

ANALYZING CO-PRODUCTION IN THE "SERPIS KEBUN KITA" URBAN FARMING INNOVATION IN SURABAYA CITY

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ABSTRACT

The rapid pace of urbanization in Surabaya has led the massive conversion of productive land, threatening the stability of local food security, particularly in vegetable commodities where the self-sufficiency rate plummeted to 0.15% in 2021. The Government of Surabaya responded to this challenge through a community-based strategy, with one of its leading pioneers being the 'SerPis Kebun Kita' innovation in Wonocolo District, which manages the largest hydroponic system in Surabaya with a capacity of 4,600 planting holes. This study aimed to analyze and describe in depth the co-production process within the 'SerPis Kebun Kita' urban farming innovation in Wonocolo District, Surabaya City, utilizing the theoretical framework by Ayob et al. 2016, which includes four indicators: collaboration, new ideas, empowerment, and change. This study employed a qualitative research method with a case study approach, with data collected through observation, documentation, and interviews. The findings revealed that cross-sector collaboration operated dynamically despite weaknesses in the monitoring function. Within the new ideas dimension, innovation was manifested through various new ideas in the agriculture, fisheries, processed products, Kafe Kebun Kita, and agricultural educational tourism. Furthermore, the empowerment process successfully transformed the Serpis Farming Group from passive consumers into active, self-sufficient food producers. Finally, this innovation proved to impact mindset shifts, create micro-economic independence, and elevate the community's status at the Surabaya city level.

Keywords: Co-production, Social innovation, Urban farming, Surabaya.

ABSTRAK

Pesatnya laju urbanisasi di Surabaya telah menyebabkan konversi lahan produktif secara besar-besaran, yang mengancam stabilitas ketahanan pangan lokal, khususnya pada komoditas sayuran di mana tingkat swasembada merosot hingga 0,15% pada tahun 2021. Pemerintah Kota Surabaya merespons tantangan ini melalui strategi berbasis masyarakat; salah satu pelopor utamanya adalah inovasi 'SerPis Kebun Kita' di Kecamatan Wonocolo, yang mengelola sistem hidroponik terbesar di Surabaya dengan kapasitas 4.600 lubang tanam. Penelitian ini bertujuan untuk menganalisis dan mendeskripsikan secara mendalam proses ko-produksi dalam inovasi pertanian perkotaan 'SerPis Kebun Kita' di Kecamatan Wonocolo, Kota Surabaya, dengan menggunakan kerangka teoretis dari Ayob dkk. (2016) yang mencakup empat indikator: kolaborasi, gagasan baru, pemberdayaan, dan perubahan. Penelitian ini menggunakan metode kualitatif dengan pendekatan studi kasus, di mana data dikumpulkan melalui observasi, dokumentasi, dan wawancara. Hasil penelitian menunjukkan bahwa kolaborasi lintas sektor berjalan secara dinamis meskipun terdapat kelemahan pada fungsi pemantauan. Dalam dimensi gagasan baru, inovasi diwujudkan melalui berbagai ide segar di bidang pertanian, perikanan, produk olahan, Kafe Kebun Kita, dan wisata edukasi pertanian. Selain itu, proses pemberdayaan berhasil mengubah Kelompok Tani Serpis dari konsumen pasif menjadi produsen pangan yang aktif dan mandiri. Terakhir, inovasi ini terbukti mampu mengubah pola pikir, menciptakan kemandirian ekonomi mikro, serta meningkatkan status komunitas di tingkat Kota Surabaya.

Kata kunci: Ko-produksi, Inovasi sosial, Pertanian perkotaan, Surabaya

INTRODUCTION

Rapid urbanization has increased pressure on food systems, land availability, and environmental sustainability in urban areas. Urban farming has emerged as an alternative strategy to address these challenges by optimizing limited urban spaces for food production while simultaneously supporting environmental conservation and community empowerment (Fadhilah et al., 2024). The growing importance of urban farming is closely associated with population growth and urban expansion. According to BPS-Statistics Indonesia (2025), Indonesia's population reached 284.4 million people, with a growth rate of 1.09% during the 2020–2025 period. At the same time, the proportion of the population living in urban areas is projected to reach 60% in 2025 and increase to 63% by 2030 (BPS-Statistics Indonesia, 2024). This trend has intensified competition for land use and increased concerns regarding urban food security.

