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Helping farmers escape the poverty trap through sustainable livelihoods

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CIPS
Center for Indonesian Policy Studies

Discussion Paper No. 15

Helping Farmers Escape the Poverty Trap through Sustainable Livelihoods

by Aditya Alta, Amalina Az Zahra & Azizah Nazzala Fauzi

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Helping Farmers Escape the Poverty Trap through Sustainable Livelihoods

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Jakarta, Indonesia
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unsplash/Muhammad Azzam

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GLOSSARY

AUTP:
Asuransi Usaha Tani Padi (Agricultural Insurance for Rice Farmers)

Bappenas:
Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)

BLT:
Bantuan Langsung Tunai (Direct Cash Transfer)

BPNT:
Bantuan Pangan Non-Tunai (Non-Cash Food Subsidy)

BUMDES:
Badan Usaha Milik Desa (Village Owned Enterprise)

DFID:
British Department for International Development

DTKS:
Data Terpadu Kesejahteraan Sosial (Unified Database for Social Welfare)

FAO:
Food and Agriculture Organization

FGD:
Focus Group Discussion

GDP:
Gross Domestic Product

JKN:
Jaminan Kesehatan Nasional (National Healthcare Insurance)

KBLI:
Klasifikasi Baku Lapangan Usaha Indonesia (Indonesian Standard Industrial Classification)

KPI:
Kartu Indonesia Pintar

KIS:
Kartu Indonesia Sehat

KLUI:
Klasifikasi Lapangan Usaha Indonesia (Indonesian Industrial Classification)

MOA:
Ministry of Agriculture

MOF:
Ministry of Finance

MOPWPH:
Ministry of Public Works and Public Housing

Musrenbangdes:
Musyawarah Perencanaan Pembangunan Desa (Village Development Forum)

NTP :
Nilai Tukar Petani (Farmer Exchange Rate)

PEN:
Program Pemulihan Ekonomi Nasional (National Economic Recovery Program)

PIP:
Program Indonesia Pintar (Smart Indonesia Program)

PKH:
Program Keluarga Harapan (Family Hope Program)

UNDP:
United Nations Development Program

UPSUS:
Upaya Khusus (Special Efforts)

USDA:
United States Department of Agriculture

EXECUTIVE SUMMARY

The contribution of agriculture to the Indonesian economy is in decline, but the sector still provides employment to a relatively large number of Indonesians. Because of low productivity, poverty has become the main social issue for farmers. Farming is concentrated in rural areas, and so farmers also face challenges that do not affect those living in urban areas.

This paper employs the "sustainable livelihoods approach," which considers welfare outcomes as the result of interactions between contextual factors, livelihood resources or assets, policies and institutions, and livelihood strategies. Employing this approach to a case study of two villages in Central Java, this paper assesses the extent to which existing policies and programs have addressed the challenges facing rural agricultural workers.

Production-oriented policies and programs such as input subsidies and market protection are the most common policies and programs to support farmers' welfare. However, they provide no more than a stopgap. Agricultural subsidies have also focused on food crops, especially rice, which distorts the market by incentivizing food production. Removing these subsidies can encourage the cultivation of high-value cash crops, unlocking a path to improved welfare via diversification. Machinery and tools assistance are largely provided per village or Farmer Group, which means that access to this assistance is influenced by social status and social institutions.

The government employs social protection programs, such as direct cash transfers, conditional cash transfers, food assistance, and programs in education and health. While effective at ensuring basic needs fulfillment, the targeting of these programs should be improved, especially the severely outdated Unified Database for Social Welfare (*Data Terpadu Kesejahteraan Sosial* or DTKS). To ensure that food assistance does not crowd out the market for local retailers, the government should explore allowing recipients of the Sembako Program to purchase food in any store.

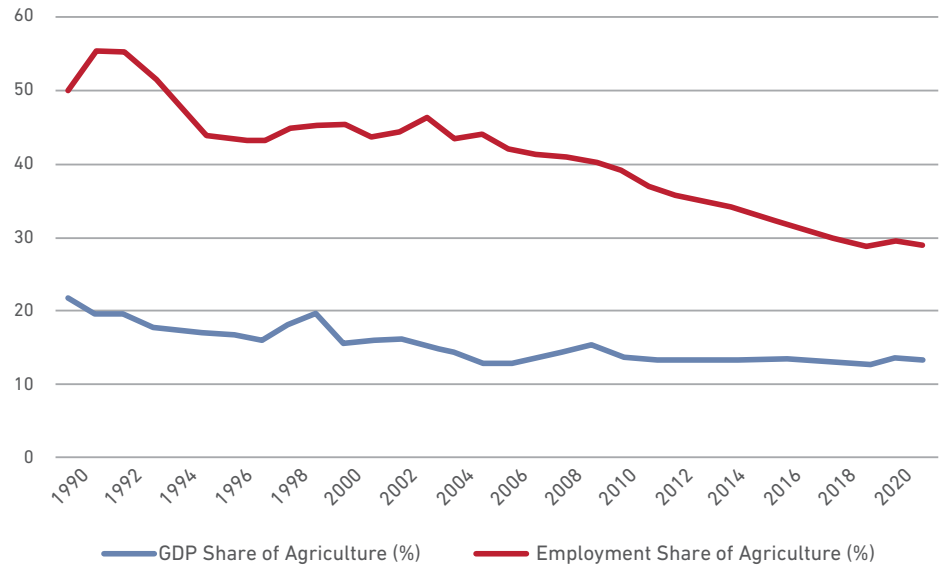
Rural development should also consider the important context added by geography. The revitalization of the Rawa Pening Lake has reportedly undermined the livelihoods of farming households. To minimize harmful effects and meet economic and environmental goals, landscape development should recognize the multiple functions that landscapes play and strive for policy coherence and effective local participation.

Finally, the government should move away from the use of a price index (such as the Farmer Exchange Rate (*Nilai Tukar Petani* or NTP)) as a measure of farmer welfare. A better indicator would consider local elements of livelihoods and farmers' income from both agriculture and non-agriculture works.

OVERVIEW OF FARMER WELFARE IN INDONESIA

Farmer welfare has become an important policy issue as agriculture's contribution to the Indonesian economy has decreased. While the share of Gross Domestic Product (GDP) attributable to agriculture is still relatively significant, it declined from 21.55% in 1990 to 13.28% in 2021. Employment in agriculture as a share of total employment has experienced a steeper drop—from over 50% in 1990 to 28.99% in 2021 (Figure 1). The falling importance of agriculture in the Indonesian economy is a consequence of economic transformation and labor mobility towards industry and services.

