JESS (Journal of Education on Social Science)
Volume 08 Number 01 2024, pp 14-31
ISSN: Print 2622-0741 – Online 2550-0147
DOI: https://doi.org/10.24036/jess.v8i1

Examining Farmer and Seed Construction in the Context of Seed Policy: A Social Constructionist Perspective

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Abstract

The role of crop seeds extends beyond the essential task of achieving food security and is embedded in technical, social, economic, and political debates. The character of seeds and their association with farmers has transformed, influenced by social constructs embedded within policies. This research endeavors to scrutinize the impact of the social construction of farmers and seeds within national policies on their respective roles at the grassroots level. The foundational premise of this approach posits that the social construction of the target demographic significantly shapes the perspectives of public officials, thereby influencing agendas and policy formulations. Employing a qualitative methodology, this study entails the analysis of both secondary data, encompassing national seed policies, and primary data acquired through the Seed Self-Reliant Village initiative in Ngasin Village. The findings elucidate a negative construction of smallholder farmers, depicting them as lacking influence, while seeds are portrayed as integral production materials geared towards augmenting productivity. At the local level, knowledge pertaining to seeds is cultivated based on productivity criteria, delineating the appropriateness of seeds for dissemination. This research contributes valuable insights to the realm of public policy analysis, underscoring the infrequently utilized yet potent social construction approach.

Keywords: *Social Construction; Public Policy; Seed Policy; Peasant*

Received November 15, 2023 ***Revised January 21, 2024*** ***Published April 30, 2024***

Introduction

Crop seeds not only constitute a critical component of food security but also embody a struggle for food sovereignty (Bezner Kerr, 2013; Gaudreau, 2019). The significance of seeds has been acknowledged as a crucial issue by proponents of both the industrial and alternative paradigms (Reuter, 2017). Since the emergence of the life science industry, seeds have played a pivotal role in the Green Revolution of the 1960s (Kloppenburg, 2008). However, according to Shiva (1993), the discourse surrounding the Green Revolution has sparked debates on ecological, social, and political conditions. The Green Revolution has evolved into the gene revolution, involving the genetic modification of seeds to create new plant varieties that can be owned by individuals and corporations and are subject to patenting (Bhutani in Yazdani & Ali, 2017). Therefore, examining seeds and their regulation goes beyond a mere technical perspective to encompass ecological, social, and political dimensions in meeting national seed production requirements.

The majority of research on seeds predominantly focuses on scientific and technological aspects, such as constructing seed quality as a capital asset (Fuglie et al., 2006), enhancing agricultural productivity, and household income (Louhichi & Gomez, 2014; Teklewold et al., 2013). Generally, research tends to emphasize the importance of private-sector investment in the agricultural industry and biotechnology (Kolady & Awal, 2018; Spielman et al., 2014). On the other hand, some studies delve into the social and political aspects of seeds, which have evolved and played a crucial role in shaping human history (McCann, 2011), social innovation

(Balazs & Aistara, 2018), social cohesion (van Niekerk & Wynberg, 2017), culture (Paul, 2018), and local knowledge or food customs (Cuevas et al., 2015) that emerge in seed studies. Additionally, there is an examination of seed activism (Peschard & Randeria, 2020), resistance against imperialism and neocolonialism (Gutiérrez Escobar & Fitting, 2016), food democracy (Daye, 2020), and struggles over seed laws (Müller, 2020). Thus, seeds hold diverse meanings and are intricately tied to the contemporary battleground encompassing technical, economic, social, and political conditions.

Escobar (2016) characterizes the debate over seeds as an ontological conflict, a conflict over what seeds fundamentally are. Seeds are perceived as part of the life cycle, or conversely, they can be produced through genetic experiments for profit (Yazdani & Ali, 2017). Breen (2015) also asserts that differing understandings of 'seeds' and seed ownership are crucial elements in discussions about seeds as property. Policy debates and political issues surrounding seeds as property arises from disparities in understanding the meaning and identity of seeds themselves, whether seeds are viewed as controlled material objects or entities intertwined with ecology and spirituality.

There has been a shift in the nature of seeds from common pool resources to private goods following the introduction of Intellectual Property Rights (IPR) (2019). Following Ostrom (2000), the change in seed ownership is not solely due to its inherent nature but also a result of social, economic, and political choices. This underscores that resources cannot be categorized as private, public, or common solely based on their nature, but rather, they result from a decision-making process. Therefore, this study will employ a social construction approach in the policy process. Social construction emerges from the field of sociology of knowledge, as articulated by Peter L. Berger and Thomas Luckmann (1966), with the fundamental assumption that reality is a social construct.

This research aims to explore the social construction of food seeds and farmers in the policy process through the Seed Self-Reliant Village program. Schneider and Ingram (1993) are scholars who have integrated social construction into policy studies by proposing the theory of "Social Construction and Policy Design" as an approach to examining policy processes. The underlying assumption of this approach is that the social construction of the target population significantly influences public officials, shaping agendas and policy designs. The use of this theory will help elucidate why certain groups benefit and why some policies disproportionately distribute benefits to specific groups (Ingram & Schneider, 1997, 2005; Pierce et al., 2014; A. Schneider & Ingram, 1993).