As the capital of East Java Province and the metropolitan center of the Gerbangkertosusila region, Surabaya faces similar challenges. The city recorded a population of 3,018,002 people in 2024 (Population and Civil Registration Agency of Surabaya City, 2024), while productive land continues to decline due to residential and industrial development (Salim, 2023). Data from the Surabaya Food Security and Agriculture Agency show that agricultural land in Surabaya reached only 6,089.2 hectares in 2023, consisting of 1,165.6 hectares of rice fields and 4,923.6 hectares of non-rice agricultural land, whereas non-agricultural land covered 27,657.8 hectares. This condition indicates that agricultural land accounts for less than one-quarter of the city's total land area. The decline in agricultural land has increased Surabaya's dependence on food supplies from surrounding regions, including Mojokerto, Lamongan, Lumajang, and Bojonegoro Regencies. According to the Regional Food and Nutrition Action Plan of Surabaya City 2023–2024, local vegetable production fulfilled less than 1% of total vegetable consumption demand during 2018–2021, indicating a low level of food self-sufficiency and a high dependence on external food supplies.

To address these challenges, the Surabaya City Government has promoted community-based urban farming through the Urban Farming Program as stipulated in Regional Regulation Number 4 of 2021 concerning the Regional Medium-Term Development Plan of Surabaya City 2021–2026. The program is implemented by the Surabaya Food Security and Agriculture Agency through the provision of cultivation facilities, training, and assistance for urban farmer groups. One of the major innovations developed under this initiative is Kampung Sayur Suroboyo (KaSurBoyo), which consists of eleven urban farming innovations officially recognized in the Surabaya Mayor Regulation Number 116 of 2024 concerning the Regional Innovation List. These innovations aim to strengthen food security through community-based vegetable cultivation adapted to local conditions.

Among the eleven KaSurBoyo innovations, SerPis Kebun Kita in Jemur Wonosari Urban Village, Wonocolo District, represents a notable case for further investigation. The innovation originated from community initiatives to support environmental conservation and initially focused on cultivating lemongrass and lime plants in limited residential spaces. Over time, it developed into an urban farming innovation involving hydroponic and conventional cultivation, agricultural education activities, and value-added product processing. According to data from the Surabaya Food Security and Agriculture Agency (2024), SerPis Kebun Kita possesses the largest hydroponic cultivation capacity among urban farmer groups in Surabaya, with approximately 4,600 planting sites. In addition, the initiative has continued to develop since its establishment in 2014 and involves collaboration among government agencies, academic institutions, private-sector actors, and local communities. These characteristics indicate a relatively high level of organizational development and farmer group sustainability, making SerPis Kebun Kita a relevant case for examining collaborative processes in urban farming innovation.

Previous studies have demonstrated the positive contribution of urban farming to food security and community development. Zuwita et al. 2023 found that policy objectives, resources, communication, organizational characteristics, and socio-political conditions positively influence the implementation of

urban farming in KRPL SerPis Wonocolo. However, the study also highlighted that farmer group empowerment remains suboptimal due to low consistency and awareness among members. Sulistyono et al. 2023 reported that urban farming contributes to household food security and generates social, economic, and environmental benefits, although sustainability remains constrained by maintenance issues and uneven community participation. Similarly, Ardiansyah et al. 2025 found that urban farming in Surabaya has been relatively successful in ecological, socio-cultural, educational, and health dimensions, yet its economic contribution remains limited. These findings suggest that the sustainability of urban farming depends not only on resources and policy support but also on stakeholder participation and collaborative engagement.