Figure 1.
GDP Share of Agriculture vs Employment Share of Agriculture, 1990–2021

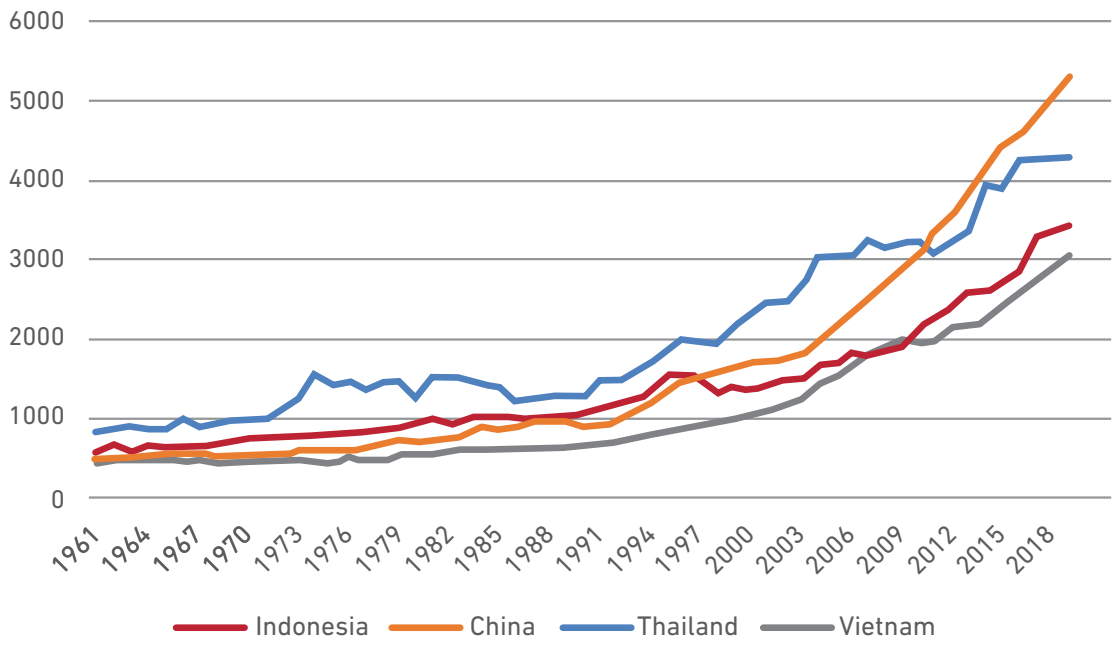


Source: World Bank (2023a, 2023b)

However, almost 30% of total employment is a significant number of workers. These workers have relatively low agricultural output compared to other East Asian economies with similar agrarian characteristics. Labor productivity in Indonesian agriculture[1] is relatively low at USD 3419 per worker in 2019, compared to USD 5281 per worker in China and USD 4274 per worker in Thailand. As seen in Figure 2, Indonesian agricultural labor productivity is higher than in Vietnam, but the gap has become smaller since the early 2000s.

[1] Calculated by dividing gross value of agricultural outputs from crops, livestock, and aquaculture by the number of people employed in agriculture.

Figure 2.
Agricultural Labor Productivity in Selected East Asian Countries (Constant 2015 USD)



Source: Processed from United States Department of Agriculture [USDA] (2022)

The relatively low productivity of Indonesian farmers translates to relatively low wages and income earned from their labor and crops. Table 1 suggests that agricultural workers[2] have received the lowest monthly wages for the last two decades. By 2015, the average agricultural wage was well below IDR 1 million (about USD 70) per month. It remains the lowest-paying sector in 2021, even when compared to more sectors under the new 2015 industrial classifications.

“The relatively low productivity of Indonesian farmers translates to relatively low wages and income earned from their labor and crops.”

[2] This paper uses “farmers” and “farming/agricultural laborers” interchangeably and generally to refer to individuals and households working entirely or partly on the cultivation of food crops, horticulture, plantation crops, or animal farming. For Table 1, Statistics Indonesia uses “workers” to refer to individual labors, employees, or freelance workers according to their main sector of activity.

Table 1.
Monthly Wages/Incomes by Sector, 2005, 2010, 2015, and 2021 (IDR)

Sector (KLUI 1990)	2005	2010	2015	Sector (KBLI 2015)[3]	2021
Agriculture, forestry, hunting, and fishery	362,238	576,848	957,205	Agriculture, forestry, and fishery	1,396,579
Mining and quarrying	1,383,364	1,937,720	2,977,571	Mining and quarrying	3,617,892
Manufacturing	719,767	1,089,733	1,676,874	Manufacturing	2,659,121
Electricity, gas, and water	1,110,962	1,797,948	2,513,744	Electricity and gas supply	3,856,069
Construction	697,636	1,046,539	1,687,911	Construction	2,314,837
Wholesale trade, retail trade, restaurant, and hotel	684,963	1,102,723	1,600,722	Wholesale and retail trade; repair of motor vehicles	2,302,001
Transportation, storage, and communication	858,650	1,457,516	2,416,771	Transportation and storage	2,882,243
Finance, insurance, real estate, and business services	1,275,804	2,045,636	2,893,631	Financial and insurance activities	4,136,064
Community, social, and personal services	932,545	1,505,703	2,172,793	Real estates	3,501,738
				Business activities	3,101,440
				Accommodation, food, and beverages	1,929,174
				Information and communication	4,064,152
				Water supply, sewerage, waste management	2,418,008
				Public administration, defense, social security	3,906,484
				Education	2,630,733
				Health services and social works	3,309,831
				Other services	1,517,244

Source: Statistics Indonesia (2007; 2012; 2017; 2021), processed.

[3] Since 2018, employment sectors in BPS publications have been classified into 17 categories which refer to the Indonesian Standard Industrial Classification (*Klasifikasi Baku Lapangan Usaha Indonesia* or KBLI) 2015. Before that, the sectors were organized into nine categories based on the Indonesian Industrial Classification (*Klasifikasi Lapangan Usaha Indonesia* or KLUI) 1990.

Poverty is the main welfare issue facing smallholder farming households. In 2021, 51.33% of poor Indonesian households depended on agriculture as their main source of income (Statistics Indonesia, 2021). The Food and Agriculture Organization (FAO) estimates that 73.10% of rural agricultural households are smallholders and 60.30% are impoverished (Amanah et al., 2021). The FAO defines smallholders as households that manage an area of farm land at most as large as the weighted median threshold of farm land at the national level (FAO, 2017). In Indonesia, the weighted median land size is two hectares, meaning all farms as large as or below two hectares are considered small farms.[4] Statistics Indonesia (2018) also reported that the number of extremely small farms (*petani gurem*)[5] in 2018 increased by almost 11% from 2013. These smaller land plots are less capable of achieving higher productivity through economies of scale. As extremely small farms become more common, farming becomes more associated with subsistence and farmers who find it more difficult to escape poverty.[6]

> "Poverty is the main welfare issue facing smallholder farming households."

Historically, poverty among Indonesian farmers has been made worse by the failure to modernize agriculture. Because agriculture remains largely unmechanized, surplus labor from other economic sectors is absorbed into agriculture, perpetuating the sector's relatively low productivity per head (Booth, 2000; Geertz, 1963).

> "Poverty among Indonesian farmers has been made worse by the failure to modernize agriculture."

More than half of the working population in rural areas worked in agriculture in 2021, compared with only ten percent in urban areas (Statistics Indonesia, 2021). Farmers face social and economic challenges stemming from the rural-urban disparity, such as more limited access to infrastructure and public services (Table 2).

Table 2.
Quality of Life in Indonesia's Rural and Urban Areas

Indicator	Rural	Urban
Poor population (2022, %) (Statistics Indonesia, 2022a)	12.29	7.50
Dependency ratio[7] (2022, % of working age population) (Statistics Indonesia, 2022f)	46.21	43.56
Under-five mortality rate (2017, per 1000 live births) (Statistics Indonesia, 2017a)	33	31
Households with access to basic sanitation (2022, %) (Statistics Indonesia, 2022d)	76.99	83.80

[4] Note that the FAO classification is based on a survey conducted in 2000. We may expect the current actual median to be smaller as farmers manage increasingly smaller land plots.
[5] In Indonesia's agricultural statistics, petani gurem is defined as agricultural households that manage less than 0.5 hectares of farmland.
[6] Maintaining small farm size may be a coping strategy for small farming households. Smaller land plots, or fragmenting larger land plots into smaller ones, may have started as a rational preference to minimize the risks associated with managing a large estate, such as crop failure, or to enable access to different land characteristics (soil type, fertility, water access, etc.) (Charlesworth 1983; Ilbery 1984; Sumaryanto and Purba, 2011).
[7] The dependency ratio measures the number of dependents (populations aged over 65 and 0-14) compared to the working age populations (15-64 years old), stated in percentage. The number 48.62 for rural populations means that every 100 working-age people are responsible for almost 49 non-productive populations.