Seeds are intricately linked to food-related issues and are regulated by Law No. 18 of 2000 concerning Food in Indonesia. As part of efforts to ensure food availability, the government has pursued food diversification, including initiatives aimed at improving the availability and access to seeds. In 2015, the government established the Seed Self-Reliant Village program to provide certified superior seeds (*Desa Mandiri Benih Menjadikan Petani Mampu Mandiri*, 2019). This program aims to cultivate seed producers capable of meeting local seed demands (Lestari, 2018). Ngasinan Village, Grabag District, Magelang Regency, is one of the successful Seed Self-Reliant Villages, serving as empirical data for examining the social constructions embedded in seed policies. This research contributes to the field of public policy by employing a social construction approach, which is relatively underexplored in the Indonesian context. It also provides insights into the construction of policies at the national level and their impact at the local level.

Literature Review

Social Construction and Public Policy

The social construction within public policy assumes that policy objectives are based on norms and beliefs constructed within a social-historical context (Edelman in Hananel, 2018). Examining public policy processes is crucial through the framework of social construction applied to target populations (Bell, 2019). This approach has been developed to comprehend

why public policies sometimes fail to achieve their problem-solving objectives, support democratic institutions, or generate greater citizenship equality (Ingram et al., 2007, p. 93). It elucidates how the social construction of target populations and political power combine to influence policy design, helping to explain why some groups receive favorable policies while others become subjects of punitive measures (Carney, 2010; Wagner et al., 2018). Hence, this approach is integral for gaining a nuanced understanding of how policies confer benefits on specific groups, transcending a mere exploration of normative policy processes.

The exploration of social construction in public policy draws from the concept of 'social construction' originating in the sociology of knowledge, as articulated by Peter L. Berger and Thomas Luckmann (1966). They argue that in the process of creating their social world, humans externalize their ideas into everyday phenomena. According to Berger, the everyday social reality is a socially constructed product. Schneider and Ingram incorporate social construction as an approach to understanding policy processes, utilizing the Social Construction and Policy Design theory. They conceptualize social construction as the various ways in which reality is shaped. The social construction of individuals or groups refers to symbols, images, and stereotypes employed in the references to individuals or groups by government officials and the broader society (A. Schneider & Ingram, 1993).

Schneider and Ingram (1993) elucidate how policy design shapes the social construction of the policy's target population. Socially constructed knowledge is linked to specific policy design types. Through the analysis of 'agents' (those implementing the policy) and their 'targets' (individuals affected by the policy), a more comprehensive understanding is formed regarding the nature of the policy, its objectives, and outcomes (A. L. Schneider & Ingram, 1990). The focus is directed towards the social construction of who is expected to comply with or be offered opportunities by the policy. Hence, this theory centers on socially constructed values applied to the population and the knowledge of the target.

Pierce et al. (2014) present two propositions related to this theory. The first proposition concerns the target population or beneficiaries and the burdens of policy. The policy design structure will shape differently construed target groups, influencing how the government operates and how they are treated by the government. The allocation of benefits and burdens for these target groups depends on the level of political power and the form of their social construction. Hence, this target population is classified along two dimensions: social construction and power. The social construction dimension places individuals on a gradient from undeserving to deserving, and similarly, on the power dimension, individuals are seen on a gradient from having power to being powerless. Groups with political power and positive social construction tend to receive benefits. On the other hand, groups with less political power and negative construction tend to bear the burdens of policy. This classification categorizes the target population into four types: Advantaged, Contenders, Dependents, and Deviants. Nevertheless, social construction can shift from one category to another (DeLeon, 2005; A. L. Schneider, 2012; A. L. Schneider & Ingram, 2005).

Social Construction Matrix by Schneider and Ingram

		Social Constructions: Positive	Social Constructions: Negative
Power	Strong	Advantaged	Contender
	Weak	Dependent	Deviant

Source: Scheneider dan Ingram, 1993

The second proposition revolves around the "Feed-forward" impact or anticipatory feedback. Schneider and Ingram underscore that the way policy treats target groups based on social construction and power is not confined to a specific moment. Instead, the target population undergoes treatment through policies that exhibit a 'feed-forward' effect. Policy design is intricately tied to social construction and power, forming propositions regarding the target population, or conversely, social construction and power are integral to policy design, shaping propositions with feed-forward impacts.

Several review articles indicate that the social construction approach in public policy has been predominantly applied in developed countries (Collins, 2017; Filindra, 2014; Francis-Tan & Tannuri-Pianto, 2015; Stabile, 2016a; Tangen & Tangen, 2020; Taylor & Earl, 2016). Pierce et al. (2014), who conducted a review of 111 applications of social construction and policy design from 1993 to 2013, demonstrate that the majority of the focus has been on propositions related to the target population. Conversely, only a small fraction of articles have utilized propositions concerning the feed-forward effect (Pierce et al., 2014; A. L. Schneider, 2012). Considering these observations, researchers acknowledge the significance of conducting studies on social construction and policy, particularly within the context of seed policy.

