomposers, integrated pest control, and the use of machinery for both planting (transplanter) and harvesting (combined harvester).

The platform value chain consists of a number of components that change depending on the primary problems and difficulties that need to be resolved.

Under the direction of IAARD, a number of research and development centres developed this technological component. Superior varieties/seeds are produced by BB Padi; biopesticides are produced by the Research Center for Food Crops (RCFC) (Indonesia: Puslibang Tanaman Pangan); the Center for Standard Testing of Agricultural Mechanization (Indonesia: BB Mektan) produces Jarwo transplanters; BB SDLP produces biological fertilisers and Paddy Soil Testing Devices (PUTS); the Center for Standard Testing of Agricultural Mechanization produces combine harvesters.

The implementation of Jarwo Super in West Java province was carried out using a dissemination method which consisted of two activities, namely socialization (advocacy activities) and technical guidance (Super, 2018). Furthermore, dissemination activities in the form of training are carried out through technical guidance. This activity was carried out at the beginning before the implementation of the activity to provide knowledge and understanding, both theoretical and practical, directly



Source: Data Processed

Figure 2. Jarwo Super Technology Package Development Process

related to the technological components that will be implemented in the Jarwo Super Technology Demonstration. The following is a brief overview of the collaboration process between stakeholders to create Jarwo Super technology.

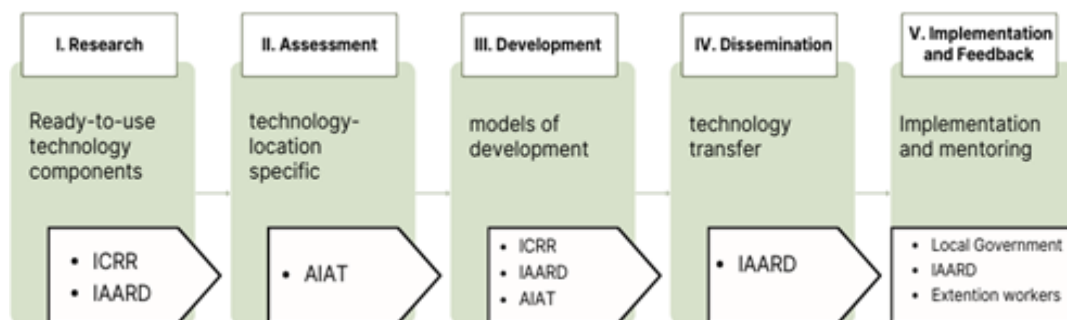
Participatory and Demand Driven

The first factor that supports the success of a multistakeholder process is Participatory-demand drive. Participatory refers to a system that allows actors to contribute their ideas individually or collectively. In the context of a multi-stakeholder for sustainable agricultural the process includes stakeholder collaboration and participation in the platform. The process of technology diffusion will be influenced by the adoption process and the needs or problems that may develop. So there will be a demand pull technological evolution from the initial introduction which was technology push. So it is necessary to identify whether the human resources involved are adequate resources to meet needs (demand driven). In this section, researchers illustrate The participation of innovation platform actors implementing technology for rice varieties, starting from technology developers, Technology beneficiaries and receiving agents.

Technology Developer

According to Minister of Agriculture Regulation No. 03 of 2005, before a technology is applied to users, comprehensive stage preparation needs to be carried out. The application.

IAARD is an R&D institution in the agricultural sector that has the largest contribution to R&D results under the Ministry of Agriculture. In the 2019-2024 period, IAARD has established a program “Creating sustainable bioindustrial agricultural innovation technology“. One of the priority activities is food crop R&D activities. To support national programs, especially national food security, especially rice commodities, IAARD has various research/engineering and development activities as well as agricultural mechanization. The Jarwo Super program is the government’s effort to create links and matches from various disciplinary fields at IAARD which produce the latest technology to increase the productivity of food crops. In creating innovations, IAARD is supported by BB Padi to carry out research in the rice sector (producing rice varieties, producing tools to detect pests so that appropriate types of pesticides can be developed.) This is very useful