Households with access to clean drinking water (2022, %) (Statistics Indonesia, 2022d)	49.03	41.95
Access to basic health facility (2022, %) (Statistics Indonesia, 2022d)	75.37	82.22
Access to decent housing (2022, %) (Statistics Indonesia, 2022b)	56.84	63.45
Populations who completed high school or higher (2022, %) (Statistics Indonesia, 2022f)	55.48	73.91
Average monthly wages (February 2023, IDR) (Statistics Indonesia, 2023)	1,985,275	3,040,475
Adults connected to the internet (2019, %) (World Bank, 2021)	36	62
Daily protein consumption per capita (2022, gram) (Statistics Indonesia, 2022c)	62.75	65.84
Daily energy intake of infant >36-59 months old (2020, kcal) (Lestari et al., 2020)	1,266.94	1,369.11

With lower agricultural earnings and quality of life in rural areas, farmers have been leaving agriculture for jobs in the other sectors. However, the welfare effects of leaving agriculture have also fallen. A longitudinal study from Moeis et al. (2020) shows that shifting from agriculture to another sector significantly reduced the likelihood of poverty for Indonesian farming households before 2007, but no significant welfare improvement was observed among those leaving agriculture after 2007. This change is likely the result of the higher skills and education required for labor mobility into formal work in the modernizing Indonesian economy. Without training and education, farmers leaving agriculture are more likely to end up in the informal economy, where they can expect little improvement in welfare. Underdevelopment in rural areas is in many ways similar to being left behind. Rural populations do not receive the skills and education required in Indonesia's shifting economy that are much more achievable in urban areas.

"Without training and education, farmers leaving agriculture are more likely to end up in the informal economy, where they can expect little improvement in welfare."

This paper examines policies and programs implemented by the Indonesian government that aim directly or indirectly at improving farmer welfare. Building on field work in two villages in Central Java, this paper proposes a conception of welfare as the possession of capacity and assets for a sustainable livelihood and assesses the extent to which current policies and programs have addressed farmer welfare by this metric.

POLICIES AND PROGRAMS TO PROTECT THE WELFARE OF FARMERS

The Indonesian government often refers to the NTP as an indicator of farmer welfare. It is a ratio of two indices: the index of prices paid to farmers and the index of prices paid by farmers. An NTP score of more than 100 is interpreted as a positive indicator of farmers' purchasing power and an increase in welfare, while a value less than 100 is interpreted as a deficit. The NTP in May 2023 was 110.20, a slight decline from the NTP in April 2023 at 110.58 (Statistics Indonesia, 2023).

The use of the price index as a measure of farmer welfare has been criticized as misleading and inaccurate. The NTP may increase when agricultural product prices increase amid limited supply, which may not reflect an increase in farmers' income. Farmers also gain limited additional revenues from higher prices per unit of the agricultural commodity when they manage small plots of land (Ruslan, 2021).

Policies meant to improve the welfare of farmers and rural populations in Indonesia can be classified into three categories based on their distinct understanding of and approach to welfare. These policies address farmers' welfare in terms of the function of production, fulfillment of basic needs, and sustainable livelihoods.

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Welfare as a Function of Production

When welfare is considered as a function of production, farmer welfare is understood to improve as agricultural production increases. Policies that assume welfare as a function of production aim to maintain higher prices for farm products and lower prices for inputs to increase production.

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This policy approach is found in the Ministry of Agriculture's (MOA) Strategic Plan 2020–2024 and Law No. 19/2013 on the Protection and Empowerment of Farmers. The Strategic Plan explicitly states that farmer welfare is the result of the achievement of programs and activities related to agricultural development (MOA, 2020, p. 40). Law No. 19/2013[8] outlines a farmer protection strategy that consists of ensuring a stable, affordable supply of agricultural inputs (fertilizer and seeds) through subsidies and assistance; provisions of equipment, machinery, pesticide, livestock medicine and feed; and of ensuring favorable agricultural commodity prices for domestic farmers through import duties and price controls (Articles 7, 19–21, 25).

[8] Law No. 19/2013 was amended by Law No. 11/2020 on Job Creation, which was again amended by Government Regulation in Lieu of Law No. 2/2022 on Job Creation. The amendment removed the provisions that prioritized domestic production to meet the national food demands and recognized that imported food is equally important as domestically produced food in meeting food security needs.

A study by the Center for Indonesian Policy Studies (CIPS) shows that import restrictions hurt farmers and lead to greater inequality via higher commodity prices (Amanta & Wibisono, 2021). Given that around two-thirds of Indonesian farmers are net consumers of rice (McCulloch, 2008; SMERU, 2015; World Bank, 2016), the negative impact of high food prices on farmers' expenditures offset the positive gain on farmers' income.

Subsidies and free provisions of inputs (fertilizer and seeds), when available to farmers, can help farmers reduce production cost and achieve optimal yields. Lowland rice farmers who received fertilizer support produced higher average yields compared to those who did not (Ruslan, 2021). However, fertilizer subsidies have limited coverage and cannot guarantee sustainable access to affordable fertilizer. Allocated quantities of subsidized fertilizer cover only 37%–51% of reported national fertilizer needs, leaving farmers with no option but to spend more money buying non-subsidized fertilizers—with a large price gap due to the subsidies—or reduce fertilizer use and accept a lower yield (Alta et al., 2021). The types of fertilizer and crops eligible for the subsidy are further limited due to increasing global fertilizer prices. MOA Regulation No. 10/2022 limited the program's coverage to urea and NPK, and farmers cultivating rice, corn, soybeans, chili, shallots, garlic, small sugarcane plantations, cocoa, and coffee. The program has been focused on the food crop sector, especially rice, leading to market distortions that incentivize food production. Removing these subsidies can encourage the cultivation of high-value cash crops, thus unlocking a new path to improved welfare via diversification (World Bank, 2023).

Seed assistance provides either subsidized or free seeds. From 2015–2018, the Special Efforts (*Upaya Khusus* or UPSUS) program from the national government provided farmers with high-yielding inbred and hybrid rice seeds, hybrid maize seeds, and soybean seeds. The UPSUS mandate ended in 2018 and seed assistance began to fall under different programs from the national and local governments. Despite years of assistance, relative success was only seen in maize, where hybrid seeds make up 80%–90% of the cultivated varieties in Indonesia (Syahruddin et al., 2020). However, wide adoption of hybrid maize seeds may have been caused more by the commercial seeds industry than government assistance.

Similarly, the government's free technology and machinery programs often overlap with similar programs from the private sector, but the government programs lack user training and proper maintenance that are usually offered in private sector technology transfers (Budiman & Alta, 2022).

Welfare as the Fulfillment of Basic Needs

The second approach to welfare evaluation sees the fulfilment of a range of basic needs as indicators of welfare (generally understood to cover the minimum standards of nutrition (food and water intake), health, education, shelter, sanitation, and other services (Frances, 1985; Streeten et al., 1981)) as indicators of welfare. This approach is typically used by governments or their development agencies to draw the poverty line and is also used by Statistics Indonesia to define poverty and measure its incidence (Statistics Indonesia, n.d.).

“The second approach to welfare evaluation sees the fulfilment of a range of basic needs as indicators of welfare.”

The government has implemented a range of social protection programs to ensure basic needs fulfilment and a decent life for low-income Indonesians, including food assistance, cash transfers, education, and health care. These programs are mandated by Law No. 11/2009 on Social Welfare (Table 3). Since 2012, social protection coverage has increased remarkably — from 5.3 million to 17.3 million households in 2017 among the Bottom 40 (B40) population[9] (World Bank, 2020).

