

Creation Subak's Social Capital: Improving Water and Land Management At Subak Guyama, Tabanan Regency

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Abstract

Until recently, few attentions have been paid on the true meaning of social capital due to lack of data availability and problem associated with its measurement. This research attempts to bridge such a gap by conducting a study of social empowerment of households through social capital reinforcement for improving natural resources management such as water and land management. The premise of this research is that social capital variables (trust, network and social norms) play an important role in natural resources sustainability program. Based on those premise, it is imperative to understand the link between social capital and natural capital especially water and land which are important factor in farm areas in Bali Province. This study, therefore, attempts to model such a link by qualitative analysis. The result show that In Subak Guyama, Bali Province, social capital can increase household income in three ways: (1) by improving individual participation in a social network so that reducing transaction cost which is important in improving people's earnings. (2) Improving people's participation in local network and reducing rent seeking behavior so that it would facilitate collective action, (3) extending network and enhancing the level of social trust so that making villager have information about price, innovative technology and education services.

Key Words: *Social Capital, Natural Resources, Sustainability*

INTRODUCTION

1. Back Ground : Environments Degradation Problems

Economic development is a normative concept that should not only address for the achievement of one generation, but also to the next generation. The concept has a message the existence of justice ethics among generation. Principally, development is harmonic changing process between resource exploitation, investment, technological and institutional changing. The efficiency of resources management will determine economics growth and social welfare. However, many fact indicate that development will changing community behavior especially means of natural resources management which tend threat resources extraction sustainability.

In Indonesia, New Order regime has claimed achieve high economic growth during the power. However, n fact, the growth has been accompanied with pollution and degradation of natural resources and environment such as water and land especially for agricultural activities. The high economic griow, in fact, is result from unwisely and inefficient of natural resources management and also do not consider local community participatory that own local wisdom. Besides that the economic growth not yet been compensated with various damaging impact.

Tendency to overexploitation on resources, both for natural and artificial resources is not only experienced in Indonesia. Other nations in the world also face the

same problems, especially for any resources that due to the characteristics cannot individually extract (common resources). Limiting management effort to exploit “common resources” will result degradation problems on the resources. The existence and resources management have placed the importance of concept and theories to manage the resources.

Often, environmental degradation was caused by the existence of income gap, low education level and unequally politics power distribution (Torras and of Boyce, 1998). Higher education level and broader power distribution broader will bring positive effect on environment quality. On the contrary, Scruggs (1998) stated that income gap do not give significant effect on environmental degradation. Research by Torras and Boyce (1998) and Scruggs (1998) becoming confirm that resources and environment degradation are not only economic problem but also institution. Pretty and Ward (2001) showing various example of bonding and social behavior that reflected in common activities have affect on environmental performance.

The expanding opinions by various works and theoretical result were initiated consideration of institution roles in the concept of economics growth and regional development. The institutional effect on many resources degradation is clearly appearing especially for common pool resources (collectively own resources). The characteristic cause market mechanism fails to create incentive for correct price. Institutional problems that related to the characteristic of common pool resources are including non existence of private property right, existence of free rider, corruption behavioral and rent-seeking.

In Bali, most of agricultural sector is common pool resources, for example irrigation channels and land that used as subak’s road and common pray place in subak. Togetherness feeling and wisdom value in subak organization are primary factors for sustainability of water availability and the land. Subak is a traditional irrigation institution that managed by farmer in rice field. The principal matter that will be explained by the paper is how institution by means of social capital can affect community performance in to maintain natural resources and environment that able to reduce degradation problems especially water availability and rice field management in Bali.

2. Problems Identification

The existence of Subak has been challenged since the expanding of tourism industry in Bali. Conversion of agricultures land use to non-agriculture is the main factor that threatens the existence of subak. As traditional irrigation institution that characterized by socio-agrarian-religious, subak often has no economics orientation. Though sectoral transformation that experienced in Bali from agricultural to industrial sector have changing community behavior – from non-materialistic to materialistic, from productive society to consumptive society. The changing often disregards local wisdom values that contain in subak which emphasized on water and land sustainability in Bali.

As so far, Subak Guyama and Subak Ayunan are represent two kinds of subak that still maintaining traditional local wisdom values. Subak Guyama located in District of Tabanan while Subak Ayunan located in District of Badung. Any effort to maintain the traditional values meaningless fortify subak from progress. Members of Subak in the two

districts always cope to be innovator and have applied efficient farming system for water use and applying inorganic fertilizer to recover natural rice field ecosystem.

3. The Objectives

This research was aimed to study social capital in an agriculture society linked with effort to maintain water and rice field sustainability. In detail, the research's objectives are :

1. To study local wisdom values in subak organization
2. To analyse subak networking utility on farmer's income improvement.

