Institutional and Regulatory Roles in Maintaining Sustainability of Subak as a World Cultural Heritage in Bali

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Abstract

Subak in Bali is a traditional irrigation system and is thought to have existed before the ninth century. Subak adopts the philosophy of Tri Hita Karana, which means three causes of the creation of harmony: the creation of a harmonious relationship with God/Creator; human relationship with the natural surroundings; and human relationship with other humans, and has been recognised as a World Cultural Heritage in 2012. Subak sustainability is dependent on the institutional and regulatory bodies in realizing the creation of harmonious relationship between man and man. The contribution of the board (Prajuru), especially the leaders (Pekaseh) of Subak in maintaining a tradition is held for many years, which is based on the principle of ngayah (working selflessly). The success of maintaining Subak is supported by the internal regulations (awig-awig); additional rules (perarem), and meeting decisions (pasuara). Awig-awig, which was originally just an agreement between the members of Subak, became a tradition called dresta or sima and is based on the belief related to Hinduism. Compliance of the prajuru and krama of Subak in carrying out activities in accordance with awig-awig is an important part in maintaining the Subak.

Subak is a traditional irrigation system in Bali which is thought to have been built and operated before the IX century. Subak is socio-religious and agrarian in nature, and is based on the philosophy of Tri Hita Karana - the philosophy of the traditional village in Bali. Tri Hita Karana philosophy includes three causes of harmony: the creation of a harmonious relationship between human and God (called Parahyangan), humans and other humans (called Pawongan), and humans and the natural surroundings (called Palemahan). The beauty of the landscape of Subak irrigation in terraces and its implementation philosophy of Tri Hita Karana in performing the activities of agriculture and water management for irrigation prompted UNESCO to award Subak as a World Heritage Property of the Cultural Landscape of Bali Province in 2012 (Ukirsari, 2012; Yekti et al., 2017). Implementation of Tri Hita Karana in Subak system includes: Parahyangan relating to a series of religious ceremonies in the rice-growing season ranging from
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draining water from the river to irrigation canals to storing grains in storage (the barn); Pawongan - the Subak organization (called Sekehe Subak) and the regulation of the awig-awig along with additional rules called perarem and pasuara (decisions of the meeting), as well as Palemahan-procedures for water distribution or water management (Norken et al., 2015; Norken et al., 2016). This paper attempts to give a comprehensive picture of the existence of the organization and regulation of water control system and their role in carrying out the operation and maintenance as well as preserve the tradition that has been practiced from generation to generation and has got a recognition as world cultural heritage.

Methodology
This study was conducted through in-depth interviews to Pekaseh (Head) of Subak Pulagan at Tampaksiring village in Gianyar Regency and Pekaseh of Subak Jatiluwih at Jatiluwih village in Tabanan Regency which are parts of Subak as World Cultural Heritage; also to Pekaseh of Subak Pecelengan Pedukuan at Mendoyo Dangin Tukad Village in Jembrana Regency. In addition, this study was supported by a literature review relating to institutions and awig-awig, and their roles in maintaining subak sustainability as a World Cultural Heritage.

Results and discussion
Subak and its development
Although Subak is known to have existed for a long time, its definition was formally described in the Regional Regulation (Perda) of Bali Province No. 02 / PD/DPRD/1972. It defines Subak as "the organization of indigenous people of Bali which has socio-agrarian and religious..."
characteristics which had historically been established since long time ago and continues to grow as an organization taking care of lands in the field of water management and others in an area" (Partha, 1972). Furthermore, the Regional Regulation (Perda) of Bali, No. 9 of 2012, defines "Subak is a traditional organization in the field of water system and/or planting system at the farm level for traditional communities in Bali which is socio-agrarian, religious, and economical in nature which has historically continued to grow and flourish" (Pastika, 2012). Various investigators also give definitions of Subak each with different points of view, such as: Geertz (1980) defined Subak as rice fields that get water from one source. Grader (1979) described that Subak is a collection of fields of the same water source or from the same branch of a duct. Furthermore Sutha (1978) described that Subak is a community organization called Seka or Sekehe. Subak is an organized social entity whose members are bound to one another because of their common interest in relation to irrigation for rice fields, has leadership (board) which could act inside and outside the organization and has both material and immaterial assets (Griadhi et al., 1993). Sutawan (2008) defined Subak as a socio-religious agricultural and irrigarion institution dealing primarily with water management for the production of annual crops particularly rice based on the Tri Hita Karana principle. Thus Subak in principle is an irrigation and agricultural system which is traditional, religious, and autonomous in nature set up to regulate water from its source to irrigate rice fields and manage seasonal crops. But lately, Subak organization has been created to regulate all agricultural crops including plantation known as the "Subak abian" that manages plantations (Norken et al., 2016).