A set of social assistance provisions were also implemented from 2020–2022 as part of the National Economic Recovery program (Program Pemulihan Ekonomi Nasional or PEN) through Government Regulation No. 43/2020. PEN covers various financial incentives and stimuli through direct cash transfers, discounted electricity bills, rice assistance, training programs for furloughed workers and allocations for the health sector to provide necessary equipment for handling the COVID-19 outbreaks (Ministry of Finance [MOF], n.d.).

[9] Indicates households whose income falls in the bottom 40% of the population.

Table 3.
Regulations and Programs on Social Protection

Regulation	Rural	Description
Ministry of Social Affairs Regulation No. 1/2018 on Family Hope Program (*Program Keluarga Harapan* or PKH)	PKH	Conditional cash transfers targeting the poor and vulnerable based on the geographical location, education level, pregnant women, and family members with disability with up to IDR 15 million (USD 1000) per month.
Ministry of Social Affairs Regulation No. 5/2021 on Sembako Program	Sembako Program	Food assistance intended to cover ideal dietary needs (carbohydrate, animal and plant protein, vitamins and minerals) through provisions of diverse kinds of foodstuffs. Recipients receive cash transfers worth IDR 200,000 (USD 13) per household per month that can only be spent on selected foodstuffs.
Ministry of Education Regulation No. 10/2020 on Smart Indonesia Program (*Program Indonesia Pintar* or PIP)	PIP	K–12 education assistance is delivered through *Kartu Indonesia Pintar* (KIP) for children from poor and vulnerable families.
Presidential Regulation No. 64/2020 on the Second Amendment of Presidential Regulation No. 82/2018	National Healthcare Insurance (*Jaminan Kesehatan Nasional* or JKN)	Healthcare assistance through *Kartu Indonesia Sehat* (KIS) for poor and vulnerable families.
Government Regulation No. 43/2020 on the Amendment of Government Regulation No. 23/2020 on the National Economic Recovery Program	Electricity Discount	Waived or 50% discounted electricity bill for poor and vulnerable households during the COVID-19 pandemic based on household wattage.
	Pre-Employment Card Program	Upskilling and reskilling programs with income support for furloughed workers from poor and vulnerable families during the COVID-19 pandemic.
	Food Coupon	Food assistance in the form of direct cash transfers up to IDR 2.4 million (USD 160) per month for poor and vulnerable families.
	Rice Assistance	Rice assistance of 10 kg for poor and vulnerable families impacted by the COVID-19 pandemic, delivered by Bulog.
	Village-Fund Direct Cash Transfer	Direct cash transfers to non-PKH, poor and vulnerable families by the district-level government.
	Cooking Oil Assistance	One-time direct cash transfer of IDR 300,000 (USD 20) during April-June 2022 for poor and vulnerable families impacted by the global high price of cooking oil.

These programs have limitations. While targeted social protection is better at providing safety nets than subsidies and import restrictions, the distribution of government assistance programs is still uneven, and many who need the programs most do not receive them (Patunru & Respatiadi,

2017). In the second half of 2021, the State Audit Board found that the government lost almost IDR 7 trillion (around USD 483 million) due to errors in the distribution of PKH assistance, non-cash food assistance, and social assistance (Ombudsman, 2022). Above all, social assistance and social protection programs, even with good targeting and updated recipient list, cannot provide sustainable improvements in well-being as they are only effective at providing temporary measures to protect vulnerable families from declining welfare.

Welfare as Sustainable Livelihoods

The previous two approaches are focused on welfare outcomes. The first approach assumes the quantity of crops harvested, income, crop prices, and other indicators of farm production as the desired outcomes for farmers. The second approach aims to provide the minimum level of outcomes from the fulfilment of a basket of basic needs.

By focusing on easily measurable outcomes, policies tend to neglect more important factors for improving welfare, such as resources (capabilities and assets that enable a means of living, such as education, skills, as well as land ownership and farm size) and strategies (activities and choices to secure livelihoods, such as staying as farmers, combining multiple sources of income, or leaving agriculture altogether) available to farmers, and the role of policies, institutions, and structural factors (Chambers & Conway, 1992; Scoones, 2015).

Scholars and international development agencies[10] have devised the sustainable livelihoods approach to better guide research and public policy by considering these factors (Carney et al., 1999; Scoones, 1998). Chambers and Conway (1992, p. 6) in a working paper considered as a seminal work in the topic defines a livelihood as comprising "the capabilities, assets (including both material and social resources) and activities for a means of living," and considers a livelihood sustainable "when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base."

The sustainable livelihood approach is therefore also concerned with the transformative effects of policies on livelihoods. Dorward (2009) and Mushongah (2009) provide useful categories of livelihood processes that consist of people who are "stepping up" (accumulating assets through expansion of the scale or productivity of their existing livelihood activities), "stepping out" (re-investing assets into new activities; diversifying income sources, including in off-farm works or in new locations), "hanging in" (maintaining the current level of wellbeing amidst challenges; barely surviving), and "dropping out" (referring to those who are losing their core livelihoods and exiting their agricultural lands, usually due to shocks).

[10] Such as the British Department for International Development (DFID), Oxfam, United Nations Development Program (UNDP).

As such, the sustainable livelihoods approach considers not only measurable outcomes, but also strategies and external factors that affect welfare improvement.[11] It considers non-agricultural income-earning work by farmers. In a changing rural setting, maintaining diverse sources of productive work becomes an important strategy, since farming activities are increasingly linked to non-farm activities (Ellis, 2000; Haggblade et al., 2010).

“The sustainable livelihoods approach considers not only measurable outcomes, but also strategies and external factors that affect welfare improvement.”

[11] More recently, McCarthy et al. (2023) studied livelihood trajectories, or the direction and pattern of livelihoods as a reaction to various contexts, external factors, resources, and strategies, in agricultural production systems across Indonesia.

STUDY APPROACH

This paper uses the sustainable livelihoods approach to evaluate the range of strategies that farmers use to improve their own welfare, and the role of government policies in facilitating or hindering welfare improvement. Following Scoones (1998: 3), the case study was guided by the following question: "Given a particular context..., what combination of livelihood resources... result in the ability to follow what combination of livelihood strategies...with what outcomes?"

The study is based on field research conducted from May–June 2022 in the villages of Gedong and Rowoboni in Banyubiru, Semarang District, Central Java. Field research was conducted as a case study comparing the two villages based on their different socioeconomic characteristics, agricultural production, and geographical contexts. While there are many differences, both villages are relatively accessible from a nearby town, Salatiga. This ensures that individuals and households have access to productive work outside of agriculture as Salatiga provides opportunities in the industrial and service sectors.

The case study relied on a combination of semi-structured interviews, focus group discussions (FGDs), and observation of farming activities, machinery and other facilities, and other important geographical contexts, such as the Rawa Pening lake area. In total, 15 interviews and five FGDs were conducted, with a total of 39 research participants. Farmers who participated in the interviews and FGDs in both villages cultivate small land plots ranging from 0.1 to 0.76 hectares. This excludes landowners of large areas of arable lands that choose to rent their land out to tenant farmers.

OVERVIEW OF THE SITES

Gedong (population: 2,445 (December 2021)) is located at the foot of Mount Merbabu and sits on relatively high-value agricultural land that provides farmers with options to diversify across crops and agricultural activities. The upper part of the village is used for an agroforestry of coffee, clove, avocado, durian, stink beans, and rainfed paddy, as well as dairy farms in Dusun Banyudono,[12] which is known for its high earnings from milk production. Meanwhile, the lower part of the village is mostly irrigated rice fields intercropped with vegetables, chili pepper, lemon, and other secondary crops. Primary education (pre-school, kindergarten, elementary schools) is available in Gedong, but villagers must travel to a neighboring village or city for middle schools and high schools. Freshwater is abundant in Gedong due to its mountainous terrain and availability of several natural springs.