4. Water and Land: *Common Pool Resources (CPRs)*

In the context of spatial planning and resources management, we always deal with various common resources. Understanding of theories and management principles for space and the existing resources are critical. For further improve our knowledge about the commons (collective ownership), the paper try to summary various basic ideas concerning concepts for the commons and common pool resources.

"Goods" is a common term to call for every thing (in the form of tangible and intangible goods) that having positive character. On the contrary, philosophically, things or goods that has negative connotation like corruption and pollution, usually refereed as "bads". The basic concept and nature of various goods is the basis for wise and sustainable management. In certain cases, of vital importance to differentiate goods to the nature of its domination, like personal goods or private with goods had or mastered collectively/together is (collective).

In economics sciences, collective goods or social goods was interpreted as public goods which can be provided in the form of private goods and provided by government for some reasons (social policy) and financed by public fund suvh as by tax. In other word, collective goods are described as goods for everybody in a given community. In economic, privat good was defined as private ownership, and characterized by : (1) excludable, cannot consumed by everyone because the consumption will reduce potency to be consumed or cannot be consumed by other party, and (2) limited (due to rivalness). Private good represent the reverse of public good because almost exclusive to create profit. Example of private goods are bread, there is a limit number of bread, bread that eaten by a person can not be eaten by others. Tables 1 depicting classical division of goods according to the nature, namely rivalness and excludability.

Tabel 1 Goods classification by the nature of rivalness and excludability

Classical division of economic goods		Excludability	
		Yes	No
Rivalness	Yes	<i>private good</i>	<u><i>common pool resource</i></u>
	No	<u><i>club good</i></u>	<u><i>public good</i></u>

The terms of Common Goods is refer to various concepts. In popular language, the goods describes as specific goods that shared and benefited for (almost) all of the

members in a given community. In economics sciences, the terms called as competitive non-excludable (competitive goods that cannot be made exclusive). In politics and ethics sciences, promoting common good mean to give advantage for society members or in our state ideology "to the best people prosperity ". So that managing of common goods mean to serve everybody or at least the majority, or equivalent with public prosperity (welfare). Resources that fall into Common Pool Resources (CPRS) is also known as common goods. Club sometimes, common goods and club goods classify into broader definition of public goods (in tables marked with shadow).

The term of public goods is used to distinguish goods that characterized by non-excludable and non-rivalness with the meaning that it is impossible to prevent any individual to consume the goods, e.g. clean air, software, science, orderliness and peace. Clean air can be classified as public good because it is difficult to prevent / limiting people to breathe. However, in fact, it is technically difficulties to find exactly pure public goods. In Bali, irrigation water becomes one of the examples of common good however often become public goods.

The nature of non-rivalness and non-excludability of irrigation water usage generate many problems both in production and management process. Specifically, the economies called as instantaneous market failure. Issues of public goods management (public good problems) has become long and serious scientific polemic and debate because as crucial argument to determine market roles in economics. More technically, problems of public goods is relate to broader issues about externality.

The first theory of Public Goods has been developed by Paul Samuelson. Classical Paper of Samuelson (The Pure Theory Public Expenditure) has defining public goods as "*collective consumption good*" such as follow:

...[goods] which all enjoy in common in the sense that each individual's consumption of such a good leads to no subtractions from any other individual's consumption of that good...

Analog with public goods, there is also known public bads, that is creating negative externality effect, that attached the nature of non-excludability and non-rivalness. In economics, public good is non rivalness goods. In other words, consumption by an individual is not reduce the availability for others. If an individual eat a cake, there is no cake for others, however breathing or drinking water from river stream do not significantly reduce amount of available water or air.

The term of public good is often used for non constrained or non rivalness goods. In other words, it is impossible toe prohibit any individual to use it. It is not possible to prevent people for breathing. These goods are referred as Pure public goods. Public Good is not always as production result but naturally available. Public goods that resulted from production process can be carried out by individual (private), company or as non government collective action.

Basically, debate on common pool resources are include two important issues that is : (1) concepts related to the management system and (2) accompanying property rights. In general, resources classification on benefit and resources characteristic basis can be grouped in to 4 ownerships: private, club, quasi public goods and pure public goods. In broader context, public goods (CPRs, Club Goods, and Pure Public goods) are including: defense, law enforcement, fire fighting department, clean

air and environmental services, mercusuar, information, software, invention, and articles.

The term of common goods tend to has difference concept. Popularly, common goods describe specific shared goods and exploited by many people in a given community. This is also can be defined in broader context in philosophy, ethics, and politics sciences. However, in economics, Common Good used for competitive purpose.