The importance of participation and collaboration has also been emphasized in studies on co-production and social innovation. Nurhidayati & Harmawan (2026), found that the Republic Melon Program in Blitar Regency successfully applied co-production through active farmer involvement and cross-sector collaboration, generating economic and social benefits despite limitations in member participation. Likewise, Perikangas et al. (2024) argued that social innovation is shaped through co-production processes involving collaboration, networks, and active engagement among multiple actors. Ayob et al. (2016) further explain that social innovation and co-production are closely interconnected because social change emerges through collaboration, empowerment, and the development of new ideas among governments, communities, businesses, and nonprofit organizations.

Despite the growing body of research on urban farming, most existing studies focus primarily on implementation outcomes, food security impacts, community empowerment, or environmental benefits. Limited attention has been given to understanding how urban farming innovations are collectively developed, sustained, and transformed through co-production processes. Furthermore, studies applying the Social Innovation Pathways and Drawing the Link to Co-production framework developed by Ayob et al. (2016), particularly in the context of urban farming innovations in Indonesia, remain limited. This gap highlights the need to examine how collaboration, new ideas, empowerment, and change interact in sustaining community-based urban farming initiatives.

Therefore, this study examines SerPis Kebun Kita as an urban farming innovation through the perspective of co-production using the Social Innovation Pathways and Drawing the Link to Co-production framework proposed by Ayob et al. (2016), focusing on the dimensions of collaboration, new ideas, empowerment, and change, this study seeks to answer the following research question: How is co-production implemented in the 'SerPis Kebun Kita' urban farming innovation in Wonocolo District, Surabaya City? Accordingly, the objective of this study is to explore and analyze the co-production process underlying the development of the SerPis Kebun Kita urban farming innovation in Surabaya City.

METHOD

This study employs a qualitative research design with a case study approach to explore the co-production process in the 'SerPis Kebun Kita' urban farming innovation. According to Creswell, as cited in Sugiyono (2023), qualitative research aims to understand meanings attributed by individuals or groups through inductive analysis and interpretation. A case study design is used to provide an in-depth exploration of a program or activity in its real-life context. The research was conducted at SerPis Kebun Kita in Wonocolo District, Surabaya City, a community-based urban farming initiative involving multi-stakeholder collaboration. The site was selected due to its long development history, recognition through various awards, integration within the KaSurBoyo program, and its large-scale hydroponic system with 4,600 planting points. Despite its achievements, challenges remain in member participation and awareness, making it relevant for co-production analysis.

This study applies the the Social Innovation Pathways and Drawing the Link to Co-production framework by Ayob et al. (2016), which includes four dimensions: collaboration, new ideas, empowerment, and change. These dimensions are used to analyze the roles of government, community, academia, and private sector actors in the innovation process. Data were collected from primary and

secondary sources. Primary data were obtained through interviews with selected informants, while secondary data included documents, reports, archives, online news, official websites, and photographs (Sugiyono, 2023). Data collection techniques involved observation, semi-structured interviews, and documentation (Hardani et al., 2020). Informants were selected using purposive and snowball sampling, with the Head of Serpis Farmer Group as the key informant. Data analysis followed the Miles et al. (2014), interactive model consisting of data collection, data condensation, data display, and conclusion drawing/verification. Data validity was ensured through credibility, transferability, dependability, and confirmability tests, supported by source, technique, and time triangulation (Sugiyono, 2023).

DISCUSSION

Based on the research title, “Analyzing Co-production in the ‘SerPis Kebun Kita’ Urban Farming Innovation in Surabaya City,” the author conducted a series of data collection activities related to the objectives of this study to examine and analyze the co-production process within the innovation. To guide the analysis, this study adopts the co-production framework proposed by Ayob et al. (2016), which consists of four indicators, namely **collaboration**, **new ideas**, **empowerment**, and **change**. The research findings and discussion based on these four indicators are presented as follows:

Collaboration

The finding indicates, that collaboration in the ‘SerPis Kebun Kita’ innovation involves multiple stakeholders, including the Food Security and Agriculture Agency (DKPP) of Surabaya City, Wonocolo District Government, Jemur Wonosari Urban Village Government, Serpis Farmer Group, Petra Christian University, and PT PLN (Persero) East Java and Bali Development Main Unit (UIP JBTB). Each actor contributes through regulatory, facilitative, academic, and financial roles. DKPP Surabaya serves as the main regulatory and technical facilitator through farmer group official registration letter (SKT), Agricultural Extension Officers (PPL), and urban farming assistance programs.