Rowoboni (population: 2,741 (February 2023)) is located in the lower part of Banyubiru around Rawa Pening Lake. While Gedong shows a range of possibilities for agricultural workers and households, Rowoboni represents the case of precarious rural livelihoods. Agricultural work in this village consists mostly in rice cultivation, small-scale capture fishery, and fish farming in floating net cages, all of which depend on the lake. The main crop, rice, is intercropped with chili pepper and vegetables. Some households also collect water hyacinths (*eceng gondok*) from around the lake to be made into or sold as dried materials for bags, baskets, and other handicrafts. Like Gedong, primary education facilities are available in Rowoboni but higher education from middle school onward is only available outside the village.

> “Since 2019, some rice fields around Rawa Pening have been flooded by the rising lake water, and affected households could no longer grow rice or other crops.”

Since 2019, some rice fields around Rawa Pening have been flooded by the rising lake water, and affected households could no longer grow rice or other crops. These households were forced to shift to fishing or working in the city. According to farmers and villagers interviewed, the flooding is caused by a revitalization program undertaken by the Ministry of Public Works and Public Housing (MOPWPH) (Interview 3, Interview 4, FGD 1).

This program is mandated under the Presidential Regulation No. 60/2021 on the Conservation of National Priority Lakes which designates 15 lakes across Indonesia, including Rawa Pening, as national priority lakes because of their high degradation status as well as economic, ecological, sociocultural, and scientific values.[13] Through the MOPWPH program, national priority lakes will be restored to their natural functions as water reservoirs through activities such as dredging, removal of water hyacinths, embankment, and watershed management (MOPWPH, 2019).

[12] *Dusun* is a subdivision of village (desa) in the Indonesian administrative system.
[13] While the Presidential Regulation was issued in 2021, the revitalization has been running since at least 2016 and was part of the previous National Medium-Term Development Plan 2015–2019 (National Development Planning Agency [*Badan Perencanaan Pembangunan Nasional* or Bappenas]), 2017; MOPWPH, 2019).

Farmers have been protesting the establishment of setbacks along the lake banks as regulated under the MOPWPH Decree No. 365/2020, which defines the lake area as extending up to 50 meters from the water edge at the highest historical water level, with an ideal water elevation of 463.30 meters above sea level set by the decree (Central Java Regional Representative Council, 2022). According to a report quoting the Lake Authority,[14] lands that fall within the setbacks will eventually be acquired by the government (Putri, 2022). The case of Rowoboni shows how the management of natural landscapes to fulfil their economic, social, and environmental functions can lead to grievances that often accompany land acquisition and resettlement in Indonesia.

[14] Rawa Pening is managed by *Balai Besar Wilayah Sungai Pemali Juana*, with authority covering river basins, lakes, and irrigation systems in the Jratunseluna and Pemali-Comal river systems in Central Java.

LIVELIHOODS, CHALLENGES, AND ASSETS

Some farming households in these two villages engage in mere subsistence farming. When there is no income, the poorer households (those with about 0.10 hectares of land and no alternative income) subsist on rice, vegetables (such as cassava leaves and papaya leaves from their garden), and chili sambal (FGD 1, FGD 2, FGD 3, FGD 4).

> "Most rice farmers do not eat the rice that they grow; farmers would rather buy rice than mill their paddy into rice."

Subsistence farmers aside, most rice farmers do not eat the rice that they grow. Farmers would rather buy rice than mill their paddy into rice, which is often more expensive. The higher price of rice at the consumer level does not translate to a higher price for the grains received by rice farmers[15]. Instead of improving farmers' income and purchasing power, price increases further impoverishes farmers.

At harvest time, farmers immediately sell their crops to intermediaries, who provide harvesting tools, appraise the value of the crops after deducting their fees, and sell the rice paddy at the big market in the city. This system is locally known as *tebas*.

When harvest season comes, the crops must be harvested immediately to avoid damage. Because of the tight timelines and their reliance on intermediaries, as well as the difficulty of finding farm laborers, farmers have little bargaining power and will often accept any price quote from the intermediary. There are a few intermediaries to choose from, so farmers have some room to compare prices and other arrangements (FGD 4). However, none of the intermediaries are from Gedong or Rowoboni. Some come from Demak (1.5-hour drive from Banyubiru) and collect rice from different areas. In general, farmers depend on the intermediaries and will sell their rice as soon as they arrive in the village. If they miss the visit, they may not be able to sell at all, and intermediaries are always moving from one village to another (FGD 1).

Resource flows also happen through the communal gift economy. Villagers are almost culturally obligated to gift a certain amount of money to other villagers who are hosting a social occasion, such as for wedding, childbirth, or funeral. The value of these gifts ranges from IDR 30,000–50,000 (around USD 2–3) if the host is a regular neighbor, to IDR 200,000 (around USD 13) if the host is a relative. A villager could spend hundreds of thousands of rupiah if they attended several invitations in a week. The cultural significance of this practice leads to villagers feeling ashamed if they gifted a low amount. Villagers short on cash even borrow from their relatives in order to give gifts (FGD 4, Interview 1).

[15] As was found by by Naylah et al. (2021).

Financial challenges facing farming households mostly come from high farming costs involved in procuring the seeds, fertilizers, herbicides, pesticides, and other chemicals for controlling plant diseases, labor costs, renting the land (for tenant farmers) and equipment, transportation, and post-harvesting fees. Labor costs come from the need (especially of older farmers or those who manage a large area of land) to outsource some of the tasks, such as weeding and threshing, to farm laborers. Laborers for harvesting are sometimes provided by an intermediary as part of the tebas arrangement.

Irrigation is a challenge in Rowoboni, which is located in the lower part and receives its water from the surrounding rivers that flow into Rawa Pening. The village's geographical location means it often receives too little water during the dry season and too much water in the rainy season. Rice fields along the bank of Rawa Pening are sometimes submerged in the rainy season because the lake authority maintains a high water level for electricity needs (FGD 1).

While the majority of farmers in Rowoboni still grow rice paddy, seasonal crops like rice are no longer the main cash crop for them. Since rice is only harvested once a year—and there is no harvest from flooded fields—farmers increasingly rely on selling fish and vegetables for daily income (FGD 1).

Farm laborers are also increasingly difficult to find as young people are giving up farming because of its low and uncertain income. This trend is not only influenced by the shifting aspirations of young people but also by parents. People whose families have farmed for generations are considering transitioning to different jobs to seek a more settled and predictable income. This indicates that they can no longer afford or are no longer willing to deal with the risks in the agriculture sector. Farmers would rather see their children take jobs such as grocery store employees, factory workers, and civil servants than follow in their parents' footsteps. Parents did not hesitate to say that the farmland they own will be sold when they are older to distribute the proceeds to their children (FGD 4).

Owning more diverse assets can determine the financial success or failure of farmers. First, land is the central asset in farmer's life. Tenant farmers who do not own land cultivate land belonging to other people through several different arrangements. The dominant one is *maro* (literally "half")—a sharecropping arrangement where the tenant farmer bears the entire cost of production and shares half of the proceeds with the landowner. Some landowners may also lease their lands on an annual contract. The average rent in 2022 was IDR 15 million (a little less than USD 1000) per hectare per year (Interview 2). For tenant farmers, these sharecropping and land lease agreements are costly and put them at a disadvantage compared to the landowners in terms of risk and profit distribution (FGD 2).

"Owning more diverse assets can determine the financial success or failure of farmers."

A second asset that farmers commonly have is livestock such as goats, cows, and chickens. Livestock act as a store of value, and raising them provides an additional source of income from the milk and eggs or fertilizer from manure. Those who raise chickens at home would usually keep them for consumption rather than sale. Some farming households also run small shops or food stalls at home, while others who act as an intermediary usually have a pickup truck.

> Social status affects welfare improvement.