Regarding the history and development of Subak, and its existence, the inscription Sukawana Al, in 882 AD (IX century), which mentioned "huma" means rice-field, while in the inscription Bebetin AI the year 986 AD (X Century) mentioned "undagi pangarung" means artisan building water tunnels or aungan in Balinese, further the inscription Pandak Badung in 1071 and Klungkung 1072 (XI century), wrote about "kasuwakan" or "kasubakan" in Balinese means Subak organizations, or an irrigation area (Purwita, 1993; Pangdja. 1998; Sutawan 2008). It further states that the number of Subak grew from 1193 in 1971 to 1331 in 1991 (Purwita, 1993), and to 1601 in 2013 (Astawa, 2013). In contrast, the total area of Subak got reduced from 103455 hectares in 1977 to 86911 hectares in 2012 (Sushila, 1987; Astawa, 2013). Rate of decline of rice growing area is a serious challenge to maintain Subak in future. In the last decade, land conversion of rice fields into non-rice fields reached to about 1,000 hectares per year and it seems likely to continue (Finlayson and Paramita, 2013).

**Organization and organizational structure**

Every Subak in Bali in general has its name and organizational structure. Although the organization structure is sometimes very simple its quite effective
in regulating the activities carried out by farmers who are members of Subak which is called *Krama Subak*, and administrators/boards of Subak called *Prajuru Subak* (Sushila 1987; Pitana 1993). A small Subak is led by only a chairman called *Kelian Subak* or *Pekaseh* and assisted by a secretary called *Penyarikan* or *Juru Tulis*, while for a large Subak the Prajuru consists of: *Pekaseh* (chairman/head), *Petajuh* (deputy chairman), *Penyarikan* or *Juru Tulis* (secretary), *Patangen* or *Juru Raksa* (Treasurer), *Kasinoman* or *Juru Arah* (channel of information) and *Saya/Bhaga/Penyade* (special assistant or working groups relating to various types of activities). For a large Subak or multiple Subaks which have the same water source is called Subak Gede, and chaired by the *Pekaseh Gede* and a deputy of *Pekaseh Gede* (Sushila, 1987; Pitana, 1993; Sutawan 2008; Norken et al., 2015). In the 1980s Subak organization began to be formed covering a watershed called Subak Agung and headed by *Pekaseh Subak Agung*. Subak also can be divided again by smaller portions called *tempek* and led by *kelihan tempek*, which is under a *pekaseh* (Pitana, 1993; Sutawan, 2008). Later there has been a development that the *prajuru* of a Subak is equipped with a working group called *penyade* or *bhaga* which is responsible for the implementation of Parahyangan, Pawongan, and Palemahan aspects, tailored to the needs of each Subak (Norken et al., 2016; Sutama, 2016). A *pekaseh* or *prajuru* are generally elected by consensus or acclamation (called *suryak siu*) of the members of the Subak. In the past, elections were often held on the basis of descent, where the son of a *pekaseh* directly replaces the parents in accordance with the traditions that are embraced from generation to generation. The main criteria of a *pekaseh* to be elected by members of Subak are: honesty, dedication, and loyalty exhibited by the attitude and behavior while becoming a member, as well as having a selfless devotion. *Prajuru Subak* is often formed for a longer term due to the trust shown by the members for their sincere and selfless performance - often called the principle of *ngayah* (Sutawan, 2008; Norken et al., 2015). Lately, there has been an agreement that the position of a *Subak prafrjuru* is limited to 5 years and may be re-elected, develops an election procedure by voting, and some change in the criteria, such as the candidate to be a *prajuru*, he must be honest and responsible, and educated enough.

*Subak* is an autonomous organization and decisions on various issues are taken through mutual agreement among the members of Subak with the board (paruman krama) as the highest power (Sushila 1996; Sutawan, 2008; Norken et al., 2015). So it is not surprising that every Subak has its own traditions (called dreesta) that may vary in carrying out various activities. As for members of Subak, it is generally divided into three groups: a) *krama pengayah* or members having fields and work as a farmer; b) *krama pangoat* or *pengampel* representing the land owners; and c) *karma leluputan* given special tasks, such as *bendesa adat* (traditional village leader) (Sutawan, 2008; Norken et al., 2016). The general organizational structure is given in figure 1.
In the past, elections were often held on the basis of consensus or acclamation (called Parahyangan). The development of more structured systems, with the implementation of a structure called Kelihan Tempek (Subak Head), and a deputy of Kelihan Tempek (Deputy Head), has been a development that the community or village has embraced from generation to generation.

