

Implications of Land Use and Housing Policies on the Existence of Subak as a Socio-Ecological System: A Case Study in Buleleng Regency, Bali

Putu Ariadi Pribadi^a, Susanti^b

^aUniversitas Terbuka, Bali, Indonesia, 501352711@ecampus.ut.ac.id

^bUniversitas Terbuka, Banten, Indonesia, susanti@ecampus.ut.ac.id

*Correspondence: 501352711@ecampus.ut.ac.id

Abstract

Developmentalism has led to the degradation of Tri Hita Karana-based subak land. Land use policies position the subak in a particular way. This research aims to deconstruct the conversion of subak in Buleleng. This research applies a case study approach, implemented thru observation, interviews, and literature review. Empirically, land conversion and development-oriented regulations create disequilibrium, particularly in subak land management. In the postmodern paradigm, subak as the epicenter of harmonization is marginalized. The inequivalence and implications are evident in the closure of water irrigation or the creation of conflict between farmers and developers. On the other hand, regulations that transform the local agrarian system into housing distract from the structure and distribution of resources in the subak system in Buleleng. Significantly, the findings of this research provide conclusions regarding the side effects of developmentalism, the conservation of subak areas, and the reformulation of regulations, which convergently draw attention to the existence of traditional land use systems. The contribution of this study provides a theoretical and practical understanding that the sporadic conversion of subak land has a destructive impact on the nature of subak conservation.

Keywords:

Spatial planning;
Land conversion;
Subak

1. Introduction

Subak is Bali's traditional irrigation system, as well as an agrarian-spiritual institution that integrates water management, organic agricultural production, and the internalization of the *Tri Hita Karana* paradigm – the cyclical relationship between the prime cause entity, humans, and cosmic entities. On the other hand, subak serves as a democratic and egalitarian collective locus for farmers to manage irrigation systems comprising 50–400 farmers, based on the principles of collectivity and egalitarianism in water management. Its institutional structure consists of *prajuru* such as *kelihan*, *petajuh*, and *pangliman*, complete with customary rules (*awig-awig*) produced thru participation. This aspect is linear with the principles of sustainable agricultural governance, which are represented thru interconnected education, attitudes, and religious rituals (Vasan, 2018).

The implementation of the concepts of equality and collectivity in the management of spatial space in *subak* is integrated thru the practice of harmonization – *Tri Hita Karana*: harmonization with God (*Parahyangan*), harmonization with fellow humans (*Pawongan*), and harmonization with nature (*Palemahan*). This principle of balance is practiced thru religious rituals in subak temples and the alignment of agricultural cycles. If traced, there are 13 (thirteen) stages of the subak ritual, consisting of: a) *mepiuning*, *ngendagin*, *banten penguritan*, *newasain*, *ngerujak* or *biukukung*, *nanggluk merana* or *pengelanus*, *banten nini*, *banten padi*, *ngerasakin*, *mendak tirta*, *ngusaba kertamasa*, *ngusaba*, *buda kliwon wugu*. These ceremonies serve as a religious symbolization of the preservation of social and ecological order. The centrality and functionality of *subak* as a local agricultural system can be viewed from a multiperspective dimension (Suryawan, 2020).

The essence of *subak* is to create a system of simultaneous planting and land rest periods. This aims to provide living space for the land and microorganisms to regenerate consistently, while also incorporating natural aspects of pest control and water quality maintenance ecologically (Sumiyati et al., 2017). Therefore, the essence of *subak* is essential because it is a determining factor in the consistency of food production, the implementation of cultural traditions, and the application of local knowledge with an ecological tendency. On the other hand, sociological aspects also operate within the practice of *subak* agriculture because of the existence of distributive justice in the fair distribution of water based on land conditions (Bond, 2018). This aspect represents the values of justice in the local epistemology of *subak*.

The holistic and integral dimensions in the implementation of *subak* are distracted by the sporadicization of developmentalism (development that focuses on infrastructure) and the gigantism of development (a new form of developmentalism that attempts to transform the superstructure and social structure of the community). An explanation of these two concepts can be seen contextually in the existence of *subak* in Buleleng Regency. Empirical findings on the degradation of *subak* in Buleleng and the theoretical legitimacy of these two paradigms (developmentalism and construction gigantism) can be traced back to *Kebijakan Rencana Tata Ruang Wilayah* (RTRW) which tends to marginalize the institutional elements of the *subak*. Theoretically, the degradation of local institutions as an implication of the infiltration of developmentalism and development gigantism is implemented thru dominant regulations (Yuda, 2020). This dominance can be traced back to specific actions that positioned local institutions, such as *subak* and its organizations, in non-productive spaces. The application of *subak* in non-productive spaces can be seen in the tendency of rules that prioritize coordination between the bureaucracy and local communities. On the other hand, coordination in the *subak* conservation process is still weak. The weak coordination between formal and informal institutions is the main basis for the conversion of agricultural land in Buleleng.

In Buleleng Regency, the sporadic nature of developmentalism and the gigantism of development can be seen from empirical findings. Contextually, the development of public housing and modern tourism has initiated significant conversion of agricultural land. The exploitation of the *subak* system as a local agrarian resilience-based land management system has been disrupted by housing development, which has blocked irrigation access and caused conflict between farmers and developers. This was validated by findings from *Subak Gede Tying Tali* in Panji Village and *Klian Subak Lapang Bedangin*, which showed that many irrigation channels were blocked by garbage and damaged, and that *subak* ceremonies lacked funds due to the decline in BKK assistance from Bali Province. This aspect indicates and explicitly degrades the essence of *subak* as a spatial arrangement based on local wisdom in Bali. The massive conversion of land use and tourism also shows that the local structure of *subak* – called *klian subak* – has no reference or reference for reporting spatial planning violations. This dimension becomes an essential aspect of the research's urgency that needs to be analyzed, due to the ambivalence between the defensive aspect of locality and the offensive development (tourism and the conversion of *subak* land into housing).