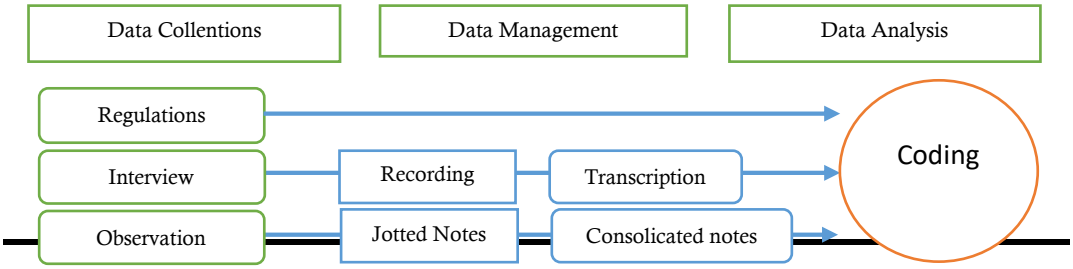
Through an analysis of seed policy cases, this research will contribute to enriching policy studies utilizing the social construction approach. In the realm of social construction and public policy, this study will contribute not only by elucidating constructions of target populations but also by unraveling constructions of knowledge. Additionally, the research examines how existing constructions shape target populations and knowledge at the local level. Operationally, this study investigates how the social constructions of farmers (the target population) and seeds (the target knowledge) manifest in seed policies. Furthermore, at the local level, it explores how existing constructions through policies and programs shape local practices and knowledge.

Method

This research uses a qualitative approach with an interpretive paradigm (Creswell, 2018). This approach is appropriate for analyzing social construction in public policies that pay attention to subjectivity and meaning-making through daily interactions and experiences. Researchers try to interpret (or interpret) the meaning of others. The unit of analysis of this research is divided into two, first is the policy or regulation regarding seeds, as stated by Schneider and Ingram (1993), that data regarding social construction can be obtained through text studies such as legislative history, laws, guidelines, speeches, media coverage and analysis of the symbols contained therein. The second is the implementation of the Desa Mandiri Benih program in Ngasinan Village, Grabag Sub-district, Magelang District. Thus, this research not only looks at the social construction of the target population, namely seed producers or seed breeding farmers, but also how the social construction of seeds is assumed to be the knowledge of the target population.

Data collection, management, and data analysis have been conducted in this study. This research answers two research questions, namely how the social construction of farmers and food seeds in seed policy and how the social construction is manifested in the Desa Mandiri Benih program. Answering the first sub-question, this research has conducted a content analysis (Collins, 2017; Filindra, 2014; Schroedel & Jordan, 1998; Stabile, 2016b) on policies and regulations regarding seeds in the form of 15 regulations consisting of laws, government regulations, and minister of agriculture regulations. The policy documents were coded to find out how the social construction of actors in food agriculture and plant breeding policies, especially farmers. Answering the second sub-question, the researcher has conducted interviews and participatory observations with key informants of the As-syifa Agro Farmer Group Seed Breeder Group in Ngasinan Village, Grabag District, Magelang Regency. The informants were the chairperson and members of the Aggro As-syifa farmer group and field agricultural extension workers. Recordings of interviews were transcribed and analyzed and then the coding process was carried out. Data collection, management, and processing are described as follows:

Data collection, management and analysis



Result and Discussion

Food development paradigm: Resilience or sovereignty?

Seed policy is associated with the paradigm of food development. Therefore, it is essential to understand the paradigm of food development. Food, being a fundamental need for every human, requires assured protection. According to Flora (2010), food security occurs when everyone has access to adequate, safe, and nutritious food at all times to meet their nutritional needs and preferences for active and flourishing lives. Food security is necessary to address food vulnerability. Initially, food vulnerability was linked to climate-related issues affecting food production. However, the discourse surrounding food vulnerability has evolved into four policy frameworks which are humanitarian, development, psychological, and political (Bishop & Hilhorst, 2010). In the global perspective, food resilience has emerged as a concept to address food vulnerability.

Boyer and Boyer (2010) perceive food resilience as an international development initiative post-war aimed at achieving improved societies and economies. Food resilience, as defined by the FAO (FAO, 2001), is described as a 'situation where all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life.' This also reflects food security based on three pillars: food availability, food access, and food utilization. Food availability is characterized by a consistent supply of sufficient food. Access provides the opportunity for adequate nutrition for a healthy diet. Utilization refers to the appropriate use of food based on knowledge of basic nutrition and care, as well as sufficient water and sanitation (Thomas et al., 2014).

Several criticisms have emerged against food resilience through the concept of food sovereignty. Food sovereignty, conceptually, arises as an alternative to the dominant food paradigm. Food sovereignty is characterized as the right of people to govern their food system, including control over markets, land, water, seeds, and production methods. The term sovereignty carries explicit political significance, indicating the right of people to govern their food system and the various levels of authority at which they can exercise this right. Thus, food sovereignty can be interpreted as a rallying argument to create awareness and community control over food production, bridging the gap between production and consumption, and democratizing the food system (Bezner Kerr, 2013).

