Reasons Subak Concerving Irrigation Water Resources

Euis Dewi Yuliana, Putu Desiana Wulaning Ayu, Gede Angga Pradipta
University of Hindu Indonesia, Denpasar, Bali, Indonesia
dewi.yuliana1966@yahoo.co.id

Ahad Ali
A. Leon Linton Department of Mechanical Engineering, Lawrence Technological University
Southfield, MI 48075, USA
aali@ltu.edu

Abstract
Subak as Bali traditional organization functions mainly in the distribution of irrigation water in paddy fields, have to reorganize the system of irrigation in rice fields (paddy). Distribution of irrigation water in paddy fields in Bali *subak* be reorganized back in tune with the amount of irrigation water decreased, without having implications for the reduction of rice production per unit area. Thus the traditional irrigation system in *subak* need to be reconstructed and adjusted for the increasingly limited availability of water, by applying a model of renewable in the irrigation system, but the optimum production and to avoid conflicts over water among farmers. In this context there is an interesting problem to be studied, as formulated in the following research questions. Reasons and motives related that provide the impetus for some of *subak* in Bali to conserve water resources. The approach used in this study is a qualitative research, with respect to the research, the emphasis is not on measurement but on a descriptive analysis of the viscous. The study was conducted in *Subak* Gunungsari, Jatiluwih village, and *Subak* Wangaya Betan, Mengesta village, Tabanan, Bali Province. Chosen *Subak* Gunungsari and *Subak* Wangaya Betan as a test site, not in spite of the uniqueness has happened to conserve water. There are several reasons why farmers of *Subak* Gunungsari and *Subak* Wangaya Betan, conserve water resources, among others (1) Water is an important factor in rice cultivation, without water it will not happen a life, no live no water so water is an essential component that must exist in a life. Similarly, in the agricultural sector can not be separated from the use of water to produce agricultural products, especially in rice cultivation. (2) Preservation of *subak* depends on the presence of water, because water is a material object that is managed by *subak*. Without water, the water control system does not exist, and without *subak* the system of rice fields in Bali as the rice will not be able to run optimally. (3) the longer the presence of water and declining water resources. (4) there is competition in water use between the domestic sector, tourism, animal husbandry, and agriculture it self.

Keywords
Concerving, water irrigation, degradation, *subak*

Introduction
At this time there is a tendency preservation *Subak* declining, this is caused by several factors, including a very low interest of young people to work in the agricultural sector, the narrowing of the rice acreage due to land use change, the modernization and technological change fairly high hit many aspects of community life, as well as decreasing the quantity and quality of irrigation water. If these problems are not addressed, Bali is not only a possibility to lose one's unique culture, but also will have a wide impact on the environment on the island of Bali (Surata, 1999; Lansing et al., 2001).

The same thing also expressed by Sedana (1999) that the quantity and quality of irrigation water is currently decreasing. At first farmers *subak* members never questioned the state of irrigation water because the numbers are still abundant, and its use is not so complex. However, along with the development of both rural and urban areas, the need for water is increasing and then the water is initially almost used only for agricultural purposes, is now being utilized for non-agricultural purposes. These conditions resulted in farmers feel the low quality of irrigation water due to industrial waste disposal that could no longer be tolerated, and the amount of irrigation water they get from the river became less and less for farming purposes.

In connection with this, *Subak* as Bali's traditional organization functions mainly in the distribution of irrigation water, which has long made important paddy crop cultivation in paddy fields, had to reorganize the system of

irrigation in rice fields (paddy). Distribution of irrigation water in paddy fields in Bali *Subak* be reorganized back in tune with the amount of irrigation water decreased, without having implications for the reduction of rice production per unit area. Thus the traditional irrigation system in *Subak* need to be reconstructed and adjusted for the increasingly limited availability of water, by applying a model of renewable in the irrigation system, but the optimum production and to avoid conflicts over water among farmers.
From the results of preliminary observations in the field directly by Yuliana (2012), there are some *Subak* like *Subak* Wangaya Betan , *Subak* Gunung Sari and *Subak* Belulang, has implemented a system of renewable water in farming. Some of *Subak* in the pattern of farming has been to strive for the preservation of water resources can be sustainable and well maintained by regulating the pattern of distribution of irrigation water to the rice fields as efficiently as possible. The efficiency of water usage is done without having to cause rice productivity per unit area decreases. Associated with the so requires a model that is able to provide information and can be used as an alternative policy or decisions regarding the use of irrigation water resources, towards a more efficient use of land, especially paddy rice plants in Bali *Subak*. In this context there is an interesting problem to be studied, as formulated in the following research question. What are the reasons and motives related that provide the impetus for some of *Subak* in Bali to conserve water resources?