This research provides a focus and contributes to finding novelty, particularly in explaining the existence of *subak* in Buleleng Regency with various academic considerations. First, the vastness and diversity of the territory. Buleleng is the largest regency in Bali, with an area of approximately 1,322.68 km². Its topography varies, ranging from lowlands to mountains, with great potential for the *subak* system and agricultural land management. Second, population size and density. The estimated population of Buleleng in mid-2024 is 828,156 people. Additionally, Buleleng is also recorded as the district with the highest number of poor people in Bali, around 36,550 people as of March 2024, providing an important contrast between modernization and agrarian traditions. Third, the existence of *subak* as an agrarian and spiritual system. In 2019, there were 308 *subaks* and 220 *subak abians* in the Buleleng region, totaling 528 traditional *subak* entities. And in 2023, a total of 528 *subaks* and *subak abians* received BKK grants from the Bali regional government, indicating the sustainability and relevance of this institution in public policy.

This research on developmentalism, development gigantism, and *subak* marginalization in Buleleng Regency has a linear relationship with several publications. The research substance equally examines the impact of *subak* land conversion due to housing and tourism pressure, focusing on institutional, ecological, and socio-spiritual aspects. Research on the nature and dynamics of *subak* was

conducted by (Hasanah, 2017) describes that the development of tourism thru villas and hotels triggers the conversion of subak land. This condition leads to a decrease in the number of farmers and the flow of irrigation water, forcing the subak to advocate to the local government. Second, research from (Dharmawan, 2016) showing that in Tabanan Regency, Bali, policy conflicts between the prohibition of land conversion and the push for private development have led to weak control over the conversion of subak land. This research recommends strengthening the role of Subak and pakraman villages in spatial planning. Third, research (Vitiara et al., 2024), Found in Jatiluwih Village, Tabanan, Bali, the conversion of subak land into homestays and restaurants increases the risk of flooding due to the weakening of the ecological function of rice field water infiltration. Therefore, policies are needed to balance tourism and the conservation of subak. Finally, publication (Hasanah, 2016) explaining that, of the 16 subaks in Ubud Village, the study results show that land conversion risks disrupting the physical structure and socio-religious life of the subak community, as well as dismantling the village's traditional spatial planning patterns.

The research gap or novelty of the study is evident in the findings regarding the consistent role of development pressure (tourism & housing) as a trigger for the conversion of *subak* land in various regions of Bali. On the other hand, the *subak* institution, including the pakraman village and *awig-awig*, serves as a form of resistance by the local community in maintaining ownership, water distribution, and shared rituals. The local *subak*-based agricultural system in Bali, if not conserved, will have various implications, particularly ecological and socio-spiritual impacts. The ecological impacts resulting from subak degradation, such as floods and reduced water flow. On the other hand, the socio-spiritual effects resulting from the elimination of the subak system-lead to ritual erosion and disruption of local community structures. Ecological and socio-spiritual impacts are negative effects that go hand in hand. The existence of *subak* and local communities represents a protection scheme for ecological aspects, while also requiring strengthening of spatial planning regulations from formal authorities. In conclusion, there needs to be an integration of local wisdom, active involvement of the *subak* community, and government attention in public policy planning.

Therefore, based on the explanation above, this research formulates two research questions as the main focus of study. The research problem formulation is as follows: a) what are the processes of land conversion, implications, and the existence of *subak* in Buleleng Regency? and b) how did the defensive practices and offensive actions of the *subak* against spatial conversion in Buleleng Regency manifest? The purpose of this research is to analyze and explain the degradation of subak and the process of spatial function conversion, as well as its implications for the existence of *subak* in Buleleng Regency. On the other hand, this research also aims to analyze the *subak's* defensive schemes in responding to and adapting to the reality of land conversion in Buleleng Regency.

2. Method

This research uses a qualitative method, within the framework of a case study. The essence of a case study is monological and examines a single problem focus, requiring a researcher to be careful and minimize the potential for misinterpreting data (Cole, 2023). The case study on *subak* in Buleleng Regency is a research design that attempts to describe a holistic framework for examining the conversion of agricultural land use from a multidimensional perspective. On the other hand, this approach attempts to provide answers in the context of the dynamic nature of *subak* in Buleleng Regency. Therefore, by examining the dynamics of *subak*, it will provide answers in a longitudinal dimension (Ebneyamini & Moghadam, 2018).

The case study approach in this research determines the research subject. The research subjects include *subak* farmers, *subak* managers, and officials from relevant departments, representing the data's relevance to the phenomenon being studied. Data collection was conducted thru in-depth interviews, participant observation, and policy documentation. The data analysis stages in this study were carried out in several steps. First, the existence and conversion of *subak* in Buleleng Regency were critically investigated thru the formulation of relevant theories. The theories used are developmentalism, socio-ecology, and the public policy paradigm. This first type of rationality serves to explain the position of a theory's propositions, which specifically examine one type of phenomenon. Second, the application of the case study in research on *subak* in Buleleng Regency is based on the rationale of a case representing extreme phenomena. Extremism is viewed as the research topic from the perspective of the paradox

inherent in formal institutions (government), economic institutions (agents who convert agricultural land), and informal institutions (*subak*). This triangulation helps researchers see the ambivalence of each institution. Finally, research on *subak* in Buleleng Regency within a case study framework is motivated by its representative character. This rationality will help researchers find the objective conditions of situations and circumstances in daily life. The relevance of this rationality is to provide a conceptual framework for researchers in examining the existence of *subak* in the contemporary era.

Data collection techniques were applied by targeting various informants who represent the existence of *subak* in Buleleng Regency. First, I Putu Wenten (*Kelian Subak Sambangan*). Second, Gede Cerita, (*Kelian Subak Babakan*). Third, Gusti Ketut Mustika (farmer *Subak Lapang Bedangin*). Fourth, Wijaya (farmer *Subak Sambangan*). Fifth, I Gede Buda (*Subak Gede Tiyang Tali Desa Panji* and *Kelian Subak Lapang Bedangin*). Sixth, I Nyoman Wijaya (farmer *Subak Sambangan*). Seventh, drh. Ni Luh Prima Diantari Wati (Sekretaris Dinas Pertanian Kabupaten Buleleng). Eighth, Gede Ngurah Dharma Seputra (Kepala Bidang Tata Ruang Dinas PUTR Kabupaten Buleleng). Ninth, Made Suitra (Kepala Bidang Sumber Daya Air Dinas PUTR Kabupaten Buleleng). The criteria for selecting informants are adjusted to the research focus, which aims to elaborate on the socio-cultural dimensions of *subak* in relation to the government's regulatory dimensions. Therefore, informants from the local perspective (farmers and *subak* managers) and government officials already represent the tensions that exist. This research also involves primary and secondary data to strengthen the findings. If simplified into a table, the data classification can be seen in the following table.