Source: Data Processed

Figure 2. The Participation of Jarwo Super Actors Based on the Technology Developer Function of The Jarwo Super Technology Package is One of the Innovations That Originates From the Synergy Between IAARD/ AIAT and Field Instructors

when the Jarwo Super application which combines various components must be able to support one each other regarding the superior varieties to be selected. After the innovation product is created, the Agricultural Technology Assessment Center (AIAT) (Indonesia: BPTP) as the technical implementation unit of the Ministry of Agriculture's Agricultural Research and Development Agency has the task of assembling location-specific technology packages and disseminating them to users.

In the process of transferring rice cultivation technology, location-specific rice technology packages that have been produced by AIAT are disseminated through several methods, including creating demonstration farms in strategic locations (food areas), training for extension workers (ToT), determining adaptive VUB according to test results and preferences, and technology assistance. AIAT collaborate with the Provincial and Regency Agricultural Services to assist the implementation of this technology package through existing programs in the Province/Regency.

Technology Beneficiaries

The Jarwo Super technology which was developed and tested by the Agricultural Research and Development Agency was then adopted by the Directorate General of Food Crops in an accelerated socialization program to be implemented in the regions. The actor's function in this role is divided into three functions, namely policy support, outreach programs and patents.

Policy Support

The Directorate General of Food Crops (Dit. TP), is one of the technical directorates of the Ministry of Agriculture which has the duties and authority to carry out the formulation and implementation of policies in the field of increasing production of

rice, corn, soybeans and other food crops. This includes providing seeds, organizing cultivation, processing and marketing of production products, as well as controlling pests and diseases and protecting food crops. In the organizational structure of Dit. TP, there is a Directorate of Cereals which is tasked with carrying out the preparation of the formulation and implementation of policies in the field of increasing the production of rice, corn and other cereals and the Directorate of Seeds, carries out the preparation of the formulation and implementation of policies in the field of increasing the supply of seeds for rice, corn, soybeans and other food crops.

The Cereals Directorate has an important role in adopting this technology as a national program to accelerate implementation in the regions. The TP Seed Directorate is making efforts to utilize the VUB results from the IAARD, including through:

- a. Utilization of BS (breeder seed) and BD (foundation seed) class source seed production for VUB produced by the Source Seed Production Unit (UPBS) of the Agricultural Research and Development Agency in the context of changing varieties
- b. Implementation of VUB recommendations by the IAARD by considering specific locations (agroecological conditions such as rice fields, dry land, swamp land) as well as the preferences of the community or consumers of each region.
- c. Enhance coordination with the IAARD as the institution that has the main duties and functions to carry out variety dissemination so that efforts to change varieties can be implemented.

Patent

PVTPP is a supporting element of the Ministry of Agriculture which is under and

responsible to the Minister of Agriculture through the Secretary General. In Jarwo Super PVT, it plays an important role, especially in the VUB (New Superior Variety) technology component. Every VUB released will get PVP rights. PVP rights are special rights given by the state to breeders/holders of PVP rights to use them themselves or give approval to users. Until 2017, 427 varieties had been released. In the jarwo super VUB component, it is a technology component that is often adopted by farmers. The number of varieties produced has an impact on research progress.

The PVP Directorate has several duties and authorities ranging from registration, release and protection of varieties. The release is carried out to protect farmers from utilizing the variety, because they do not have patent resources. In this context, release is more about testing the varieties that have been produced by breeders. For example, the breeder states that Inpari 37 rice seeds can produce productivity of up to 7 tonnes with characteristics of being resistant to brown planthoppers and other pests, so it is necessary to test the variety so that the results can be trusted and used by farmers. Different from release, PVT also carries out plant variety protection to provide plant breeders with the right to protect the results of the development of new varieties so that they can be used exclusively. In other words, this protection right is like a patent, which can ultimately be sold or licensed by the plant breeder concerned. In testing new varieties intended for release, PVT carries out multi-location tests, while testing for the protection of new varieties includes several aspects such as novelty, uniqueness, uniformity and stability of the variety.