Academic involvement from Petra Christian University focuses on knowledge transfer in product processing (transforming crops like pakcoy into high-value commodities), marketing, and appropriate technology automatic water sprayer system with Internet of Things (IoT), while PT PLN (Persero) UIP JBTB provides critical financial injections through corporate grants from 2021 to 2024 totaling IDR 230 million (comprising sequential phases of IDR 50 million, IDR 100 million, and IDR 80 million) for infrastructure development, including greenhouse expansions and the establishment of Kafe Kebun Kita. However, PLN’s role remains predominantly financial rather than capacity-building oriented. Collaboration is characterized by multi-actor engagement with differentiated roles, but coordination is largely informal and event-based rather than institutionalized. Despite the presence of multi-stakeholder collaboration, the findings indicate three main limitations: first, there is no structured or routine coordination mechanism among actors; second, collaboration is uneven with dominant dependence on academic institution; and third, stakeholder engagement is largely event-based, making sustainability dependent on project continuity rather than institutional integration.

The findings demonstrate that SerPis Kebun Kita represents a social innovation that is fundamentally shaped by cross-sector collaboration, consistent with Ayob et al. (2016) who define collaboration as the formation of new social relations that enable collective problem-solving beyond the capacity of a single actor. The collaboration involves government agencies (DKPP of Surabaya City, Wonocolo District, Jemur Wonosari Urban Village), academic institutions (Petra Christian University), private sector actors (PT PLN UIP JBTB), and the Serpis Farmer Group as the community-based implementer. This multi-actor configuration operates through a co-production framework Nabatchi et al. (2017), in which the government provides regulatory legitimacy, land access, and extension services, while the community contributes labor, local knowledge, and daily operational management. Resource limitations in the public

sector are complemented by private funding and academic technological support, demonstrating a resource-pooling logic typical of social innovation ecosystems.

However, the findings also reveal that collaboration remains episodic rather than institutionalized, as interaction among actors is mostly triggered by specific events such as funding cycles, harvest periods, or program implementation. This condition diverges from Loeffler & Bovaird, (2021), who emphasize that effective co-production requires continuous and reciprocal engagement. Despite this structural weakness, sustainability is maintained through strong internal social capital within the Serpis Farmer Group, which functions as an adaptive governance mechanism. This indicates that co-production in practice is not fully symmetrical, but remains effective due to community resilience and self-organization capacity.

New Ideas

The finding indicates, new ideas in SerPis Kebun Kita emerge from cross-sector collaboration and are reflected in four main areas: agriculture, fisheries, value-added products, Kafe Kebun Kita, and agricultural educational tourism. These ideas develop dynamically in response to land limitations, community needs, and external support from government, academia, and private actors. In the agricultural sector, innovation is reflected in the shift from conventional yard-based cultivation to hydroponic urban farming using unused public land. This transition was driven by land constraints and strengthened through government facilitation and funding support. The development was further expanded through academic involvement, including IoT-based irrigation technology, although some devices are currently non-functional due to technical issues. Distribution patterns also evolved toward direct sales, institutional buyers, and digital marketing, although market reach remains limited due to production scale and logistical constraints.