Third, social status affects welfare improvement. Being a village official (*perangkat desa*) or in a village official's family can grant someone the ownership of tanah bengkok, lands that were originally village owned but have historically changed ownership as they were distributed to the village officials. As with privately held land, *tanah bengkok* is often leased to tenant farmers.[16] Villagers with close relationships with village officials tend to be exposed more to assistance (such as fishnet provision for fishermen, the Sembako Program, assistance with home renovation, and direct cash transfer (*Bantuan Langsung Tunai* or BLT) as these programs rely on village officials for registration and verification of recipients.

[16] For an analysis of village-owned lands, see Krishnamurti et al. (2019).

LIVELIHOOD STRATEGIES OF FARMING HOUSEHOLDS

Farming households in the two villages employ a number of strategies to maintain a standard of welfare. First, they reduce farming costs and minimize risks by reducing the use of fertilizer and other inputs. Cultivating a smaller land plot, or renting out instead of working on the lands themselves (in the case of those who own enough land), is also associated with risk minimization, since larger land plots require more maintenance and supervision to prevent pest attacks and diseases.

The second strategy is income diversification. Most farming households already pursue additional sources of income, both within agriculture (such as intercropping, operating machinery for a fee, fishing, animal rearing, being a trader/intermediary) and outside agriculture (migrating to the city for wage labor (such as in the garment industries in Semarang and Surakarta), collecting water hyacinth for handicrafts). Most farmers use intercropping to maximize the land potential and increase income, rather than trying to expand their land holdings. Rice farmers usually use empty space in rice fields for growing secondary crops like corn, peanuts, cayenne pepper, and vegetables.

On the hillside of Gedong, which is dominated by coffee plantation, farmers also intercrop with plants like cloves, durian, bananas, and avocados. Coffee plantations do not require intensive care so the farmers can grow other crops intercropped with coffee or on different lands. Coffee growers can harvest twice a year and make substantial proceeds by processing coffee cherries into raw coffee beans before selling to intermediaries. According to a local coffee processor in Gedong, the selling price of coffee cherries is IDR 3,000 (USD 0.2) per kilogram while the green beans can be sold from IDR 30,000 (USD 2) if unsorted to IDR 60,000 (USD 4) for the selected ripe beans.

Fishermen can fish three to five kilograms of tilapia every day at Rawa Pening, which they sell to intermediaries for quick returns. They can earn on average IDR 50,000 (around USD 3.33) per day by selling fish, though doing so incurs a cost for boat rental of IDR 20,000 a day (around USD 1.33). The lake authority has been removing water hyacinths, which are a major source of sediments that create problems such as flooding, shrinking lake area, and water quality degradation. The removal also benefits fishermen by allowing easier navigation. On the other hand, it poses a threat to small artisans and others who collect water hyacinth. Lake conservation therefore has different effects on different users of the lake, and these effects must be taken into consideration by the authorities.

Income diversification requires skills and qualifications that not everyone has. Work as a factory laborer or a supermarket clerk requires at least a high school diploma. In both villages, only about a quarter of the populations have finished high school.[17] Gender-based barriers are also a factor as mothers may find difficulties leaving their children at home to perform wage labor in the city (Interview 3). In this case, farming is sometimes more accommodating to mothers as they could bring their children along in the field.

Moving out of agriculture completely has become more common but is rarely done by all family members. Some members of the farming households usually stay in the village as farmers while the rest support the family through remittances from wage labor in the city.

[17] According to each village's demographic data sourced from the Village Office in Gedong and a village official in Rowoboni. Data as per December 2021 for Gedong and February 2023 for Rowoboni.

ROLE OF POLICY AND INSTITUTIONS

Inputs, Equipment, and Machinery Assistance

Free or subsidized provisions of inputs, equipment, and machinery are the dominant forms of policies and programs to support farmers in the two villages. This aid is based on a conception of welfare as a function of production.

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The villages occasionally receive farming equipment and machinery such as tractors, rice transplanters, rice threshers, and lawnmowers. The community of fishermen in Rowoboni sometimes also receives boats and catching tools such as nets. Four biogas digesters were also found in Dusun Banyudono, received by dairy farms or households with livestock. This aid is mostly from government assistance funded by the Village Fund (*Dana Desa*),[18] local or central government programs implemented through the District Agricultural Office, or some funds called *dana aspirasi* that members of parliament receive for their constituencies.

Farmers identify several weaknesses of aid in the form of free equipment, machinery, or inputs. First, machinery like tractors is provided on a per Farmer Group (*Kelompok Tani*) or per village basis, and which household hosts a large piece of machinery is often determined by their social proximity to village officials. Because there is often only one machine for the whole village, farmers must pay a rent or share revenues with the Farmer's Group for using the machine (Interview 2, Interview 4, Interview 5, FGD 1). Since agriculture is a seasonal activity, it is often difficult to find machinery available for rent, or a person able to operate it, during the planting or harvesting season.

Second, this assistance does not consider geography, farming techniques, or farmer preferences. Farmers in Gedong have no use of the provided tractors due to the sloping land in the hilly terraces of the village (Interview 5, Interview 7). The milking device provided by the government is also not preferred by local dairy farmers, since it tends to damage the cow's nipples (FGD 2). Rice farmers in Rowoboni prefer planting local seeds to the free Ciherang rice seeds they received (FGD 1, FGD 4, Interview 9).

Third, some technology assistance was provided as a one-off program without proper maintenance. A farmer in Rowoboni recalled the village receiving a rice transplanter, but that over the time no one used it or knew its whereabouts (Interview 7). The latter was also found in a CIPS study on technology transfers to the dairy farms, where farmers tended to abandon a new technology in the long run because it was provided with no technical and knowledge support (Budiman & Alta, 2022).

[18] The Village Fund (*Dana Desa*) is a fund that is sourced from the state budget and transferred to the villages through the district/city budget. The fund can be used for village governance, development, social, and empowerment programs according to the results of the Village Development Forum (*Musyawarah Perencanaan Pembangunan Desa* or Musrenbangdes), with annual guidance on allocation priorities from the Ministry of Village, Disadvantaged Regions, and Transmigration.

As found in several studies (Alta et al., 2021; Ruslan, 2021), farmers depend on cheap, subsidized fertilizer to reduce production costs. Scarcity is commonplace, with farmers receiving less subsidized fertilizer than they need and sometimes receiving it late into the planting season. Farmers and even village officials believe that bad actors in the distribution chain are to blame for scarcity and misallocation that prevents farmers from receiving all they need (FGD 5), and are unaware that fertilizer subsidies only cover 37–51% of the national fertilizer needs every year (Alta et al., 2021). However, it is a common practice to illegally sell subsidized fertilizer above the supposedly guaranteed maximum retail price. Local farm shops reportedly claim that the higher price is to cover logistics and transportation borne by the seller (FGD 5), which should not be the case as the maximum retail price should already consider these costs. This finding echoes media reports in other places on the illegal sales of subsidized fertilizer above the maximum retail price despite frequent crackdowns by the law enforcement (e.g., Kompas, 2022; Saputra, 2022).

Farmers claim their subsidized fertilizer quota by presenting individual Farmer Cards (*Kartu Tani*). Our study confirmed findings that distribution and farmers' adoption of the card has been inadequate and uneven (Alta et al., 2021) due to slow registration (FGD 5) and poor familiarity of the farmers, especially older individuals, with the process and requirements to receive the card (FGD 3). In Gedong, some farmers worked around subsidized fertilizer scarcity by sharing their cards and quota. Farmers cultivating small-scale maize and cassava claimed that their fertilizer needs are not as intense as those growing rice, and share their remaining quota to other farmers in need. The quota sharing is facilitated by the Farmer Group (FGD 3). These findings show the limitations of in-kind fertilizer subsidies in accommodating farmer's preferences.