The distinction between the two concepts lies in the emphasis of the food resilience agenda on the role of international governance institutions in supplying food, while food sovereignty is safeguarded by social movements of farmers, active citizenship practices, and democratic organizational structures developed through grassroots initiatives and transnational human rights struggles. This is crucial for the implementation of the right to food sovereignty (Dunford & Dunford, 2015). Discourses on food resilience and food sovereignty have given rise to at least four interpretations. First, food sovereignty aligns with food resilience, where 'sovereignty' is understood as a condition in which food policies are not controlled by other states in the political and market contexts. Second, food sovereignty differs from food resilience, as observed in international references, where food sovereignty prioritizes farmers and environmentally friendly agriculture. Third, food resilience serves as the foundation for achieving food sovereignty. In this view, food sovereignty is an attainable goal through food resilience. Lastly, food sovereignty is the basis for achieving food resilience. In this context, dignified and prosperous farming families serve as fundamental assets for agricultural development (Propantoko et al., 2019, p. xi).

In light of the pivotal role of seeds within the food system, two key concepts prevalent in seed studies are seed security and seed sovereignty. Seed security is defined as a situation in which farmers can access and utilize seeds of desired quality with adequate availability (Remington et al., 2002). Building seed security can be achieved through seed assistance and the distribution of commercial hybrid seeds, which may conflict with farmers' control over seeds in storage systems, selection, and long-term seed exchange practices (McGuire, 2007; Sperling & Longley, 2002). Conversely, seed sovereignty, as an integral component of food

sovereignty, asserts the imperative of farmer control over seed varieties, production methods, and distribution channels. This stance challenges the dominion of commercial entities and patented actors over seeds (Wittman, 2009).

The regulation of food in Indonesia is stipulated in Law No. 18 of 2012. This law outlines that the implementation of food is based on the principles of sovereignty, self-sufficiency, resilience, security, benefits, equity, sustainability, and justice. Food resilience, as defined in this law, signifies the condition of fulfilling food needs from the nation to individuals, reflected in the availability of sufficient, safe, diverse, nutritious, equitable, and affordable food that aligns with the religious, belief, and cultural values of the society, enabling a healthy, active, and sustainable life. Meanwhile, food sovereignty is the right of the state and its people to independently determine food policies that guarantee the right to food for the population and empower the community to decide on a food system that aligns with local resource potentials. Although food sovereignty is acknowledged in regulations, practical efforts to realize it are yet to be implemented.

Social construction of farmers in seed policy

The social construction of farmers in food and seed policies is crucial for understanding how policy benefits flow to farmers. Among several early regulations related to food, the explicit definition of who constitutes a farmer is notably absent. For instance, Law No. 12 of 1992 concerning Plant Cultivation Systems does not explicitly mention the definition of a farmer but focuses on plant breeding. Plant breeding involves a series of activities to maintain the purity of existing types and/or varieties or to produce new and improved types and/or varieties. The process of plant breeding can be carried out by the government, individuals, or legal entities. In this process, any effort in the search and collection of germplasm[1] must obtain permission. Seeds from superior varieties are referred to as foundation seeds, and their production and distribution are supervised and released[2] by the government. Anyone who intentionally or negligently collects germplasm without permission, distributes unreleased breeding results, or circulates foundation seeds not following the label may face fines and criminal penalties.

While not explicitly defining the meaning of farmers, this law addresses farmers in crop cultivation planning, stating that farmers have the freedom to determine the types of crops. However, farmers are required to participate in the national crop cultivation development plan. In order to provide services to farmers, this law also encourages the government to conduct research and foster the involvement of the community, especially the business sector, in participating in research and development of crop cultivation, whether it involves technological engineering, socio-economic engineering, or socio-cultural engineering.

Explicit meaning of farmers in regulations:

Concept	Definition	Regulations
Farmer	Indonesian citizens individually and/or with their families who conduct Farming Business in the fields of food crops, horticulture, plantations, and/or animal husbandry.	Law No. 18 of 2012 on Food, Law No. 19 of 2013 on Farmer Protection and Empowerment and Law No. 22 of 2019 on Sustainable Agricultural Cultivation System

[1] Germplasm is a hereditary trait-carrying substance that can be a whole organ or part of a plant or animal, as well as microscopic organisms that can be utilized for the development of varieties.

[2] The term "released" refers to the acknowledgment of a breeding result as a superior variety that can be disseminated after meeting the requirements, including pedigree, breeding methods, adaptation test results, experiment design and analysis, description, and the availability of seeds from the respective variety at the time of release.