Table 1

Data classification

Primary Data	Secondary Data
The results of interviews and field findings with sources, such as:	Collection and analysis of documents, such as:
a) I Putu Wenten (<i>Kelian Subak Sambangan</i>).	a) <i>Awig-awig</i> or written rules that maintain the existence of the <i>subak</i> . For example, the <i>awig-awig</i> of <i>Subak Sambangan</i> , <i>Subak Babakan</i> , <i>Subak Lapang Bedangin</i> .
b) Gede Cerita (<i>Kelian Subak Babakan</i>).	b) Government documents in Buleleng Regency regarding land use, such as documents like a document Dinas Pertanian Kabupaten Buleleng, Tata Ruang Dinas PUTR Kabupaten Buleleng document and Sumber Daya Air Dinas PUTR Kabupaten Buleleng document.
c) Gusti Ketut Mustika (farmer <i>Subak Lapang Bedangin</i>).	
d) Wijaya (farmer <i>Subak Sambangan</i>).	
e) I Gede Buda (<i>Subak Gede Tiyang Tali Desa Panji</i> and <i>Kelian Subak Lapang Bedangin</i>).	
f) I Nyoman Wijaya (farmer <i>Subak Sambangan</i>).	
g) drh. Ni Luh Prima Diantari Wati (Sekretaris Dinas Pertanian Kabupaten Buleleng).	
h) Gede Ngurah Dharma Seputra (Kepala Bidang Tata Ruang Dinas PUTR Kabupaten Buleleng).	
i) Made Suitra (Kepala Bidang Sumber Daya Air Dinas PUTR Kabupaten Buleleng)	

Data was analyzed using source triangulation. The aim was to obtain valid information by involving various sources from different *subaks* and including sources from government elements in Buleleng Regency. The analytical framework for this research is based on source triangulation-based findings classification. This means that empirical findings are grouped according to the source, time, and location. This aims to specify and simultaneously assist researchers in elaborating research findings for greater accuracy.

3. Results

The strategic role of *subak* as a social structure, spiritual function, irrigation system, and agricultural activity. *Subak* plays a strategic role in the lives of Bali's agrarian society, particularly in

Buleleng Regency, as a local institutional system rooted in spiritual, social, and ecological values. As a traditional institution built by and for farmers. *Subak* not only regulates rice field irrigation but also serves as a vehicle for social solidarity and spiritual preservation based on the *Tri Hita Karana* philosophy. The institutional structure of the subak consists of the subak head (*kelian subak*), advisors (*petajuh*), water commanders (*pangliman*), and farmer members (*krama subak*), who collectively establish customary rules (*awig-awig*) and fairly conduct rituals and water distribution.

Field findings reinforce the function of *subak* within the agrarian and spiritual system of the community. In *Subak Sambangan*, it was found that the role of *subak* for farmers is very good because all farmer activities are regulated by the *subak* institution, including issues of *awig-awig* (customary law), farmer obligations, and rights. This is supported by other empirical findings regarding the role of *subak*, which fairly and evenly regulate rice field irrigation, ensuring that every farmer receives their required share of water. Beside technical agricultural management, the *subak* also carries out agrarian ritual cycles such as *mapag toya*, *ngusaba*, and *ngayah* at the *Subak Temple*. On the other hand, the *subak* also manages planting schedules, water distribution, and the implementation of ceremonies like *ngusaba* and mutual cooperation in cleaning irrigation channels. Thus, *subak* is not only a technical structure, but also a center of spirituality and strengthening solidarity among farmers. This context shows how the aspects of the divine realm (*parahyangan*), human relationships (*pawongan*), and the land (*palemahan*) are interconnected thru the subak institution.

Empirical findings based on observations, interviews, and policy document studies reveal that pressure on *subak* structures is increasing due to land conversion, social change, and a decline in young people interested in becoming farmers. Data shows that, out of the total rice fields recorded in Buleleng Regency, there has been a conversion into settlements and tourism support areas. The total area of rice fields has shrunk from 9,045 ha (2019) to only 7,348.78 ha (2024), a decrease of 18.8% in five years. This increases the workload of the remaining *subak* members, especially in maintaining irrigation channels, conducting ceremonies, and institutional operating costs. This aspect also has implications for the reduced subak area, decreased membership, and increased waste volume on agricultural land. With the presence of housing, the water often gets blocked by garbage. Housing development has led to many roads and subak irrigation channels being taken over by developers.

The interview data shows that housing development has blocked irrigation access and caused conflict between farmers and developers. This case occurred in *Subak Gede Tiyang Tali*, Panji Village, and *Subak Lapang Bedangin*. Empirical findings show that many waterways are blocked with garbage and damaged, and fertility ceremonies lack funds due to the decline in BKK assistance from the province. In fact, *subak* members don't even know where to complain when there are spatial planning violations. The perspective from the relevant agencies indicates a lack of coordination. Although the government normatively stated that it had involved subaks in the preparation and determination of the RDTR and Kawasan Pertanian Pangan Berkelanjutan (KP2B), However, in practice, this involvement is only a formality. Subak is not sufficiently protected by regulation alone; it also needs technical support to prevent displacement by development.