Methodology

The approach used in this study is a qualitative research, with respect to the research, the emphasis is not on measurement but on a descriptive analysis of the viscous (Bungin, 2006). The study was conducted in *Subak* Gunungsari Jatiluwih village, and *Subak* Wangaya Betan, Mengesta village, Tabanan, Bali Province. Chosen *Subak* Gunungsari and *Subak* Wangaya Betan as a test site, not in spite of the uniqueness has happened to conserve water. Types of data collected in this study is qualitative data supported by quantitative data as supporting data. The data collected in this study were derived from field data and document. Data was analyzed using qualitative analysis, through a three-stage process: data reduction, data presentation and conclusion.

Results And Discussion

Water is Important Factors in Rice Cultivation and Sustainability Subak

One of the important and major factor that controls all aspects of life in the world of living things is water. Without water it will not happen a life, "no live no water" so water is an essential component that must exist in a life. Similarly, in the agricultural sector can not be separated from the use of water to produce agricultural products, especially in rice cultivation. Rice crops require water in the process of growth, such as those expressed by one of the informants in the field, Mr. Krishna (47 years old) in *Subak* Gunungsari, Jatiluwih Village, Penebel, Tabanan Bali which states as follows.
".... The water is an important factor in rice cultivation techniques, it seems impossible in the absence of water rice crops can be grown to produce rice. Because water is so important role in the growth of rice then it became one of the reasons why we need to conserve water resources. Absence of water means that we will not be able to eat, because our main food is rice, rice there when the rice plant can grow to produce rice, water is necessary for it .... "(Interview, April 2014).
From the expression above it can be seen that the main reason farmers in *Subak* in conserving water resources is the water utility is very significant in paddy rice cultivation. Without water, the rice crops will not grow properly and optimally, so that the position of water in rice cultivation is vital, as the above expression "no live no water".
Until now, the agricultural sector, especially in rice cultivation technology, could hardly be separated from the need for water. As in the case of rice cultivation on ecosystems *Subak* in Bali, it is certain that water is an important factor. Since the organization's own *Subak* is a traditional organization of farmers in Bali, which is based on the need for irrigation water, *Subak* organization often referred to farmer organizations irrigation water users in Bali (Yuliana, 2010). *Subak* even have the right to autonomy in regulating the need for members of *Subak* irrigation water itself.
The same thing also expressed by I Nengah Suarsana, SH (51 years old), one of the farmers cooperative in *Subak* Wangaya Betan , Village Mengesta, Penebel, Tabanan Bali which states as follows.
".... Not too much if our farmers in *Subak* assume that water is one of the sources of life. Without water we can not grow rice in the rice fields, this is different from planting rice in the fields. That's what distinguishes us from other farmers, where we are incorporated in *Subak* system. *Subak* system itself itself is nothing but a traditional organization in Bali that regulate the distribution of water. Without water, in addition to rice can not be grown, *Subak* system also could not walk and just name, that's why we have to preserve the water resources of this .... "(Interview, May 2014).

From what is expressed by informants in the above it can be seen that in addition to the water plays an important role in the growth of rice crops (Figure 1), water is also an important factor for the sustainability of the water control system itself. Without water, the irrigation water management organizations in Bali, known as *Subak*, will become extinct, because the material objects that are managed by *Subak* is no longer that of water (Figure 2). Thus, the role of water as a great means for farmers in *Subak*, so that farmers in particular have an obligation and responsibility to preserve it.

Figure 1. Water Important Role in The Growth of Rice
(Photo Documentation: Euis Dewi Yuliana, April 2014)

Subak is a community organization that specifically regulate irrigation system used in rice cultivation (Purwita, 1993). *Subak* is defined as a traditional irrigation system in Bali, is one example of excellence and cultural identity that can be displayed as a cultural studies. *Subak* system has been shown to have advantages with the concept of farming culture with its philosophical foundation is *Tri Hita Karana* (three causes of happiness) (Jelantik in Sirtha, 2008).