Post-Harvest Facilities, Infrastructure, and Market Access

Farmers' most common demand for aid was to improve access to post-harvest equipment and facilities. Road access has improved the local economy by enabling the transportation of harvests to the nearest market. Paved roads connecting the upper-side of Gedong were only available in 1998. Before then, Banyudono was the poorest Dusun due to its location. Today, it is regarded as the wealthiest part of the village thanks mostly to the dairy farms. Further improvement to road access, such as through the construction of special farm roads (*jalan usaha tani*), is still expected by the villagers to help with the transportation of harvests and inputs to and from the fields (FGD 1).

> "Farmers' most common demand for aid was to improve access to post-harvest equipment and facilities."

Building marketplaces close to farms is not always helpful. The local government has built a traditional market in the village, but according to farmers in Rowoboni, not many consumers come, since they can buy directly from farmers or millers for a cheaper price (FGD 1). Market access is also an issue for farmers who have an interest in organic farming. While some farmers have transitioned to using manure and reducing pesticide, going fully organic is not supported by market access to conscious consumers who would pay more for organic produce. This is in contrast to larger growers in nearby villages, where farmers have access to organic retailers in Jakarta and other cities (Interview 8).

Farmers also expect more support in providing post-harvest machinery such as dryers, grass choppers, and rice mills. Typically, this machinery is owned by traders and intermediaries, who in the tebas arrangement estimate the value of the crops and help farmers harvest and prepare the crops for a fee deducted from the transaction value. Village officials in Gedong are aiming

to replace intermediaries by establishing a Village Owned Enterprise (*Badan Usaha Milik Desa* or BUMDES) that will own and operate post-harvest machinery and basically takes over the trader's role in marketing the harvests. The BUMDES will also be equipped with a granary to store grains and delay sales to obtain a better price (FGD 5).

Social Assistance Programs

Social assistance programs received by villagers include BLT, conditional cash transfers from the PKH,[19] *Sembako* program,[20] house renovation from dana aspirasi, and other social protection in education (PIP) and health (JKN).[21] Direct cash transfers (BLT) of IDR 200,000 (around USD 13) per month for three months were received at the start of the pandemic, but according to the villagers, many poor people were not covered.

> "Issues with inclusion/exclusion and poorly targeted programs are an ongoing problem for Indonesia's social assistance programs."

Issues with inclusion/exclusion and poorly targeted programs are an ongoing problem for Indonesia's social assistance programs. Since 2012, DTKS has been used as a basis for identifying recipients of social assistance programs. The list from DTKS is combined with annual community deliberations (*musyawarah desa*) and input from local program facilitators to verify, update, and produce a final list of recipients (Katiman, 2023). Ministry of Social Affairs Regulation No. 3/2021 stipulates that the DTKS should be updated once a month. However, according to a World Bank report, the DTKS is severely outdated, with much of the database still containing information from 2015 (World Bank, 2023c).

Issues with exclusion became more pronounced during the pandemic. In Gedong and Rowoboni, the "new poor" emerged as more people fell into poverty when they lost their ability to work during the pandemic. Because they only became poor in the pandemic, they were not registered as social assistance recipients (Interview 1, FGD 4). A World Bank report from June 2020 found that around 46% of the B40 population had not received any social assistance (World Bank, 2020).

Many villagers are also recipients of Sembako Program, a direct food subsidy to poor households[22] of IDR 200,000 (USD 13) per month (from January–March 2022, according to Directorate General for the Management of the Poor Decree No. 29/2022). The balance can be spent with appointed *e-warong*[23] merchants on a variety of foodstuffs including rice; animal proteins such as eggs, beef, chicken, and fish; plant proteins such as tempe and tofu; and vegetables and fruits. While most villagers agreed that the program is beneficial, rice farmers in both villages were unhappy because they believe the program crowded out their produce, making it difficult to sell rice and reducing prices (FGD 1, FGD 3). According to farmers in Gedong, neighbors who used to buy rice from their shops now go to the e-warong (FGD 3). Farmers in Rowoboni mentioned in-kind assistance that provides rice directly to recipient houses, suggesting there may have been overlapping programs from different levels of government (FGD 1).

[19] Both PKH and Sembako Program are aimed at poor households/families (as defined by the poverty line published by Statistics Indonesia) that are recorded in the Ministry of Social Affairs' Integrated Database for Social Welfare (*Data Terpadu Kesejahteraan Sosial*). To receive the conditional cash transfers under PKH, a family must satisfy one of its criteria (such as having a pregnant woman or a family member with disability) and fulfill the conditions (such as getting prenatal care for pregnant women). The amount received can reach IDR 3 million per year per eligible family member, with a maximum of four family members.
[20] Previously known as Non-Cash Food Subsidy (*Bantuan Pangan Non-Tunai* or BPNT). For an analysis on BPNT, see Ilman (2020).
[21] For a thorough analysis of PKH, JKN, and PIP, see Patunru and Respatiadi (2017).
[22] As defined by the poverty line published by Statistics Indonesia.
[23] E-warong are government-appointed merchants with pre-existing networks of suppliers. Some e-warong are pre-existing shops and grocers that do not exclusively serve customers from the Sembako Program. For more information regarding e-warong under BPNT (a precursor to the Sembako Program), see Ilman (2020).

Rawa Pening Revitalization

Households whose rice fields flooded by higher water levels along the bank of Rawa Pening received a one-time property tax waiver and five kilograms of rice per household member from the district government in 2021. Farmers understandably do not consider this sufficient compensation for the loss of their livelihood.[24] Through the Rawa Pening United Farmers Forum (*Forum Petani Rawa Pening Bersatu*), farmers have organized a number of protests, met directly with the governor of Central Java, and sent letters to the local parliament, the mayor of Surakarta, and even President Joko Widodo. They demanded the government to remove the setbacks, ensure farmers and fishermen can continue to work, be transparent about the lake development and resettlement plan, and provide proper compensation for the time during which farmers were unable to cultivate their lands (Interview 4; Interview 5; Rahadi, 2022).

"Affected households demanded the government to remove the setbacks, ensure farmers and fishermen can continue to work, be transparent about the lake development and resettlement plan, and provide proper compensation for the time during which farmers were unable to cultivate their lands."

After a series of protests and hearings, the Head of District (*Bupati*) and the regional police guaranteed that farmers would be able to harvest at least once in 2022 (Interview 4, Interview 5), and in the fourth quarter of 2022, farmers were able to plant on the previously flooded rice fields. This required an agreement between the Farmers Forum, the Head of District, and the Regional Representative Council to lower the water surface by more than two meters below the level mandated by MOPWPH Decree No. 365/2020, to 461 meters above sea level. However, there is no plan to revise the MOPWPH Decree at the national level, according to a member of the Farmers Forum. The revitalization plan remains unclear to the villagers and there has been no communications regarding possible land acquisition and relocation. While the agreement and subsequent harvest were happily received and the Forum reduced their activities in early 2023, farmers have no plan to stop demanding the compensation and transparency of the revitalization (Interview 6).

The Rawa Pening case shows the importance of recognizing multiple functions of landscape and geography for local livelihoods, economy, and environment in any landscape development project. There are already examples of local-led, multi-stakeholder sustainable landscape management initiatives that the Rawa Pening project can learn from. These include Gerakan Rejoso Kita in Rejoso Watershed, Pasuruan; Jambi Sustainable Landscape Management Project (J-SLMP) to reduce emissions from forestry and land use; and the management of landscape with high conservation value and high carbon stock (HCV/HCS) in addition to high economic values from plantation crops in Lalan, Musi Banyuasin.