Subak serves as a conceptual scheme for harmonizing and ecologically practicing Balinese society in preserving nature. This statement is supported by the stages of the liturgy, which represent farmers in maintaining ecology, social, cultural, and spiritual relationships. If traced, there are 13 (thirteen) stages of the subak ritual, consisting of: a) *mepiuning*, which is a ceremony aimed at requesting permission, performed every time agricultural activities begin. Or it can also be defined as the individual activities of farmers, spiritual apologies), b) *ngendagin*, which is a ceremony to ask for safety during the land cultivation process, as well as requests to smooth the flow of water, c) *banten penguritan*, which is a prayer aimed at obtaining safety for the seeds, with the hope that the planted seeds will become superior seedlings or plants, d) *newasain*, which is a ceremony to ask for the safety of plants and determine a good day to plant rice seeds, e) *ngerujak* or *biukukung*, which is praying for rice plants so that their seeds can grow and not experience crop failure, f) *nanggluk merana* or *pengelanus* namely, ceremonies to ward off danger and manage pests and diseases, g) *banten nini*, which is a ceremony aimed at ensuring a smooth harvest with maximum yield, h) *banten padi*, which is a ceremony to pray that the harvest will be sufficient to meet the needs of the farmers, and that the rice planted will consistently yield results, i) *ngerasakin*, which is a ceremony of gratitude for an abundant harvest, j) *mendak tirta*, which is a ceremony to pray for water, so that the water flowing thru the rice fields will never dry up or run out, k)

ngusaba kertamasa, which is an expression of gratitude performed collectively by farmers within the subak management structure, l) *ngusaba cenik*, which is an expression of gratitude thru ceremonies held by the subak, m) *buda kliwon wugu* and *buda wage klawu*, which are ceremonies to commemorate the spiritual relationship between the subak and the village, as well as to express gratitude for the harmonious cooperation between farmers and the wider community.

Converting rice fields into settlements and tourism areas is a major challenge for the sustainability of the *subak* system in Buleleng Regency. Empirical data shows that this land conversion has occurred significantly in the last five years, especially in *Subak Sambangan*, *Subak Babakan*, and *Subak Lapang Bedangin*. In *Subak Babakan*, approximately one hectare of rice fields is converted into housing each year, resulting in a decrease in membership from 260 people to 50 people. The impact of this conversion is multidimensional. Beside reducing the area of cultivated land, land use change also disrupts the *subak* irrigation system. Water channels that were originally open for cleaning and water distribution are now largely covered with concrete by developers, causing blockages and a decrease in water flow. This is exacerbated by the increase in household waste from residential areas entering the irrigation canals. This aspect has implications for the reduction of *subak* land, the decrease in *subak* membership, and the inaccessibility of *subak* roads due to being taken over by housing developers.

This condition worsens the economic burden on farmers. The cost of maintaining irrigation channels, subak ceremonies, and procuring fertilizer is now borne by only a small fraction of active farmers. Previously, the burden was shared equally by all members of the subak. Additionally, the government provides assistance in the form of *Bantuan Keuangan Khusus* (BKK) which initially reached Rp.50.000.000 per year, has now drastically decreased to Rp.10.000.000 per year. The Buleleng Regency Government stated that the involvement of *subak* in spatial planning policy development is still weak. Normatively, the government recognizes subak, but its involvement in housing and spatial planning policies is not yet structured. A more participatory approach and formal engagement mechanisms are needed. This gap leads to conflicts, such as in the *Subak Paras Jambul*, where the irrigation channels are blocked by buildings.

Empirical data also shows that another impact that needs attention is the disruption of the *subak's* spiritual dimension. The decrease in membership has led to a decline in participation in ceremonies such as *ngusaba* and *mapag toya*. Findings at *Subak Gede Tiyang Tali* and *Subak Lapang Bedangin* indicate that the current funding for ceremonies relies on donations from landowners and developers. Nevertheless, the *subak* in this area faces several challenges. One of them must negotiate with the housing developer to access capital for the ceremony. On the other hand, the independence of *subak* members from the developers has implications for other dimensions, namely the large number of water channels blocked by waste and many damaged irrigation channels, the cost of ceremonies is decreasing due to the decline in BKK numbers, and currently, the *subak's* funds are being replenished by collecting water fees from farmers within the *subak*. This is done to continue fulfilling obligations and maintain harmony between the divine realm, the earthly realm, and the human realm.

4. Discussion

4.1 Subak Conversion in Buleleng Regency

Converting rice fields into settlements and tourism areas is a major challenge for the sustainability of the *subak* system in Buleleng Regency. Land conversion has occurred significantly in the last five years, especially in *Subak Sambangan*, *Subak Babakan*, and *Subak Lapang Bedangin*. In *Subak Babakan*, approximately one hectare of rice fields is converted into housing each year, resulting in a decrease in membership from 260 people to 50 people. The impact of this conversion is multidimensional. First, the conversion process reduces the area available for planting, and land use changes also disrupt the *subak* irrigation system. Second, the practice of converting subak land into housing causes water channels that were originally open for cleaning and water distribution to be increasingly closed with concrete by developers, leading to blockages and reduced water flow. This is exacerbated by the increasing amount of household waste from housing entering the irrigation channels. Other consequences caused by the conversion of subak land include a reduction in the area of *subak* land, a deficit in *subak* membership, and *subak* road access being taken over by housing developers.

Pressure on the *subak* structure is increasing due to land conversion, social changes, and a decline in young people interested in becoming farmers. Data shows that out of the total rice fields recorded in

Buleleng Regency, there has been a conversion into settlements and tourism support areas. The total area of rice fields has shrunk from 9,045 hectares (2019) to only 7,348.78 hectares (2024), a decrease of 18.8% in five years.

The domain tension between capitalist aspects and the preservation of the *subak*'s socio-ecological dimension creates a double burden on farmers. Currently, the costs of maintaining irrigation channels, *subak* ceremonies, and fertilizer procurement are only borne by a small fraction of active farmers. Previously, the burden was shared equally by all members of the *subak*. This is exacerbated by government assistance, namely *Bantuan Keuangan Khusus* (BKK) which initially reached Rp.50.000.000 per year, has now drastically decreased to Rp.10.000.000 per year. This context can be interpreted as indicating that the involvement of *subak* in spatial planning policy development is still weak. Normatively, the government recognizes *subak*, but its involvement in housing and spatial planning policies is not yet structured. A more participatory approach and formal engagement mechanisms are needed. This gap leads to conflicts, such as in the *Subak Paras Jambul*, where the irrigation channels are blocked by buildings.