Plant breeding	Plant breeding, hereinafter referred to as Breeding, is a series of research and testing activities or activities to discover and develop a variety, by standardized methods to produce new varieties and maintain the purity of the seeds of the resulting varieties.	Law No. 12 of 1992 on Plant Cultivation System Government Regulation No. 44 of 1995 on Plant Seeds Government Regulation No. 13 Year 2004 on the Naming, Registration and Use of Varieties of Origin to Make Essential Derived Varieties MOA No. 37/Permentan/OT.140/7/2011 on the Preservation and Utilization of Plant Genetic Resources
Plant breeder	A plant breeder is a person who carries out plant breeding.	Law No. 29/2000 on Plant Variety Protection MOA No. 39/Permentan/OT.140/8/2006 on the Production, Certification and Distribution of Seeds of Bina

Source: author

The explicit definition of farmers is outlined in several Indonesian laws, including Law No. 18 of 2012 on Food, Law No. 19 of 2013 on the Protection and Empowerment of Farmers, and Law No. 22 of 2019 on Sustainable Agricultural Cultivation Systems. Farmers are defined as individual Indonesian citizens or their families engaged in Agricultural Enterprises in the fields of food crops, horticulture, plantations, and/or livestock. Generally, the concept frequently employed in seed policies is plant breeding, typically conducted by plant breeders. In many recent regulations, plant breeding encompasses a series of activities involving research, testing, discovery, and development of new varieties, adhering to standardized methods to create new varieties and maintain the purity of seed varieties produced. While Law No. 12 of 1992 stipulates the need for permission in the process of searching and collecting germplasm, Law No. 22 of 2019 exempts smallholder farmers from this licensing obligation. Nevertheless, they are still required to report to local authorities, and if engaged in searching and collecting genetic resources, the information will be forwarded to the central government.

This study not only examines the meaning or definition of farmers in policies but also investigates how rights and obligations are framed by these policies. As mentioned earlier, understanding the rights and obligations of the target group reveals why policies may favor or distribute benefits more significantly to certain groups (Ingram & Schneider, 1997, 2005; Pierce et al., 2014; A. Schneider & Ingram, 1993). Therefore, this research identifies the rights and obligations that emerge within seed regulations. Among the 15 regulations analyzed, there are 9 regulations related to the rights and obligations of farmers.

Entitlements and Obligations of Farmers in Regulation

No	Regulation	Entitlement	Obligation
1	Law No. 12 of 1992	Freedom to choose the type of crop	In this freedom, farmers shall participate in the national crop cultivation development plan.

No	Regulation	Entitlement	Obligation
2	PVP Law No. 29 of 2000	Obtaining Plant Variety Protection Rights (PVP) This right is given to plant breeders as a form of moral and economic rights.	PVP right holders are obliged to exercise their PVP rights in Indonesia, pay annual fees, provide and show seed samples of varieties that have obtained PVP rights in Indonesia.
3	Government Regulation No. 44 Year 95 on Seeds	The search for and or collection of germplasm can be carried out by individual Indonesian citizens or Indonesian legal entities based on the Minister's permit	
4	Regulation of the Minister of Agriculture No. 39/Permentan/OT.140/8/2006 on the Production, Certification and Distribution of Seeds of Bina	Producing foster seeds through certification: crop monitoring and/or laboratory tests, quality management system and seed products.	Obligations Individuals, legal entities or government agencies that will produce foster seeds must control the land and have adequate seed processing facilities, supporting facilities in accordance with the type of seed, and personnel who have knowledge in the field of seeding. Prospective seed dealers to become seed dealers must register with the Regent/Mayor through the Service Office whose main task is in charge of plant seeding.
5	Regulation of the Minister of Agriculture No. 37/Permentan/OT.140/7/2011 on the Preservation and Utilization of Plant Genetic Resources	Exploration can be carried out by government agencies that have the authority in the field of research and / or breeding.	
6	Law No. 18 Year 2012 on Food		Farmers, Fishermen, Fish Cultivators, and Food Business Actors are obliged to apply food safety norms, standards, procedures, and criteria.
7	Law No. 19 of 2013 on the Protection and Empowerment of Farmers	Farmers can conduct business partnerships with Business Actors in marketing Agricultural products in accordance with the provisions of laws and regulations.	Farmers are obliged to maintain Agricultural infrastructure
8	Law No.22 of 2019 on Sustainable Agricultural Cultivation System	Farmers have the freedom to make choices about crop and animal species and their cultivation. Every person who conducts search and collection activities for Genetic Resources must have a license, except for small farmers.	In practicing the freedom as intended, Farmers prioritize cultivation planning in accordance with the provisions and develop cultivation of other main crops. Smallholders who search for and collect Genetic Resources as referred to in paragraph shall report to the Regional Government and then submit it to the Central Government.

No	Regulation	Entitlement	Obligation
9	Government Regulation No. 13 Year 2004 on the Naming, Registration and Use of Varieties of Origin to Create Essentially Derived Varieties	Plant Variety Protection is a special right granted by the state to breeders and/or holders of Plant Variety Protection rights to use their own Breeding Varieties or give approval to other persons or legal entities to use them for a certain time.	Farmers are obliged to participate and active in Farmer Institutions.