Figure 2. Material Objects are Managed by *Subak* is Water, Without Water There is No Longer *Subak*
(Photo Documentation Euis Dewi Yuliana, April 2014)

Systems and ecosystems *Subak* in Bali can not be separated from the farm system. Very difficult to separate the rice fields with *Subak*, so that every mention of the word *Subak*, then you have in mind is the expanse of rice fields. Thus the role of rice paddies in Bali and food production can not be separated from *Subak*, as the organization of irrigation water control. *Subak* has a very large role in producing food, especially rice, which is done by the farmer members *Subak* as managing ecosystems. Without water, the water control system does not exist, and without *Subak* the system of rice fields in Bali as the rice will not be able to run optimally.

Subak is not only a stunning expanse of rice fields, but in it there is a lot of value as value management, deliberation, democracy, participation, fortitude, justice and solidarity are actualized in terminology, called mutual aid, as well as adherence to the teachings of Hinduism especially sradha and bhakti. In this case actualized by which water control system has one or more *Bedugul temples* to worship the Goddess Sri in the manifestation of God as the Goddess of

Fertility. So *Subak* as a traditional organization of irrigation water management, it also implies that the values universally valuable,, it can last forever, then water as something that is managed by *Subak*, must be preserved.

Competition Water Utilization

There is no any outside power that can affect the strength of *Subak* autonomy in managing irrigation water for the benefit of its members. But now that the power can not be guaranteed almost entirely because most of the power of *Subak* has been disabled by the external power that ultimately thins internal strength *Subak* it self. So that the weaker the *Subak* organization in maintaining the strength of autonomy owned over the years, including in managing irrigation water. So it is not uncommon case of irrigation water shortages in some ecosystems *Subak* in Bali, which in turn in addition to the internal conflict in *Subak*.

Water is often a source of conflict in society in the last decade because of competition utilization of water use. The use of water utilization with different interests such as household, the tourism industry (Figure 3), agriculture and livestock, causing a struggle for water is increasing. The need for domestic demand (household), tourism, livestock increasing from day to day, in line with the increase of population, tourism menggeliatnya, and supporting factors such as farm tourism causes water demand for agriculture (rice cultivation) is increasingly limited. On the other hand the existence of diminishing water resources due to the destruction of forests in the upstream, causing water consumption increased competition. This is similar to what is disclosed by Jro Mangku Prajapati (70 years old), one of the farmers in *Subak* Gunungsari, Jatiluwih Village, Penebel, Tabanan Bali, which states as follows.

"... Now the use of water is getting tight, many water companies has been ploting existing water sources here (study site), and fetch water for his company from this region. In addition it is also rapidly expanding poultry farm, first here there's only the number of chicken farms only a thousand, but now has grown to hundred thousand for one breeder. The farmers take water from a stream or small river by means of pump it with a pipe, and there's even willing to take the underground water by means of drill. Also the rise of the current tourism in our village led to the need for water outside the agricultural sector also increased. Here the water used is not an obstacle, here there are many water sources , since this area is an area upstream of the island of Bali. But now many water sources that are already dead (somewhat downstream), meaning that there is no more water. We do not dare to speak anything because all the existing permit from the government. If this is allowed to continue, than our job as a farmer will be loss .... "(Interview, May 2014).

From the above statement it is known that in the field of competition is now happening in the utilization of water. Water is not only contested its use for drinking water (household), but also used for other purposes, such as large-scale farms and also stretching the increasingly vibrant tourism, all of which require water in capacity / large quantities. So this affects the amount of water received in the agricultural sector are diminishing.

Figure 3. Location Offering Panorama Research Natural Beauty, Being the World Tourism Destination (Photo Documentation Euis Dewi Yuliana, May 2014).

On the other hand, I Ketut Riksa (55 years old), a farmer cooperative in *Subak* Wangaya Betan , Village Mengesta, Penebel, Tabanan Bali stated as follows.

"... We as farmers feel now a bit of trouble getting irrigation water, had never been a turn distribution of irrigation water, but this time it has been done on *Subak* members. This is due to the reduced amount of water available for agriculture. Of the importance of water utilization can be our competition is understandable, since the raising of cattle also are our brothers, but let this water arrangements should be fair, and the government should set it in this regard. And all parties have to be thrifty in the use of water in any form including us in planting rice in paddy fields also had to downsize, so that all the water gets .... "(Interview, April 2014).