This function aligns with the concept of Socio-Ecological Systems (SES) and institutional theory, which emphasize the importance of community control over the management of common pool resources. This reality reflects the existence of value conflicts, as explained in the theories of collaborative governance and public value conflict. The substantial non-involvement of subaks in space policy indicates an imbalance between local cultural values and modern development (Lozano, 2023). This is supported by the theory of political ecology, which emphasizes that land use changes not only have ecological impacts but also disrupt power structures and resource distribution at the local level (Bridge, 2020). Thus, *subak* in Buleleng Regency continues to play a vital role in maintaining agricultural sustainability, spiritual values, and social solidarity. However, the pressure on the structure and function of *subak* due to modernization and uncontrolled development highlights the need for spatial planning policies that are oriented toward preserving local institutions based on cultural wisdom (McDonald & Wilson, 2017). *Subak* should be viewed not only as a technical entity, but as a living and ecological social system that needs to be actively involved in regional development decision-making.

4.2 Impact of *Subak* Conversion on Social-Spiritual Dimensions

On the other hand, the inequality in public policy-making based on development tendencies creates a public value conflict in the interdependent relationship between two elements (formal and informal institutions). However, the existence of formal institutions that carry the ideology of development, attempting to maximize economic achievements in accumulating resources. On the other hand, the reciprocal relationship between these two elements is vulnerable to exploitation by the elite (Sun et al., 2020). The elite utilize cumulative resources (economic power) and authoritative resources (power) to control the lives of citizens (in this context, *subak* farmers). The implication is that social policies created by the government often create the potential for unequal distribution of social justice, ultimately leading to inequality (Mercer, 2018). Inequality in the public policy framework, which does not strive to create welfare, but rather the regulations created are used to organize the upper class forces in economic accumulation (the concept of development gigantism and developmentalism) (Fan, 2022).

Contextualization of the public value conflict theory, which explains that local socio-ecological values often clash with short-term economic development interests. Within the framework of political ecology and empirical analysis, the active non-involvement of *subak* in spatial planning reflects the weak bargaining position of local communities against development-oriented power and decision-making structures. Empirical conditions indicate that the *subak* system has been taken over, farmers who sold their land have left the *subak*, and ultimately, there are many conflicts regarding land boundaries. The importance of youth regeneration and participation in maintaining the continuity of the **subak's** socio-cultural functions. *Subak* in Buleleng is not just an agricultural system, but also a social and spiritual institution that serves as the last bastion to safeguard the sustainability of traditional Balinese agriculture amidst the challenges of modernization and climate change. The problem is, integrating *subak* into RTRW and RDTR it has not been fully able to prevent the legalization of development on productive agricultural land. Although housing permits require a *subak* recommendation. However, in practice, development continued without comprehensive oversight. This indicates the weakness of permanent zoning mechanisms for agriculture in spatial policy. If there is no stronger and more participatory policy protection, then the existence of *Subak* will be further eroded.

All pillars of *Tri Hita Karana* – agrarian, spiritual, and social – are threatened with fragility. *Subak* could survive symbolically, but it is losing its vital function in the Balinese agricultural system and social structure (Kotze, 2014).

4.3 Local Community Response and Adaptation to the Alif Function of *Subak* in Buleleng Regency

Facing the sporadic conversion of land and the weakening of institutional structures, the *subak* communities in Buleleng Regency have created various responses. Various forms of responses and adaptation strategies are employed by farmers and *subak* managers, aiming to maintain the existence of traditional value-based land use as an integrated agrarian and spiritual management system. Although this response demonstrates strong social resilience, its adaptability is limited without supportive and cross-sectoral policies. The concept of the *subak* social strategy in facing development's offensive actions is closely related to sociological facts and political values. In social strategy, the idea of public interest has implications for shaping the values, ethics, and social structures of defensive groups (local communities, *subak* farmers, and *subak* organizations). Social strategy as a mechanism for maintaining authenticity (the form, structure, and practices of *subak* that must not change or be interfered with by anything) has undergone an expansion of meaning (Ditrych, 2014). Social strategy activities transitioned into a "new social movement", raising the issue of social adaptation of *subak* in the sporadic development. As a result, *subak* and agricultural land are not only viewed as quantifiable entities (whose profit can be converted and calculated from the land conversion process). However, there are sociological elements that must be considered (Vandenberghe, 2018). Essentially, the *subak* social strategy strengthens social capital to ensure its sustainability. One important element in strengthening social capital is maximizing local instruments, such as *awig-awig* (rules that bind individuals within the traditional village locus). *Awig-awig* should be used as a tool to maintain the authenticity of *subak* and minimize potential degradation as an effect of development (Wong, 2014).

Revitalizing *subak* regulations is an important strategy for ensuring the sustainability of the *subak* system, particularly regarding water distribution, ritual practices, and controlling land conversion. This aspect of revitalization can be interpreted as a defensive practice for the existence of *subak*, allowing it to consistently endure the dynamics of developmentalism and the gigantism of development. In Sambangan Village, the traditional village supports the preservation of *subak* thru socialization of the ban on throwing garbage into irrigation and campaigns LP2B. This demonstrates the synergy between the *subak* and *adat* as local socio-cultural forces – strengthened thru the local village *awig-awig*. *Subak* managers are also working to strengthen institutions and socialize land protection policies, even tho *subak* involvement in spatial planning policies is still weak. On the other hand, *Subak Lapang Bedangin* initiated water fees to ensure the sustainability of *subak* activities amidst limited funds and land conversion. This context becomes a defensive scheme for the existence of the *subak*, driven by a grassroots movement, thru the involvement of its authentic agents (*subak* farmers).