Source: author

Numerous entitlements arise from regulatory frameworks, whether pertaining explicitly to farmers or encompassing broader considerations. Initially, farmers possess the autonomy to determine the selection of crops and their cultivation practices. However, in exercising this autonomy, farmers must concurrently prioritize agricultural cultivation planning following legal stipulations. The selection of crop types aligned with national planning priorities frequently necessitates the utilization of specific seed varieties. Subsequently, the exploration and collection of germplasm are admissible for both the advancement of plant varieties and the conservation of genetic resources. Yet, such endeavors are prohibited for individual or corporate plant breeders in the absence of requisite permissions. This provision is perceived as somewhat intricate for farmer seed breeders engaged in the cultivation of their seeds, as it might be construed as a violation of regulations. Recent regulatory revisions, however, exempt smallholder farmers from this licensing obligation. Nevertheless, farmers are still obligated to report to governmental authorities when conducting germplasm exploration and collection, and the breeding outcomes are restricted from dissemination beyond the city or district. Thirdly, the production of foundational seeds is feasible for individuals, corporate entities, or government agencies, contingent upon the certification of crops, the implementation of quality management systems, or compliance with product standards. Fourthly, plant breeders are conferred with Plant Variety Protection (PVP) rights, representing a specialized entitlement granted by the state to breeders and/or PVP rights holders for the utilization of their breeding achievements or granting permission to others for a specified duration. This emanates from the safeguarding of intellectual property rights associated with plants, concurrently extending to seeds. Fifthly, farmers retain the option to engage in collaborative ventures with industry stakeholders.

Several obligations also emerge from seed-related regulations. Firstly, farmers are obligated to adhere to the national priority scheme in determining the crops they cultivate. Secondly, the certification process must be undertaken in the production and dissemination of foundational seeds, as previously mentioned. Thirdly, farmers are required to comply with established food safety standards. Fourthly, farmers must maintain agricultural infrastructure. Fifthly, holders of Plant Variety Protection (PVP) rights are obligated to exercise their PVP rights in Indonesia, pay annual PVP fees, and provide and present samples of seed varieties that have obtained PVP rights in Indonesia.

Furthermore, it is important to note that in several of these regulations, there are other actors aside from farmers, including legal entities and private companies. The government provides broad opportunities for legal entities such as cooperatives, state-owned enterprises, regional-owned enterprises, private limited companies, and individuals, including partnerships and limited partnerships, to participate in seed-related activities, including breeding, production, and distribution. This is aimed at ensuring that seed-related activities can grow and develop according to the desired objectives. Another actor is researchers, who also play a crucial role in the plant breeding process for the conservation and utilization of plant genetic resources.

What intrigues about the social construction established by policies is its separation of farmers from plant breeders, allowing various entities such as legal bodies, private companies, or government institutions with the necessary research capabilities to conduct plant breeding activities. This configuration places farmers, particularly those operating on a small scale, in conjunction with numerous actors throughout this process. This approach tends to overlook

the extensive local knowledge possessed by farmers, who, for thousands of years, have been involved in studying, identifying, modifying, cultivating, and freely exchanging seeds to obtain high-quality varieties. Antons et al. (2020b) contend that this perspective neglects the fact that farmers also function as researchers engaged in research activities over an extended period. The independent breeding carried out by farmers is not regarded as a formal scientific research process. Nonetheless, this practice plays a pivotal role in supporting economically viable agricultural practices (Bainus & Yulianti, 2018).

Secondly, the social construction has given rise to a system that is incompatible for small-scale farmers. This stems from the differentiation between farmers and plant breeders. While plant breeders have pursued Plant Variety Protection (PVP) rights, small-scale farmers lack the means or experience to navigate this system. Consequently, only a few large seed industries dominate the national seed supply. Both national and international legal frameworks contribute to a seed industry landscape that overlooks the contributions and innovative practices of local farming and instead favors the seed industry (Antons, Winarto, Prihandiani, et al., 2020a).

The analysis above indicates that farmers, especially small-scale farmers, are constructed negatively and perceived as lacking power, potentially falling into the category of deviance. Kreitzer and Smith (2018) state that while some social constructions of target populations are agreed upon within certain groups, many remain highly controversial. In this context, farmers are not constructed with imbalanced rights and obligations. However, there are actors without significant political power who are still considered beneficiaries (Schroedel & Jordan, 1998). This article will further discuss the social construction of seeds.

The social construction of seed in seed policies

The social construction of seeds represents how policies shape farmers' knowledge of seeds. Identifying this knowledge is crucial for analyzing how policies guide farmers in using seeds. All regulations related to seeds state that seeds are plants and/or their parts used for reproduction and/or cultivation. Meanwhile, Plant Genetic Resources (PGR), hereafter referred to as Plant Genetic Resources (PGR), are genetic materials from plants that have actual or potential value. This definition implies that seeds are biological materials that can be cultivated for food production. Therefore, seeds are crucial for meeting the food needs of the population. Policies then regulate seeds through a certification process as a requirement for their production and distribution. Seeds produced through this process are superior seeds, and if distributed, they must undergo certification and meet the quality standards set by the government, as well as be labeled. This is done to fulfill and enhance the availability of high-quality seeds considered to have high productivity. Additionally, the introduction of seeds from abroad is highly possible through the seed importation process.