[24] According to a Farmer Group leader, farmers in Rowoboni are generally not covered by any agricultural insurance. A lack of awareness and a perceived complexity of the registration and terms and conditions are cited as reasons for the low interest (Interview 6). Similar reasons were found in a CIPS study (Patunru & Respatiadi, 2017). However, had the affected farmers been insured, they could still have not been able to receive compensation. The guidelines for Agricultural Insurance for Rice Farmers (*Asuransi Usaha Tani Padi* or AUTP) mention a minimum plant age of 10-30 days after planting as an indemnity condition for harvest failure (MOA, 2021). The floods in Rowoboni may have not qualified for coverage as farmers could not plant in the first place.

CONCLUSIONS

Welfare properly considered is a complex concept that links contextual factors (such as geography, climate, and socioeconomic); livelihood resources or assets; policies, institutions, and social relations; livelihood strategies; and finally, livelihood outcomes. Using a case study of the villages of Gedong and Rowoboni, this paper depicts the ingredients of each livelihood element and how they interact to produce improved or deteriorating welfare. The application of this policy analysis approach to the case study yields the following insights (Table 4).

> Welfare properly considered is a complex concept that links contextual factors; livelihood resources or assets; policies, institutions, and social relations; livelihood strategies; and livelihood outcomes.

Table 4.
Sustainable Livelihoods Framework

Contextual Factors	Livelihood Resources	Policies, Institutions, and Social Relations	Livelihood Strategies	Livelihood Outcomes
Rawa Pening COVID-19 pandemic Input and commodity prices Land ownership structure Local infrastructure Distance and access to cities Climate Other geographic factors giving rise to agricultural production systems (rice farming, horticulture, animal farming)	Natural resources Land ownership Equipment and machinery Physical strength and skills for manual labor Relations with traders and markets Vehicles Livestock Home industry Remittance from family members Social status and social proximity to village officials Education	Lake development plan Input subsidies and assistance Equipment and machinery assistance Social assistance Communality Landowners-tenants relations Role of Farmer Groups and village government in facilitating access to assistance Role of the Farmers Forum Role of local governments and the lake authority Gift economy	Diversification in and out of agriculture Farming cost reduction Renting out lands Cultivating smaller land plots Fishing and fish farming Collecting water hyacinth Making handicraft or other small businesses Migrating away from the village	Subsistence livelihood Precarious livelihood Forced adaptation and shifts in livelihood Stable household income from combined livelihood sources of household members Entrepreneurial farmers with access to market, credit, labors, and knowledge Landowners renting out lands

Source: Framework adapted from McCarthy et al. (2023) and Scoones (2015).

The role of policies, institutions, and social relations is central to livelihoods and welfare outcomes as they "mediate the ability to carry out such strategies and achieve (or not) such outcomes" (Scoones, 1998: 3).

Crop prices and production costs provide incomplete measures of farmer welfare. While higher crop prices and lower cost of production are generally desired by farmers, their effects on welfare are not transformative. Small farmers and farming laborers remain "hanging in" when they receive good prices because of small lands and the seasonality of agricultural incomes. Therefore, the NTP cannot be relied on as an indicator of farmer's welfare.

Policies aimed at protecting and improving farmer welfare are still largely guided by the production-oriented approach. Despite some perceived benefits, these policies have a limited impact on welfare due to their narrow focus on agricultural outputs and income. These policies tend to ignore whether farmers have the resources, assets, strategies, or find themselves within the right contextual elements that allow them to sustainably fulfill their needs.

The case study shows that smallholders and tenant farmers struggle to increase their earnings from agriculture mainly because of high production costs, the seasonality of agricultural incomes, and small plots of land that are inherently less productive.

Production-oriented policies and programs such as input subsidies and market protection tend to have limited effects because they provide only a stopgap. Farmers receiving subsidized fertilizer or good prices may breathe a sigh of relief, but they do not make the agricultural work less precarious in the long run.

Social protection programs are effective at ensuring the fulfillment of basic needs among the poor and near-poor populations—when they reach those populations. Programs such as cash transfers are especially useful during shocks—such as the COVID-19 pandemic, loss of jobs, and natural disasters—in ensuring survival and preventing households from falling deeper into poverty. While these policies are not transformative in the sustainable livelihood framework, social protection and assistance allow the poor to "hang in" while planning a "stepping up" or "stepping out" strategy. However, social assistance targeting needs to be improved, especially in the context of reaching people whose socioeconomic status has recently changed, as with the "new poor" during the Covid-19 pandemic.

To ensure that food assistance does not crowd out local enterprises, the government should explore allowing Sembako Program recipients to purchase food from any store, not just the e-warong, to boost local demand for rice and other foodstuffs. In most circumstances, food assistance distributed as cash is superior and should be preferred over in-kind assistance.

The government largely ignores the role of landscape as an important contextual element for the local economy, as shown by the Rawa Pening revitalization project. Findings in Rowoboni show that the lake development—for environment, energy, and other goals—had profound socioeconomic effects, forcing affected households to find new work and encouraging the formation of new social institutions and activities (the Farmers Forum, advocacy activities, protests).

To minimize the harmful effects of the lake development project while meeting economic and environmental goals, the project should recognize that landscape features can serve multiple functions. A lake ecosystem can support farming, settlement, energy, recreational uses, etc., each of which can have its own public policy issues and goals.

A sustainable approach to landscape management should strive for policy coherence across these functions. Further, its implementation should involve stakeholder participation from the national, sub-national, and local levels; ensure effective local participation; and set a transparent and accountable monitoring and evaluation system.

Subsidies and free provisions of inputs, when available to farmers, can help farmers reduce production cost and achieve optimal yields. However, they may not significantly improve farmer welfare as they act more as a stopgap and because agricultural subsidies have been focused on the food crop sector, especially rice, leading to market distortions.

Government-provided machinery in the villages is considered public resources, but access to them is influenced by social status and proximity to social institutions such as the Farmer Groups. Government-provided technology reaches mainly people with stronger authority and closer ties to the bureaucracy. The strong presence of free technology and inputs provided by public players potentially deters market integration through investment by private actors along the value chain. While intermediaries to an extent have facilitated technology use and market integration, there are still too few of them covering too many markets, leading to unequal bargaining power between farmers and these traders.

Improving agricultural productivity remains crucial for rural households to escape and avoid falling back into poverty (World Bank, 2023). Policies aimed at improving productivity to yield transformative benefits to farmers should reframe agricultural policy not as intended to act as a stopgap but instead moving toward policy that creates and enlarges opportunities through open trade and open investment, including those that facilitate growth in off-farm and urban jobs.

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INTERVIEW LIST

Interview 1 – Sulaimah, a villager in Rowoboni who lost a livelihood during the pandemic (2022, June 2). Personal communication.

Interview 2 – Jono, a farmer in Gedong (2022, May 31). Personal communication.

Interview 3 – Uswatun, an owner of a handicraft business (2022, June 1). Personal communication.

Interview 4 – Khoirul, a staff at Semarang District Regional People's Representative Council (DPRD) (2022, June 2). Personal communication.

Interview 5 – Muhlasin, farmer and leader of Rawapening United Farmers Forum (2022, June 1). Personal communication.

Interview 6 – Muhlasin, farmer and leader of Rawapening United Farmers Forum (2023, May 23). Personal communication via phone call.

Interview 7 – Muh Ambyah, a Dusun Head in Rowoboni (2022, June 1). Personal communication.

Interview 8 – Kusri, farmer and trader in Gedong (2022, June 3). Personal communication.

Interview 9 – Agus Salim, Rowoboni Village Head (2022, June 1). Personal communication

FGD LIST

FGD 1 – Rowoboni male farmers (2022, June 1). In-person FGD.

FGD 2 – Gedong male farmers (2022, May 31). In-person FGD.

FGD 3 – Gedong female farmers (2022, May 31). In-person FGD.

FGD 4 – Rowoboni female farmers (2022, June 1). In-person FGD.

FGD 5 – Gedong village officials (2022, May 30). In-person FGD.

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