Revitalizing the *awig-awig* doesn't just aim to prevent the *subak* area from being damaged by the effects of development. The most important aspect of the revitalization phase is upholding the basic principles of justice and the rational value of the local community's original rights in preserving the legacy of socio-ecology (*subak*). Justice and the value of rationality as original rights in the principle of preserving an area are formed from a set of ownership rights. The rights of local communities operate in two realms: the natural realm and the values of human rights (Gwaibi, 2017). Being a local community means being part of a dimensional community (the connection of the *subak* community or farmers with local government and economic groups/developers). Therefore, this cyclical relationship must prioritize well-being. The principles of justice and welfare derived from the revitalization of *awig-awig* aim to prevent the sporadic spread of capitalism in the use of agricultural land. If *awig-awig*, as a tool of regulation, is not maximized within the local *subak* life cycle, then formal institutions (government) and economic groups (housing developers) will be in a dominant position, leading to a *laissez-faire* mechanism (Makowski, 2023). The implication is that a free market economic system is formed, and the existence of local communities that should be protecting the *subak* is drawn into market varieties (land conversion, capital accumulation, and ownership) (Schonher, 2019).

Awig-awig is the main strength of *subak* as traditional political will – a revitalization process of *awig-awig* supported by traditional villages and the government. In the explanation and contextualization of the value-led heritage conservation theory, it is explained that *subak*-based conservation is rooted in local values preserved by the community as the front line (the essence of

farmers' existence as central actors). A reflective idea regarding the *awig-awig* that could be developed to explain the context above is the presence of the local community as the last line of defense for the *subak*, making it an important element in creating balance and the main basis for preventing catastrophe (Marino, 2022). Local communities and the maximization of local legal instruments, with all their strength, resources, and tools, become a socio-political entity capable of directing social vision, particularly *subak* conservation policies, minimizing land conversion, and ensuring social welfare for *subak* farmers. Without the involvement of local communities and their instruments, the vision of achieving balance or "social protection" will not be attainable (Lewis & Owen, 2020).

On the other hand, the offensive aspect displayed by the *subak* as a traditional value-based agrarian institution shows snapshots of the *subak* as a diversified socio-cultural locus. In Buleleng Regency, the development of economic function diversification, such as agricultural education, promotion of local culture, and community-based environmental conservation, becomes a semiotic dimension to position *subak* as an open area that still maintains its traditional authenticity, particularly in land management and water distribution. Although not simultaneous across all *subaks*, this step indicates the direction of adaptation and openness of *subaks* in resisting policies that do not pay attention to the existence of the traditional agricultural system. On the other hand, the openness of *subak*, demonstrating independent economic activity (such as agricultural education, promotion of local culture, and community-based environmental conservation), represents a process of dispositive and distracts from land conversion-based economic dependence. *Subak* has the potential to be a socio-cultural and spiritual institution that can be developed into a local educational and tourism destination (Hoffman & Jennings, 2015). *Subak* is not just an agricultural system, but also a socio-cultural institution that ensures the survival of farmers and the surrounding environment. The process of device and distraction of land conversion-based economic dependency carried out by the *subak* is seen as an accumulation of socio-ethical power and socio-utilitarian principles in improvising local citizen participation while simultaneously facilitating them to move collectively toward realizing the vision of prosperity (Chigangaidze, 2022).

On an advocacy basis, diversification on each *subak* land with the principle of local value-based adaptation, where environmental and cultural preservation becomes an alternative source of income. However, for *subak* to thrive, it requires cross-sectoral support, especially from the government, so that its economic function can be carried out inclusively and remain rooted in Bali's cultural heritage. Public policy advocacy regarding *subak* in Buleleng Regency can begin with the water management process, particularly due to reduced water flow and damage to irrigation networks caused by land conversion. On the other hand, the district government can provide assistance to *subaks* that are starting to implement local innovations, such as self-funded channel repairs and internal fundraising from the community for maintenance. Thus, the technical challenges and operational costs that have long been obstacles for farmers in developing agricultural land can be addressed.

The creation of an intersection between formal (government) and informal (*subak*) aspects can be read as an idea of welfare-based development. That basic idea is impossible without involving formal elements, or without emphasizing individual authority alone. However, the prospects for welfare-based development are pursued simultaneously. The structure of the concept of welfare is based on the relationship between formal elements, the local community, and farmers as a relative tendency that determines diverse types of social policies. In other words, the integration between the government and *subak* in the process of preserving the local agricultural system based on the *Tri Hita Karana* value, forms a liberal-informal characteristic. The government's existence is based on socio-cultural protection that prioritizes vulnerable *subak* farmers to be protected with a social safety net. In the process of building welfare and preserving *subak*, the configuration of welfare thru a layering process, and the general influence used is formally patterned for the benefit of informal groups (Molinario et al., 2020).

4.4 Theoretical Analysis of Subak Conversion in Buleleng Regency

The policy-based advocacy context from the district government can be implemented thru material support for the innovative practices carried out by the *subak*. On the other hand, the government's facilitation in the form of technical training, irrigation infrastructure assistance, and access to funding strengthens the relationship between formal and informal parties. Without such support, the sustainability of the community-based irrigation system that is the foundation of *subak* will continue to be threatened by external pressures such as land conversion and a lack of cross-sectoral coordination.

On the other hand, policy-based advocacy can also be implemented through government involvement in providing access to *subak* in village or sub-district musrenbang forums to facilitate the fulfillment of farmers' aspirations. Within the framework of collaborative governance theory, this response reflects real-world practices in building partnerships across sectors and levels of government. The findings above reflect that the responses and adaptations of *subak* in Buleleng Regency demonstrate institutional resilience based on local values. However, the sustainability of this strategy is highly dependent on legal protection for *subak* agricultural land, the integration of *subak* into spatial planning policies, and the facilitation of strengthening the institutional and economic capacity of *subak* communities. Without it, the adaptations made risk being merely reactive and short-term.

The theoretical framework of collaborative governance in interpreting government policy advocacy that seeks to maintain the authenticity of *subak*, tends to increase solidarity among welfare actors (government and local communities). This reflects that collaborative actions among formal organizations and the collective agricultural sector of society demonstrate a collective movement, involving all social strata. The existence of actions that collaborate social actors illustrates the presence of informal solidarity – an association of actions between government and non-government actors (Honneth, 2019). This is becoming a phenomenon in improving and continuing services in social policy, and specifically, it confirms the involvement of non-state actors in the circulation of a policy (Chen & Hamilton, 2015). The idea of reflective collaborative governance, which can be explained by the *subak* phenomenon, is that social policy, particularly in its implementation aspect, can be achieved by utilizing all social strata. Not only from the formal sector, but the informal or private sectors also mobilize resources with altruistic motives (Sovacool & Hess, 2017).