Activities in implementing regulations (channel of information) and participation in decision-making in the meeting called perarem (additional rules or pasuara). While members of Subak have the obligation to represent the land owners; and c) willing to be involved in the management in accordance with the agreement (perarem or pasuara). In addition, members of Subak have the following duties and obligations in carrying out various activities. Prajuru and krama of Subak have an obligation in accordance with their position, which can be described as follows: Subak management (prajuru): a) implement, ensure and lead members of Subak in implementing regulations (awig-awig), agreement (additional rules or perarem) as well as the decision of the meeting called pasuara, including chairing a meeting called paruman or sangkepan; b) guide and watch the ordinances and ceremonies (ritual called pengaci) to maintain the sanctity of the Subak; and c) represent the Subak. While members of Subak have the obligations of: a) observe and implement all the rules (awig-awig, perarem and pasuara); b) attend and participate in decision-making in the meeting of members; c) willing to be involved in the management in accordance with the agreement (perarem or pasuara). In addition, members of Subak have the

![Diagram](Asian Agri-History Vol. 21, No. 4, 2017 249)

**Figure 1.** Subak structural organization (Sushila, 1996).
task to be carried out including: a) maintaining the integrity of the water control system in order to succeed in line with expectations, b) carrying out development and ceremony on Subak, and c) carry out other obligations, such as paying taxes, dues/urunan (which is also called sarin tahun), carry out farming, keeping law and order in the distribution of water and farming, making a report when to sell a rice field. The obligations of management and members of Subak are generally governed by legislation (awig-awig), any changes or additionals are made by decisions in the meeting called pasuara (Suanda and Aryana, 1999; Suanda and Derken, 1999; Artiya, 2011a; Artiya, 2011b; Sutama, 2016; Norken et al., 2016).

**Rights of Prajuru and Krama**

The management of Subak has the right to: a) obtain incentives from the contributions of the members whose amount and portions are in accordance to their position, for example: pekaseh 1000 marks (marks given for comparison among personnel of the board in accordance with its position), the deputy/petajuh 600 marks, secretaries/clerks 600 points, treasurer/juru raks 600 marks Kelihan tempek 400 marks and so on; b) exempt from contributions/dues (urunan) and other forms of levies. Incentives earned by prajuru Subak are derived from urunan (called sarin tahun in the form of a bundle of rice and now in the form of money based on the ownership area of rice fields, around Rp. 50,000/kecoran, namely unit of water obtained, equivalent to 0.4 ha). The amount of incentive that becomes the rights of a prajuru is the remainder of the sum of all urunan subtracted from the cost of implementation of the ritual (parahyangan) during the growing season (generally every 6 months), and then divided in accordance with the portions. Although the management of Subak gets incentives whose amount is generally very small (around Rp. 300,000- the money at current value every 6 months), but the managements of Subak always sincerely implement their obligation without rewards based on ngayah principle. While the right of members of Subak include: a) getting a share of water equitably, b) elect and be elected as Subak management, c) raising opinions and proposals, d) ask permission for not participating in activities or performing activities through deputation or making excuses, e) reporting a violation, f) getting a share of the wealth, and g) receiving good care and treatment (Norken et al., 2016).

In carrying out the obligations and the acquisition of rights, both administrators and members of Subak generally implement the principles of togetherness with the motto: sagilik-saguluk salunglung-sabayantaka (united and mutual respect or mutual assistance). With these principles intensity of conflict in general is very small, although sometimes there is a conflict but it is soon overcome by the management or by patron..

**Patrons of Subak**

In addition to having autonomous and independent management, Subak also has patrons from elements outside the Subak management. In the past, the most
respected. *Subak* patrons were *Sedahan* and *Sedahan Agung*. *Sedahan* / *Sedahan Yeh* / *Pengelurah* is the officer of the District Government called *Kecamatan* that regulates and oversees irrigation water in its territory; while the next higher level of *Sedahan* named *Sedahan Agung* is the officer of Regency Government called *Kabupaten/Kota* that regulates and oversees the law and order of the irrigation system and is an advisor and implementer of the irrigation at the Regency level. Since the introduction of the Regional Autonomous Government at the Regency Level in the 2000s, the authority of the Regency Government plays a vital role in determining the Work Unit of Local Apparatus. This has a huge impact on the existence of *Sedahan* and *Sedahan Agung* gearing towards the obscurity of the existence as government officials patronizing the *Subak*. Lately only the Tabanan regency which is still functioning with *Sedahan* and *Sedahan Agung* (Norken et al., 2007; Norken et al., 2010). In addition, *Subak* is also fostered by the Public Works Department of Regency/City Government and the Sub Department of Irrigation that takes care of the development and maintenance of irrigation structures. As for matters relating to agriculture, it is fostered by the Department of Agriculture, while issues related to customs are supervised by the Department of Culture. Lately various institutions related to *Subak* have appeared like - *sahbantara pekaseh*, forums of *Subak*, assemblies of *Subak* or the like which are basically organizations/associations of *Subak* aim and serve as a consultative and coordinating media between *Subak* and *Subak patrons* and the government.