The Meaning of Seeds in Regulation:

Concept	Definition	Regulation
Seedlings	Plant seeds are plants or parts thereof, including seeds, grains, fruits, flowers and powders that can in any way be used to propagate or breed the plant.	Law No. 2 Year 1961 on the Expulsion and Entry of Plants and Plant Seeds Regulation of the Minister of Agriculture No. 39/Permentan/OT.140/8/2006 on the Production, Certification and Distribution of Seeds of Bina
Seed	Plant seeds, hereinafter referred to as seeds, are plants or their parts used to propagate and/or breed plants.	Law No. 12 of 1992 on Plant Cultivation Systems Law No. 29 of 2000 on Plant Variety Protection Law No.22 of 2019 on Sustainable Agriculture Cultivation System
Germplasm	Germplasm is a substance contained in a group of living things, and is a source of hereditary traits that can be utilized and developed or assembled to create superior types or new cultivars.	Law No. 12 of 1992 on Plant Cultivation System

Source: author

This construction emphasizes the technological aspects of seeds that have been in place since the advent of the Green Revolution. The introduction of the Green Revolution led to the development of seed technology to meet the national self-sufficiency needs for rice. This situation resulted in farmers' dependency on agricultural input from the industry through superior varieties. Unfortunately, after the introduction of superior varieties, local farmers began to lose their varieties (Fox, 1991). The intellectual property rights regime on plants grants personal ownership rights to varieties and plant genetic resources, encouraging the private appropriation of breeding benefits (Oberthür & Pozarowska, 2013), thereby limiting farmers' access to seeds (Gentilucci, 2018).

The regulatory focus on technological aspects solely for productivity has overlooked the diversity of meanings associated with seeds. In practice, seeds carry various social meanings that play a crucial role in shaping human history (Mccann, 2011), social innovation (Balazs & Aistara, 2018), social cohesion (van Niekerk & Wynberg, 2017), culture (Paul, 2018), and local knowledge or food traditions (Cuevas et al., 2015). National policy studies related to seeds remain heavily centered on viewing seeds as a primary factor for enhancing agricultural productivity through the use of superior varieties, while paying insufficient attention to the social aspects.

Seed-self sufficient villages: implementation and practices

The development of seed self-sufficient villages was initiated between 2015-2017 to empower and enhance the capabilities of seed-producing farmer groups to produce superior seeds. This program is expected to accelerate the adoption of location-specific superior varieties that can be independently produced. Through this program, the government targets 1000 self-sufficient seed villages to achieve national food security. Each farmer group unit is required to establish a seed breeding area covering 10 hectares, provided with facilities such as a budget of 170 million for production facilities (basic seeds, labor processing costs, certification fees), complementary facilities (tools and machinery), warehouses and drying floors, as well as mentoring. Various forms of assistance are aimed at meeting the requirements for the certification of food crop seed breeding. This program involves the Directorate General of Food Crops of the Ministry of Agriculture, Provincial and district-level Agricultural Offices, the Agency for Agricultural Technology Assessment (BPTP) of the Agricultural Research and Development Agency, the Plant Seed Certification and Horticultural Seed Certification Center (BPSBTPH), as well as breeders and farmer groups.

Ngasinan Village in the Magelang District has been designated as a Seed Self-Sufficient Village, particularly within the Agro Asyifa Farmer Group, consisting of 32 members and two seed breeders. The developed seeds encompass varieties such as Mekongga, Ciherang, Situbagendit 3, and local Mentik Wangi. Non-physical facilities, such as training and guidance provided by the Central Java Agricultural Technology Assessment Center (BPTP), are afforded to this farmer group. Through this program, they have achieved an average production of 7.2 tons/ha, exceeding the average productivity in the Magelang District. Subsequently, the Ago Assyifa Farmer Group received the Upland Project in 2021 for the construction of a seed warehouse, a collaborative effort with the International Fund for Agricultural Development (IFAD) and the Islamic Development Bank (IsDB).

The series of seed self-sufficient village programs within this farmer group has yielded several benefits. Firstly, it provides high-quality seeds that meet the preferences of farmers, especially group members. Farmers within the group can acquire seeds at a more economical price through management offers or farmer proposals.

> As follows:
> "Now we are thank God in terms of physical, non-physical we already exist. We have started making seeds but we are starting from scratch, actually if it is normal at this time we can produce seeds with a white label" (ASW, interview, August 18, 2023).
> "Now we are independent seeds not only rice, here we also have horticulture so it has led to independent horticulture as well although later the seeds do not have to be certified" (YN, interview, September 30, 2023).

> "It has an impact, because it is easier to get the seeds" (SYD, interview, September 28, 2023).

Secondly, the farmer group obtains a permit as a seed producer and distributor capable of distributing its seeds beyond the sub-district, for example, to Kendal, Semarang, and Demak. As stated below.

> "It just so happens that we have a license to be a producer, have experts so we have a greater opportunity to represent in this area as a producer as well as a breeder with our principle being independence because we are all in the sense that we can first, we walk first and then we support activities" (ASW, interview, August 18, 2023).