Subak can be viewed through the lens of political ecology theory or public value conflict. This paradigm, in the context of contextualizing the conversion of *subak* functions, shows land use that marginalizes *subak*, tentatively indicating a reality of disequilibrium. Another implication created by the constellation of social policies is the marginalization of cultural life elements (read: *subak*). The main subordinate aspect is the subjective will of the farmers in maintaining the authenticity of the *subak*, but this is distracted by massive development. That topic is dislocated from the macro-state discourse (read: the relevant government). The massive development that marginalizes the essence of *subak* can be interpreted as a form of accelerating formal institutions that emphasize intervention in the socio-religious life of local communities (within the *subak* mechanism), improvising land conservation productivity for capitalist interests (Wang et al., 2022). Thus, ideologically, social policies that normatively aim to include local *subak* farmers are not pure due to the intervention of development exclusivity, for the benefit of housing or tourism. This ideology of development progressiveness has the probability of being utilized by formal institutions and economic groups to control the informal *subak* life in Buleleng Regency. It can be said that social policies oriented toward the development process are not truly independent in promoting socio-ecological ideas, but rather have a high probability of being infiltrated by external forces (economic groups). The result is the creation of inequality and marginalization of local groups (Barker, 2023).

5. Conclusion

Spatial planning and housing policies in Buleleng Regency have not fully accommodated the sustainability of the *subak* system. The conversion of rice fields into housing, including the construction of subsidized homes, has led to a narrowing of water access, the clogging of irrigation channels, and a significant decrease in the area of *subak* land. The minimal involvement of *subak* in the spatial planning process leads to an imbalance between development policies and local institutional needs. Land conversion and the decline in the number of active farmers not only impact the physical aspects but also shake the spiritual and social dimensions within the *subak* system. This research aims to examine the local dimensions of *subak* in Bali and its dynamics using various theoretical perspectives. First, the local community's defensive actions in preserving the *subak* are evidenced by the maintenance of *awig-awig*. Within the framework of collaborative governance theory, this response reflects real-world practices in building partnerships across sectors and levels of government. The findings above reflect that the responses and adaptations of *subak* in Buleleng Regency demonstrate institutional resilience based on local values. Finally, the theoretical framework of collaborative governance in interpreting government policy advocacy that seeks to maintain the authenticity of *subak*, tends to increase solidarity among welfare actors (government and local communities).

The recommendation from this research is confirmation Lahan Pertanian Pangan Berkelanjutan (LP2B) and the *subak* area as a cultural and ecological protection zone. Adding a clause stating that *subak* is protected not only as land, but also as a socio-religious system. Furthermore, in favor of farmers, land use must be approved by the *subak* and traditional village communities before a conversion permit is issued, the integration of the *Tri Hita Karana* values as a licensing principle, and the digitalization and transparency of the licensing process.

The limitations of this study can be seen from several aspects. First, the research focus is limited to land conversion in Buleleng Regency. Therefore, it cannot provide a detailed explanation of the conditions of other *subak* systems in Bali. Second, this research only focuses on a specific time period, so it does not provide further explanation of the conditions of *subak* systems in previous periods. Therefore, its elaboration is still very minimal and does not provide a comprehensive dimension. Therefore, this research hopes for follow-up action from subsequent researchers to focus on a broader scope, particularly regarding *subak* and the dynamics of conversion in this traditional land management system.

6. References

- Barker, T. (2023). Michel Serres and the Philosophy of Technology. *Theory, Culture and Society*, 1–16. <https://doi.org/10.1177/02632764221140825>
- Bond, C. G. (2018). Ecofeminist Epistemology in Vandana Shiva's The Feminine Principle of Prakriti and Ivone Gebara's Trinitarian Cosmology. *Feminist Theology*, 26(2), 185–194. <https://doi.org/10.1177/0966735017738660>
- Bridge, G. (2020). Habit, Experience and Environment: A Pragmatist Perspective. *Environment and Planning D: Society and Space*, 38(2), 345–363. <https://doi.org/10.1177/0263775819882715>
- Chen, J. M., & Hamilton, D. L. (2015). Understanding Diversity: The Importance of Social Acceptance. *Personality and Social Psychology Bulletin*, 41(4), 586–598. <https://doi.org/10.1177/0146167215573495>
- Chigangaidze, R. K. (2022). The Environment Has Rights: Eco-Spiritual Social Work Through Ubuntu Philosophy and Pachamama: A Commentary. *International Social Work*, 1–5. <https://doi.org/10.1177/00208728211056367>
- Cole, R. (2023). Inter-Rater Reliability Methods in Qualitative Case Study Research. *Sociological Methods and Research*, 1–32. <https://doi.org/10.1177/00491241231156971>
- Dharmawan, A. H. (2016). *Pengendalian Konversi Lahan Pertanian di Kabupaten Tabanan, Provinsi Bali: Analisis Kelembagaan Subak dan Pakraman* [Institut Pertanian Bogor]. <https://doi.org/repository.ipb.ac.id/handle/123456789/83038>
- Ditrych, O. (2014). Security Community: A Future for a Troubled Concept? *International Relations*, 28(3), 350–366. <https://doi.org/10.1177/0047117814545952>
- Ebneyamini, S., & Moghadam, M. R. S. (2018). Toward Developing a Framework for Conducting Case Study Research. *International Journal of Qualitative Methods*, 17(1), 1–11. <https://doi.org/10.1177/1609406918817954>
- Fan, J. (2022). A Century of Integrated Research on The Human-Environment System in Chinese Human Geography. *Progress in Human Geography*, 46(4), 988–1008. <https://doi.org/10.1177/03091325221085594>
- Gwaibi, N. W. (2017). 'Wrath from the Gods': Traditional Institutions and Electoral Politics in Bali. *Journal of Asian and African Studies*, 52(3), 324–345. <https://doi.org/10.1177/0021909615577500>
- Hasanah, S. W. N. (2016). *Alih Fungsi Lahan Sawah Subak ke Lahan Terbangun di Kelurahan Ubud, Kecamatan Ubud, Kabupaten Gianyar, Bali* [Universitas Gadjah Mada]. <https://doi.org/etd.repository.ugm.ac.id/penelitian/detail/103455>
- Hasanah, S. W. N. (2017). *Peran Subak dalam mengatasi Dampak Negatif Alih Fungsi Lahan Dari Kegiatan Pertanian Ke Kegiatan Pariwisata di Ubud Bali* [Universitas Gadjah Mada]. <https://doi.org/etd.repository.ugm.ac.id/penelitian/detail/130881>
- Hoffman, A. J., & Jennings, P. D. (2015). Institutional Theory and The Natural Environment: Research in (and on) The Anthropocene. *Organization and Environment*, 28(1), 8–31. <https://doi.org/10.1177/1086026615575331>
- Honneth, A. (2019). Recognition, Democracy and Social Liberty: A Reply. *Philosophy and Social*