From the expression above interviewee can understand that water should not be monopolized by the agricultural sector. Division of water to be evenly, all must receive water distribution, water is needed by all sectors of life, without water, life will not be rolling. Amid the limitations of water then the only way to be taken is to implement efficiencies in the use of water for optimal results.

Concerned with the problems mentioned above, the water originally conceived as something that res nullius (no one has), it means that if an object that has never been owned by someone (or other legal subjects), can then owned by people who have managed to master it so that no No more other parties who perform resistance to such authorization, while the right to water is a form of water that was born in relation to human rights. Explicitly indeed there are only two major human rights conventions which mentions the existence of the right to water as part of human rights. Making it clear that the right to water is an effort to determine who has and does not have water. It is important for investors to insure their investment. So not surprisingly, there is a presumption that the Law No. 7/2004 on water resources is the first step of the privatization of water resources in Indonesia (Santoso, 2005).

Law No. 7/2004 on water resources is the first step of the privatization of water in Indonesia, this is because the law is based on the perspective, looking at water as an economic good that is evident with the implementation of the right to water. Water rights are based on the concept of water right (which is very different from the concept of the right to water). Water rights refers to the concept of property rights (ownership) gives the freedom and authority to the person who has been deemed legally have water.

When the fierce competition between the domestic sector, tourism, agriculture and animal husbandry has not occurred in the use of water, water control system is able to distribute irrigation water very well to all members of *Subak* in accordance with their needs and perhaps even excessive because of the availability of irrigation water in abundance. But it is now almost unheard of in most of *Subak* in Bali, as a result of intense competition between the various sectors as well as the presence of deforestisasi which tend to reduce water resources. If it is not managed properly, the wider impact threatens the sustainability of agricultural systems, especially paddy farming on ecosystems *Subak* in Bali. One of the efforts made by farmers to overcome this is to conserve the use of irrigation water in order to produce optimal results. As such it is one of the reasons why farmers conserve water resources.

In addition to the efforts made by farmers in managing irrigation water in order to continue kebermanfaatannya the Law of water use not only refer to Law No. 7/2004, but should refer to the 1945 Constitution. Where the water is a human right protected by the 1945 Constitution and used to meet the lives of many people. Because it must be guaranteed access to water for the sake of people's welfare state is not only merchandise.

Conclusions

The conclusions of this study are as follows. There are several reasons why farmers *Subak* Gunungsari and *Subak* Wangaya Betan, to preserve water resources, among others, (1) water is an important factor in rice cultivation, (2) the preservation of water control system depends on the presence of water, because water is a material object managed by *subak*, (3) the longer the presence of water and declining water resources, (4) there is competition in the use of water between the domestic sector, tourism, livestock, and agriculture itself.

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Biographies

Euis Dewi Yuliana is an Professor in the field of Agricultural Social Culture. He completed his bachelor degree at the Faculty of Agriculture, University of Mataram, Mataram, Indonesia with a study program in Soil Science and Fertilization. Then the master's program was achieved at the Bogor Institute of Agriculture, Bogor, Indonesia with the Soil Science study program. The doctoral program was achieved at Udayana University, Denpasar Bali, Indonesia under the Cultural Studies study program. And the post doctoral program was won at Leiden University, Netherland. Much of his research refers to the agricultural system in Subak, the traditional irrigation organization that exists in Bali, Indonesia, with funding from the Ministry of Research, Technology and Higher Education. And has published scientific articles in several international journals.

Ahad Ali is an Associate Professor, and Director of Master of Engineering in Manufacturing Systems and Master of Science in Industrial Engineering in the A. Leon Linton Department of Mechanical Engineering at the Lawrence Technological University, Michigan, USA. He earned B.S. in Mechanical Engineering from Khulna University of Engineering and Technology, Bangladesh, Masters in Systems and Engineering Management from Nanyang Technological University, Singapore and PhD in Industrial Engineering from University of Wisconsin-Milwaukee. He has published journal and conference papers. Dr Ali has completed research projects with Chrysler, Ford, New Center Stamping, Whelan Co., Progressive Metal Manufacturing Company, Whitlam Label Company, DTE Energy, Delphi Automotive System, GE Medical Systems, Harley-Davidson Motor Company, International Truck and Engine Corporation (ITEC), National/Panasonic Electronics, and Rockwell Automation. His research interests include manufacturing, simulation, optimization, reliability, scheduling, manufacturing, and lean. He is member of IEOM, INFORMS, SME and IEEE.