Receiving Agent

Once a product is developed, implementation activities occur, in terms of deal closing,

product testing and launch, feedback and knowledge sharing, support and maintenance, and product improvements. Farmers as the main recipients are involved in various important activities at this stage; for example, they test the product, in terms of functionality and mass use; receive training sessions to learn about the use and value of new products; receive after-service maintenance and support; and provide feedback on user acceptance and user experience. In other words, the success of technological development cannot be separated from the role and ability of farmers in responding to and implementing technological innovation effectively and efficiently.

Unfortunately, there is still a gap between the encouragement of technological developments in VUB development and farmers' preferences for guaranteed seeds, which is considered one of the challenges in the adoption of VUB by farmers. Apart from that, farmers' limited access to VUB in seed shops is also an obstacle in adopting VUB in various regions. In fact, the technology and cultivation systems developed in each policy include how Good Agriculture Practices can be applied among farmers, who continue to develop, improving and complementing previous technology with the support of the use of superior varieties. To allow for effective participation in innovation platforms, capacity building of participants in terms of improved understanding of innovation, and the idea of joint learning, was necessary.

Capacity Development

There are several things that allow the collaboration process to fail, such as the unpreparedness of users in accepting new research results, both in terms of technology management capacity, resources, financial/investment readiness, and human resource readiness which are still unresolved challenges. In fact, most of the technology

produced by LPNK is still being tested on a laboratory scale, and does not yet have a pilot project feasibility that meets industry needs. This is because there is no organization that facilitates infrastructure to test technical feasibility and measure the economic feasibility of implementing products and technology at the user level.

To allow for effective participation in innovation platforms, capacity building of participants in terms of improved understanding of innovation, and the idea of joint learning, was necessary. The implementation of Jarwo Super in Indramayu and Cianjur districts has ensured a certain level of understanding of the platform's objectives and interaction requirements to achieve progress. This can be seen at the level of the innovation platform itself. Capacity development efforts emphasize the need for flexibility, adaptive capacity and learning as essential characteristics of successful IPs in terms of their capacity to respond to the needs and demands of different groups of stakeholders. Acceptance of technological components by farmers in developing their farming activities requires a process that begins with farmers' adequate understanding of a technological component, then followed by the formation of an attitude in accepting technological innovation.

The process of accepting technological innovation or knowledge is a series of processes that have a real influence on farmers' actions in adopting new technology. Therefore, various factors that influence this stage need attention in encouraging farmers to increase their farming productivity. This also requires a change in mindset among researchers, extension workers and government representatives participating in these platforms.

The capacity to participate in innovation also depends on local stakeholders. Implementation is implemented at the local level, representatives have a mandate to engage

in discussions on behalf of larger groups and defend their interests, which allows for decision making and discussions at a higher and more strategic level. For example, in Indramayu there is a gap between the encouragement of technological developments in the development of VUB and farmers' preferences for guaranteed seeds which is considered one of the challenges in the adoption of VUB by farmers. Apart from that, farmers' limited access to VUB in seed shops is also an obstacle in adopting VUB in various regions. so the local government needs to find a solution to convey to the local agricultural department to include the participation of seed providers to play a role as service providers for the successful use of VUB

Furthermore, capacity development in West Java province focuses on local platforms (socialization and advocacy activities and technical guidance) ([17]). Socialization and advocacy activities are the first steps in the dissemination stage. The process is that government agencies as stakeholders, both at the provincial level (Department of Food Crops and Horticulture, West Java) and district level provide information, knowledge and activity plans as well as understanding of super jarwo rice cultivation technology innovations in the form of demonstration farms (demonstration plots). farming) to farmers. This activity is also aimed at agricultural extension officers, plant pest organism observers (POPT), Regency and Sub-district level Farmer Fisherman Contacts (KTNA) and farmer groups who are potential implementers of the activity.