- Criticism*, 45(6), 694–708. <https://doi.org/10.1177/0191453719843439>
- Kotze, L. J. (2014). Human Rights and The Environment in The Anthropocene. *Anthropocene Review*, 1(3), 252–275. <https://doi.org/10.1177/2053019614547741>
- Lewis, T. E., & Owen, J. (2020). Posthuman Phenomenologies: Performance Philosophy, Non-Human Animals, and the Landscape. *Qualitative Inquiry*, 26(5), 472–478. <https://doi.org/10.1177/1077800419836694>
- Lozano, P. P.-. (2023). History and Philosophy of Geography I: Heterodox Progress, Critical Scepticism and Intellectual Voluminosity. *Progress in Human Geography*, 1–13. <https://doi.org/10.1177/03091325231164620>
- Makowski, P. T. (2023). Strengthening The Theoretical Perspective on Action in Routines Research With the Analytical Philosophy of Agency. *Journal of Management*, 1–29. <https://doi.org/10.1177/01492063231157328>
- Marino, F. (2022). Book Review: Sigrid Norris, Systematically Working With Multimodal Data: Research Methods in Multimodal Discourse Analysis. *Discourse & Society*, 33(2), 287–289. <https://doi.org/10.1177/09579265221077472>
- McDonald, M., & Wilson, L. (2017). Trouble in Paradise: Contesting Security in Bali. *Security Dialogue*, 48(3), 241–258. <https://doi.org/10.1177/0967010617692925>
- Mercer, D. (2018). Why Popper Can't Resolve The Debate Over Global Warming: Problems With The Uses of Philosophy of Science in The Media and Public Framing of The Science of Global Warming. *Public Understanding of Science*, 27(2), 139–152. <https://doi.org/10.1177/0963662516645040>
- Molinario, E., Kruglanski, A. W., Bonaiuto, F., Bonnes, M., Cicero, L., Fornara, F., Scopelliti, M., Admiraal, J., Beringer, A., Dedeurwaerdere, T., DeGroot, W., Hiedanpaa, J., Knights, P., Knippenberg, L., Ovdenden, C., Horvat, K. P., Popa, F., Gomez, C. P., Smrekar, A., ... Bonaiuto, M. (2020). Motivations to Act for the Protection of Nature Biodiversity and the Environment: A Matter of “Significance.” *Environment and Behavior*, 52(10), 1133–1163. <https://doi.org/10.1177/0013916518824376>
- Schonher, M. (2019). Gilles Deleuze's Philosophy of Nature: System and Method in What is Philosophy? *Theory, Culture and Society*, 36(7–8), 89–107. <https://doi.org/10.1177/0263276418820954>
- Sovacool, B. K., & Hess, D. J. (2017). Ordering Theories: Typologies and Conceptual Frameworks for Sociotechnical Change. *Social Studies of Science*, 47(5), 703–750. <https://doi.org/10.1177/0306312717709363>
- Sumiyati, Windia, I. W., & Tika, I. W. (2017). Operasional dan Pemeliharaan Jaringan Irigasi Subak di Kabupaten Tabanan. *Jurnal Kajian Bali (Journal of Bali Studies)*, 7(1), 121. <https://doi.org/10.24843/jkb.2017.v07.i01.p08>
- Sun, J., Li, G., Wang, Q., & Zhang, B. (2020). Ecological Environments of Tropical and Subtropical Regions in China. *Tropical Conservation Science*, 13(50), 1–4. <https://doi.org/10.1177/1940082920942022>
- Suryawan, I. G. Ja. J. (2020). Subak Sebagai Pariwisata Budaya Dengan Konsep Tri Hita Karana. *Maha Widya Duta*, 2(1), 21–27. <http://jurnal.stahnmpukuturan.ac.id/index.php/duta/article/view/45>
- Vandenbergh, F. (2018). Sociology as Practical Philosophy and Moral Science. *Theory, Culture and Society*, 35(3), 77–97. <https://doi.org/10.1177/0263276417709343>
- Vasan, S. (2018). Ecological Crisis and the Logic of Capital. *Sociological Bulletin*, 67(3), 275–289. <https://doi.org/10.1177/0038022918796382>
- Vitiara, M. D., Putri, A. A., & Triadi, J. (2024). Analisis Dampak Alih Fungsi Lahan Subak Terhadap Kerawanan Bencana Banjir: Studi Kasus di Desa Jatiluwih, Kecamatan Penebel, Kabupaten Tabanan, Provinsi Bali. *Social Agriculture, Food System, and Environmental Sustainability (SAFSES)*, 1(1). <https://doi.org/10.61511/safses.v1i1.2024.551>
- Wang, J., Yu, C. W., & Cao, S. J. (2022). Planning for Sustainable and Ecological Urban Environment: Current Trends and Future Developments. *Indoor and Built Environment*, 32(4), 627–631.
- Wong, D. B. (2014). Integrating Philosophy with Anthropology in an Approach to Morality. *Anthropological Theory*, 14(3), 336–355. <https://doi.org/10.1177/1463499614534554>
- Yuda, T. K. (2020). Re-Examining the Institutional Layering of Social Policy Configuration In



Indonesia. *Journal of Asian Public Policy*, 13(3), 353–365.
<https://doi.org/10.1080/17516234.2019.1662164>