In the fisheries sector, new ideas are realized through an integrated aquaponics system using Recirculating Aquaculture System (RAS) technology supported by international collaboration. Initial resistance from members was overcome after technological demonstration and external support from academic and foreign partners. This system has successfully increased fish productivity, although its implementation still depends heavily on external equipment support. In addition, value-added product development and Kafe Kebun Kita represent efforts to increase economic value through processed herbal drinks and food products. Although initially designed as a green cafe, its operation was short-lived due to accessibility constraints and limited facilities. As a result, production has shifted to a pre-order system using social media platforms, which helps maintain continuity but limits market expansion.

Furthermore, agricultural educational tourism activities transform the site into an educational tourism space that accommodates visits from schools and universities. While there are plans to develop it into a structured edu-tourism package, implementation is still in the planning stage and requires stronger institutional coordination. Overall, the emergence of new ideas demonstrates strong innovation capacity within the group. However, several limitations remain, including technological sustainability issues, limited market access, and dependence on external actors for infrastructure and development continuity.

New ideas in SerPis Kebun Kita emerge not as radical inventions, but as adaptive responses to contextual constraints, particularly land scarcity and limited agricultural infrastructure. This aligns with Ayob et al. (2016), who argue that innovation often arises from the reconfiguration of existing practices through new social relations. In the agricultural sector, the shift from household-based greening initiatives to integrated urban farming reflects a structural transformation in land use governance. The relocation to public land, supported by local government facilitation, enabled the construction of greenhouse-based production systems. This process illustrates institutional adaptation driven by community initiative.

The subsequent integration of IoT-based irrigation systems developed with Petra Christian University further demonstrates technological hybridization in urban farming. Although technical failures occurred due to system degradation, the continued effort to re-develop the technology indicates that innovation is iterative rather than linear. In fisheries, the introduction of aquaponics and Recirculating Aquaculture

System (RAS) represents a higher level of systemic integration between agriculture and aquaculture. Initial resistance from community members highlights that innovation adoption is shaped by trust-building processes rather than technical feasibility alone. The success of RAS implementation through international collaboration reinforces the argument that social innovation requires external enabling ecosystems (Perikangas et al., 2024).

Economic innovation is reflected in value-added product development and the establishment of Kafe Kebun Kita. However, its limited sustainability due to accessibility constraints led to adaptive restructuring through an Open Pre-Order system. This confirms that economic innovation in urban farming is highly adaptive but structurally vulnerable, consistent with Ardiansyah et al. (2025), who identify economic sustainability as the weakest dimension of urban farming systems. Finally, the transformation into agricultural educational tourism reflects a reconceptualization of agricultural space into an educational and tourism-based social infrastructure, strengthening the idea of agriculture as a multifunctional public value system.

Empowerment

Empowerment in SerPis Kebun Kita focuses on strengthening women's capacity to manage urban farming independently. The program was initially designed under the KRPL framework as a women-centered initiative, targeting housewives to support household food self-sufficiency through productive use of home gardens. Over time, empowerment expanded beyond cultivation into training in processing, marketing, finance, and digital skills, mainly supported by Petra Christian University and partially by government institutions. These activities have improved members' skills and self-reliance in both production and organizational management.

As stated by a key informant, empowerment aims to provide women with productive knowledge and alternatives beyond domestic routines. Members now actively participate in farming operations and knowledge sharing during educational visits. However, empowerment implementation still faces limitations, particularly the declining intensity of government support. Agricultural Extension Officers (PPL) are rarely present, making members rely more on internal knowledge exchange. This indicates that while community-based empowerment is strong, institutional support remains inconsistent.

Empowerment in SerPis Kebun Kita reflects a transition from externally driven assistance to internally sustained capacity development, consistent with Ayob et al. (2016), where empowerment transforms beneficiaries into co-producers of value. Initially framed as women's empowerment under KRPL program requirements, the initiative evolved into a broader community capacity-building system. Training provided by Petra Christian University, government agencies, and other partners covers cultivation techniques, financial literacy, digital skills, and product commercialization. However, the uneven intensity of government involvement results in a reliance on academic actors and internal peer learning mechanisms.