Furthermore, dissemination activities in the form of training are carried out through technical guidance. This activity was carried out at the beginning before the implementation of the activity to provide knowledge and understanding, both theoretical and practical, directly

related to the technological components that will be implemented in the Jarwo Super Technology Demonstration. This training activity may have contributed to manufacturers to recognize their farming as a business venture that requires innovation to achieve progress

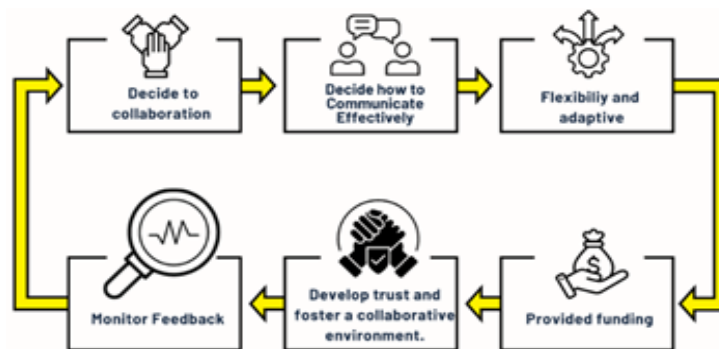
Commitment

Participation and capacity development will not be successful without the support of commitment from each stakeholder in carrying out their functions. The role of developers, such as extension institutions, beneficiaries and policy makers, requires commitment. Collaboration and communication effectively between different groups is needed in order to develop information and technology to achieve development targets. The involvement of stakeholders from various backgrounds (including politicians/policy makers) and inclusive member participation can encourage the success of full innovation. This requires flexibility and adaptive capacity throughout the innovation platform process.

Apart from that, efforts are also needed to create a mindset among the partners participating in the innovation platform and that they all must contribute to the innovation process. Government and industrial R&D institutions have carried out continuous research to increase product

added value, productivity, cost efficiency and services through the development of advanced technology on the input, output and institutional side so that all actors can contribute without experiencing multidimensional challenges and problems, especially in the aspect of synergy between technology providers and the relevance of user needs, especially industry (Lakitan, 2013)

To increase commitment among government members, his party also provides several incentive schemes such as those implemented by the Ministry of Research and Technology. The government facilitates a cooperation model in the form of partnerships by providing research incentives and forming consortia with topic assignments in several priority areas. It must be acknowledged that a certain level of formality can be helpful in establishing a platform as an autonomous entity that can continue to function with less external facilitation support. Membership with associated fees, for example, is one type of platform formalization. Extension officers are also selected and training is required to increase the capacity of these facilitators to fulfill their role. Initially the idea was to recruit external mobilizers to work with activists and facilitators and spread the message and motivate local farmers to join the platform.