This permit allows the farmer group to produce and distribute blue-labeled seeds (broadcast seeds) that can be directly planted. These blue-labeled seeds represent the lowest level of seeds ready for planting. However, the permit holder must continuously report to ensure its annual extension.

Thirdly, there is an improvement in the quality of farmers' resources in seed management, distribution, and breeding. Seed-breeding farmers, considered one level higher than seed-producing farmers, bear significant responsibility for producing high-quality potential seeds. As stated below:

> "It is different, the breeder is a farmer who is in charge and has the ability to ennoble the seed, the breeder at the same time rises to the level of a noble person, but it takes time that is not fast for a noble person" (ASW, interview, August 18, 2023).

Issues also arise in the distribution of seeds to farmers who are not members of the farmer group. This occurs because farmers have a habit of using their seeds selected from the harvest. This practice contradicts the government's expectation that farmers should use high-quality seeds.

> "The problem of marketing it to the community to use this is still difficult, because in general, the farming community makes their own seeds, after harvesting, they take a few kilos to make it again. Because if the rules from the government or the agency must use good seeds, which are selected" (SYD, interview, September 28, 2023).

The use of low-quality seeds adversely affects productivity. Another problem is related to the farmers' practice of planting for 7 months. This cycle is considered too lengthy for the rice planting process. As a result, producing seeds and planting rice alone do not provide significant benefits to farmers. Consequently, many members of the group also cultivate other crops such as horticulture, which have a shorter harvest period.

> "For me, I don't only plant rice, I also plant chilies. If we only plant rice, we have to wait 7 months for what we want to eat. If it's chili, we can keep rolling, we can harvest continuously even though we have a small harvest of chili" SYD, interview, September 28, 2023).

The formation of knowledge within the targeted population is intricately shaped by the implementation of the independent village program within farmer groups, as elucidated earlier. This implementation provides an intricate insight into how the social constructs of farmers and seeds, as embedded in policies, contribute to the formulation of farmers' knowledge. Seeds, within the policy framework, assume a pivotal role in the overall food production process. Seeds deemed suitable for distribution are those that have successfully undergone the rigorous certification process. Within this context, the assessment of seed appropriateness for cultivation in specific regions gains paramount importance. This evaluative process, in turn, leads to the characterization of farmers' utilization of non-certified seeds as inadequate, primarily due to perceived low productivity. It is noteworthy, however, that this usage might stem from considerations such as cost-effectiveness or the perceived advantages associated with local seeds. Additionally, the productivity facet renders the 7-month rice planting period as suboptimal. Conversely, this prolonged planting season has been a longstanding collective practice among farmers as a strategic measure to mitigate the impact of crop pests.

Notably, members of the Agro Assyifa farmer group have demonstrated a strong commitment to producing seeds through natural or organic processes. This commitment is primarily driven by their human resources, which possess knowledge, skills, and environmental awareness. However, it is noteworthy that, in general, existing policy designs do not strongly support small-scale farmers. In alignment with Schneider and Ingram (2018), practically examining the social construction of farmers' knowledge about seeds tends to allocate benefits to socially powerful groups and may be less advantageous for small-scale farmers. These practices should be carefully considered in policy formulation to ensure that policies deliver benefits to all segments of the community.

Conclusion

This article has presented a study on the social construction and public policy, which is still rarely undertaken by policy researchers. The social construction of farmers and seeds in seed policies in Indonesia is used as a case study. This case is crucial as a significant portion of the Indonesian population comprises farmers. Based on the designed research questions, there are two key points. First, farmers are separated from plant breeders, where plant breeders can come from businesses, private entities, or the government. Therefore, the system developed in seed cultivation is incompatible for small-scale farmers. This indicates that small-scale farmers, lacking power, are constructed negatively. This leads to some farmer breeders being marginalized for cultivating their seeds instead of buying from companies. Furthermore, seeds are constructed as production material for productivity enhancement, thus emphasizing technological aspects. Consequently, seeds can also become private property through intellectual property rights. At the same time, farmers and indigenous communities consider them collective heritage, common/shared goods distributed freely, not personal property, and should be passed down to future generations. Therefore, policies are directed to benefit the target population perceived positively, as expected by theory. Second, in line with what is shaped in policies through the independent seed village program in Ngasinan Village. The constructed knowledge target about seeds is that seeds play a crucial role in the food production process. The productivity aspect will determine whether seeds are deemed suitable or unsuitable for distribution.

Thus, the theoretical implications of this study suggest that a constructive perspective within the model of social construction needs to be considered when examining public policies. It is crucial to scrutinize how policies allocate benefits to various actors and then reflect on their alignment with policy objectives. The policy implications underscore the necessity for policies to account for small-scale farmers with expertise in plant breeding, ensuring that the regulations implemented are contextually relevant. From a practical standpoint, it emphasizes the importance of involving and empowering farmers in the planning and implementation of food agriculture programs.

Acknowledgment

The research was supported and funded by DIPA (Internal Funding Allocation) Universitas Tidar in 2023.

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