**The role of the organization in the preservation of *Subak***

Although the *Subak* system is thousands of years old, it is still practiced today. Despite the rapid urbanization and development of tourism in Bali, the challenge in maintaining *Subak* is very heavy. Various challenges include: land use, lack of land ownership and low farming income, interest of youth in the wetland agricultural sector is very low, high risk of crop failure due to pests, decreasing quantity and quality of water resources, and so on. The principle of *ngayah* (working sincerely without expecting anything in return/profit) as a spirit embraced by the *pekaseh*, has given a strong foundation of devotion to duty-related tasks of *Subak* (Norken et al., 2016).

**Subak regulation (Awig-Awig)**

*Awig-awig* are regulations governing *Subak* internally and arranges a variety of activities related to organizations, rights and obligations of the board and the members. *Awig-awig* can be expanded and supplemented with additional rules called *perarem* and *pasuara* (decision of the meeting). *Perarem* and *pasuara* are usually done to adapt to the changes that occur to meet the demands of the farmers as
members of Subak. Awig-awig is the rules governing the implementation of the philosophy Tri Hita Karana in the execution of farming activities in the paddy fields. As a rule, awig-awig generally consists of a chapter called Sarga and Section called Palet, and article called Pawos. Scope of awig-awig include: names and places, the basic principles, membership rules, the rules of the religious aspect, the rules of irrigation, setting fines, etc. Awig-awig is usually explained and written in Balinese language and characters, although lately it is written in Latin characters as well and approved by the Government. Awig-awig of each Subak is generally not equal because it is basically made according to the agreements based on solidarity and fairness to assume the rights and obligations of the principle called: sagilik-saguluk salunglung sabayantaka (unity and respect of Indonesian - called gotong royong). Not all awig-awig of Subak made in writing and approved by the authorities, some Subak set simple awig-awig or even unwritten. In the past awig-awig was not written and only set in a custom called dresta. However, awig-awig is always respected, followed, and adhered to by the members and the board of Subak. Suanda and Derken, 1996; (Suanda and Aryana, 1999; Artiya, 2011a; Artiya, 2011b; Sutama, 2016; Norken et al., 2016).

The role of regulation in the preservation of Subak

Awig-awig which was originally just an agreement with the members of Subak through meetings (paruman or sangkepan), then became a tradition (dresta) and a culture that is based on the belief in Hinduism in Bali, and passed on from generation to generation in conducting paddy farming (irrigation). Awareness in maintaining harmonious relationship between man and God (Parahyangan) becoming the spirit of awig-awig of Subak, and has become a driving force for Subak to continue various activities even today, despite various limitations of modern time. The challenge faced by Subak is the inconsistent regulation of external elements that is supposed to be supporting its existence, such as regulations or statute laws of the central government. For example, the replacement of Bali Provincial Regulation No.02 /PD /DPRD /1972 by the Bali Provincial Regulation No. 9 of 2012 on irrigation has not strengthen the presence of Subak. However, at the national level Subak receives recognition through the Government Regulation (PP) 20 of 2006 on irrigation, but the regulation is not valid and does not have a replacement along with the repeal of Law No. 7 of 2004 on Water
Resources (Gatra, 2015). In future regulatory support from the government is needed in efforts to preserve the Subak that has been recognized as a World Cultural Heritage (Norken et al., 2016).

Conclusion

Subak in principle, is a traditional irrigation system, which is socio-religious and agrarian in nature based on the philosophy of Tri Hita Karana and is recognized as a World Cultural Heritage of UNESCO. Every Subak from a small to large ones has been adapted to the needs of the organization, headed by a Chairman called Pekaseh elected with the principle of deliberation and is very effective in organizing various activities. Sincerity and dedication of the Pekaseh evoke sympathy and respect of the members of Subak who follow and obey all policies that have been agreed and approved together. Each Subak has internal regulations called awig-awig written or unwritten, are carried from generation to generation, respected and adhered to sincerely by the board (prajuru) and members (krama) of Subak. The role of the organization and awig-awig is very important in maintaining and preserving the existence of Subak.

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**Sutha IGK.** 1975. It is a multi-ethnic state comprising of major ethnic groups viz., Nepalis, Bhutias, and Lepchas. According to the 1971 census, the total population of Sikkim was annexed as the 22nd state of India in 1975.  