Source: Data Processed

Figure 3. The Element of Commitment Needed for Jarwo Super Actor Collaboration

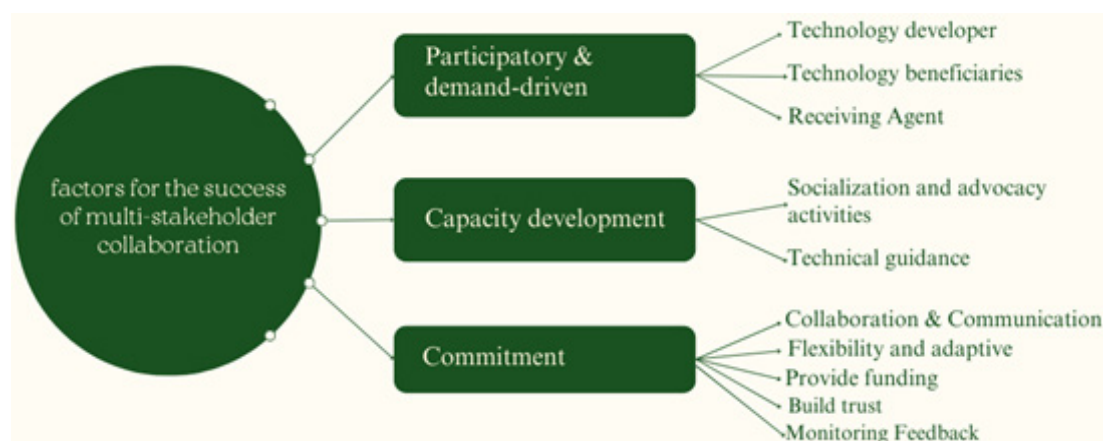
Social innovation can be exemplified by access to land, knowledge about agronomy, the rights that farmers should obtain and so on. In addition, how the actors involved in the adoption system pay excessive attention to or ignore the socio-political conditions that are developing at that time will also influence the success of scaling activities at the local level. Collective action is needed to create new partnerships that can participate in shared learning. By working together, stakeholders can develop trust and foster a collaborative environment. Funding is needed for this kind of collaborative effort. Support in this case is provided by the Cianjur Regency Agriculture Service, which is partly funded by the APBD budget and managed by the Ministry of Agriculture through the regional government. The Cianjur Regency Agriculture Service will propose budget support through e-planning/budgeting through the provincial APBD and APBN if there is a budget deficit. The department will submit an application through AIAT or the PSP Directorate of the Ministry of Agriculture for assistance with production facilities.

The final thing to maintain commitment is that AIAT also has a role in monitoring the implementation activities

of regional governments and extension workers from each region. Through monitoring activities, AIAT gets feedback on how technological innovation can complete solutions and achieve targets so that all actors can continue to carry out their duties so that Jarwo Super can be implemented perfectly.

CONCLUSION

This research uses an innovation platform framework to identify and connect various actors and stimulate new actor relationships. Through a technology package mechanism, the Jarwo Super innovation platform combines various technological components resulting from research and development centers so that it can optimize the planting process optimally. This allows for the exchange of information and makes it easier for R&D results to be implemented in a system. In addition, the emergence of this technology package has encouraged multidimensional interactions and initiated collaborative activities between elements at the policy, implementation and user levels. We suggest that these factors can be of concern to be practically applied by experts to minimize uncertainty in innovation outcomes and increase the effectiveness of decision making. As can be seen in



Source: Data Processed

Figure 4. Factors for the Success of Multistakeholder Collaboration Based on Jarwo Super Technology Package

Figure 4, the first factor, namely demand-based participatory, consists of research, assessment, implementation and testing processes. In successful collaboration, actor participation according to needs is one of the most frequently mentioned success factors.

Furthermore, the capacity building factor shows that successful collaboration requires a platform for learning, experimentation and developing knowledge. This factor will be central in the exchange of innovation elements by integrating several technical, organizational and institutional aspects. In other words, the Jarwo Super innovation platform is a forum for testing research results that have been developed through experimentation and piloting so that they can be applied by farmers according to specific locations. In the end, these two factors must be accompanied by commitment. This factor aims to encourage the formation of new changes, where the innovation platform can be a solution according to needs based on shared goals and vision and as a form of legitimacy for the innovation produced. Innovation platforms can encourage the formation of group activities to develop and realize innovations in real-world contexts. This function can be seen from the formation of collective activities such as Integrated Field Schools (SLT) and Field Laboratories which are very useful in helping farmers to learn practices and absorb knowledge that has been disseminated by R&D actors and even exists today.

Recommendations

There is a number of gaps in our knowledge. Based on field findings, the collaboration process carried out still resembles a traditional linear approach (supply push) oriented towards short-term solutions to solve certain problems. Meanwhile, the process of building a network where the

innovation platform will be used requires a multi-level and interdisciplinary process (pull approach). Therefore, there is a need for alignment between platform activities and the larger institutional agenda so that the strategy for expanding the scale of impact will be supported by the appropriate context. Further research is needed to help quantitatively capture the perspectives of research partners who have diverse experiences but were not covered by this study. Furthermore, further research can be arranged in the form of scientific work to produce solutions that have a significant impact.

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