Economically, empowerment is institutionalized through a 60:40 profit-sharing system that strengthens both consumption security and collective financial capital. The establishment of a self-managed savings-and-loan mechanism further enhances financial independence and reduces external dependency. Organizational discipline is reinforced through fingerprint attendance systems and structured duty rotations, indicating institutional maturation at the community level. Most importantly, members have achieved technical autonomy in managing hydroponic systems, including nutrient monitoring and system maintenance. This demonstrates full internalization of knowledge, transforming the group from an object into a subject of empowerment. The Serpis Farmer Group also functions as a knowledge disseminator for visiting students and researchers, indicating upward diffusion of empowerment outcomes. This supports Nurhidayati & Harmawan, (2026), who emphasize that participatory empowerment enhances both social and economic resilience.

Change

Change in SerPis Kebun Kita is reflected in social, behavioral, and economic transformation among members. The most significant change is increased self-confidence, communication ability, and technical competence in urban farming activities, enabling women to actively participate in public interaction and training. As explained by an informant, members have progressed from limited knowledge to understanding cultivation systems, tools, and monitoring processes. This reflects a shift from passive participants to active actors in urban farming practices. Another key change is the transformation of Serpis from a beneficiary group into a mentor institution for other farmer groups, indicating recognition of its success and capacity. However, economic change remains uneven. While the program generates additional income through value-added products, benefits are distributed individually rather than collectively, showing that economic impact is not yet fully inclusive or structured.

Change represents the final and most comprehensive outcome of co-production Ayob et al. (2016), encompassing cognitive, institutional, and socio-economic transformation. In SerPis Kebun Kita, the most significant change is the shift in mindset from low confidence and passive engagement to active participation and public leadership. Members of the Serpis Farmer Group have transitioned into public educators capable of demonstrating agricultural technologies and engaging with external stakeholders. This reflects substantial improvement in human capital and communication capacity. The group's institutional status has also shifted from competition participants to mentors for other urban farming groups, indicating formal recognition of their capability.

Economically, SerPis Kebun Kita has transformed into a multifunctional socio-economic ecosystem that generates both collective and individual income. The shift from group-based revenue to individualized Open Pre-Order systems reflects micro-entrepreneurial decentralization. However, economic sustainability remains uneven, consistent with Ardiansyah et al. (2025), who highlight persistent challenges in the economic dimension of urban farming. Overall, the findings confirm that co-production generates long-term structural change rather than short-term programmatic outcomes. In line with Perikangas et al. (2024), SerPis Kebun Kita demonstrates that sustainable social innovation emerges when local communities evolve into autonomous actors supported by an enabling but non-dominant institutional ecosystem.

CONCLUSION

Based on the research findings and discussion regarding the 'SerPis Kebun Kita' urban farming innovation in Wonocolo, Surabaya City, the co-production process runs through dynamic cross-actors collaboration among the Food Security and Agriculture Agency of Surabaya City (DKPP of Surabaya City), Serpis Farmer Group, Petra Christian University, PT PLN, and local governments (Wonocolo District and Jemur Wonosari Urban Village). Although this collaboration faces challenges like weak monitoring and inconsistent coordination, strong social capital keeps the project sustainable. This innovation successfully introduces new ideas, such as turning abandoned land into urban farming areas using IoT, RAS technology, value-added product processing, and agricultural educational tourism, though Kafe Kebun Kita was temporarily paused due to poor planning. Furthermore, the initiative empowers members by turning them into self-reliant food producers, leading to positive changes like increased confidence, turning the group into a mentor for others, and boosting the local economy. Based on these findings, discussion, and conclusions, several recommendations are proposed: first, establish a shared commitment among stakeholders for regular coordination meetings; second, redesign the garden layout and optimize digital marketing to address the challenges of Kafe Kebun Kita; third, strengthen collaborative relationships and increase assistance from key stakeholders, particularly DKPP of Surabaya city and local governments; and finally, implement a marketing strategy that prioritizes the sale of fresh agricultural produce to local markets.

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