Public Goods is different with common pool resources (CPRS) due to the difference of key relate to benefit and access to the resources. CPRS is collectively ownership by a given group or community where is the management approached to private property management while public goods (characterized by non-excludability and nonrivalry) tend to be open access and often the benefit controlled by the strongest groups or groups with access to the power. CPRs is one category of impure public goods (quasi public goods) such as aqueduct, coastal, shepherd field, river, ground water, and tropical forest (Ostrom, Gardner And Walker 1994)

The term of Common Pool Resources is re-invented more specific by some researcher that pioneered by Elinor Ostrom to explain resources characteristic that having two keys characteristic. First, characterized by substractibility or rivalness in the exploitation, that is any consumption or harvesting by any person will reduce others quota or ability to exploit the resources. The example are coal, petroleum, renewable resources, fish and air, that is more and more people in the space will cause congestion and uncomfortable feeling. Second, the existence of cost that must be pay to prevent the access from other parties to be beneficiaries.

The effect can be either significant or not significant. Basically, fresh air is substractability in nature, however in real life above the atmosphere, air that we breathe appear not limited. In the past, especially in abundance areas, water appear unlimited available. In fact, the availability of air and water is limited and reflect CPRS but in certain conditions, the limitation of its availability disappears.

The limitation problem arising from the existence of overuse tendency (overexploitation) and as result disturb others potency to exploit. The overuse tendency will cause congestion as result of imbalance between and supply and demand at given times. For example, there is traffic jam in street because of many cars in limited space. Street space resources are available for log terms (not quickly used up) however in certain times will be limited (at the morning and evening when people go to/come back to home). Other phenomenon, for example, is availability of clean water by PDAM network, electricity current, phone extension, natural gas network, etc. The overuse tendency will result degradation (damage). There is resources when abundantly harvested, exceed than critical value, will be lost (unrenewable). For example, eroded land that exceeds tolerable soil loss, will be critical land. Overexploitation on a resources that exceeding natural regeneration ability will be totally lost, e.g forest that harvested more than successive ability, fish that catch by fisherman.

Concerning of the second characteristic of CPRs, that is cost that should be paid to prevent access by parties, as public goods, CPRS have the same problems that is existing free rider (benefited parties but have no contribution on costs to provide, maintain dan regulating the resources management). *free rider* that exceed certain limit will threat production system sustainability. For example, electric current stealing will threat electric production system.

The tendency of overuse and free rider represents the problems and at the same time as character of CPRs resources. Due to the reason, it is necessary to have institution system and mechanism that able to prevent or avoid the problems.

In this time, CPRs is not only concerning natural resources but also artificial and new resources that created by human being. Condominium, is an example of mix ownership of private and collective. We also develop common resources, for example internet and server to access website that depicting character of common pool resources. It is hard to prevent others person to access it.

Some people has argue that common property resources will be disappear in few decade forwards, as disappearing and decreasing of the roles traditional local community to control and manage their traditional resources. Political history of natural resources control in Indonesia has been characterized by transformation of indigenous property resources that controlled by custom society/customary right (traditional common property) to ownership and domination by state (state property) and private property. The death bell of traditional common property assumed only a matter of time and the transformation to state management and privatization often assumed as prerequisite for the more modern future.

Empiric fact concerning resources control transformation as explained above is significantly confirm domination of state with and without private sector involvement on strategic resources. However, problems concerning of common-pool resources management will never end and continuously significant in development of theories and sustainable management ploicy for water, air, and forest resources.

Edwards and of Steins (1999) stated that dynamic strengths from CPRs user e.g. social, economic, politics, institution changing and technology has significant effect management strategic for the CPRs. The effects is not only on demand side, but also on supply side and resulting benefit].

Farmer Empowerment in Bali : Develop Subak's Social Capital

Economics transformation in Bali from primary sector to tertiary sector have placed agricultural sector in marginal position. Although Bali have traditional agriculture system that still relevant to be defended, and as pillar for agriculture development in Bali, that is by subak system. Irigrasi channel and irrigation water in Bali is common pool resources that managed by subak organization. Study from many experts shows that subak institution is traditional institution that proved able to maintain the existence of agriculture farm and water and food availability in Bali.

Neglecting of Subak roles for Bali development will restrict the extension of subak network. Assistance of subak is more emphasizing on agriculture product improvement and yielded by the member while development of partnership that capable to improve value added is relative disregarded. The situation continuously run from year to year and the result is disability of agricultural sector to catch up rapid growing of tourism sector. In fact, most of tourism sector demand on agricultures product is served from outside Bali Island even imported from foreign countries. Balinese farmer do not enjoy any generated benefit from tourism activities due to weakening of subak's capital social bridging relative to capital social bonding (Utari, 2007)

Any efforts to empower the farmer are impossible to be implemented without network development and subak management so that all subak activities has economic orientation, not only emphasizing on social activities. However, it is not means that

social-cultural characteristic of subak allowed to be totally disappeared. Effort to develop subak capital social especially for network development with the government, private sector and University have improved production quantity and selling value and also higher benefit level both for Subak Guyama and Ayunan.

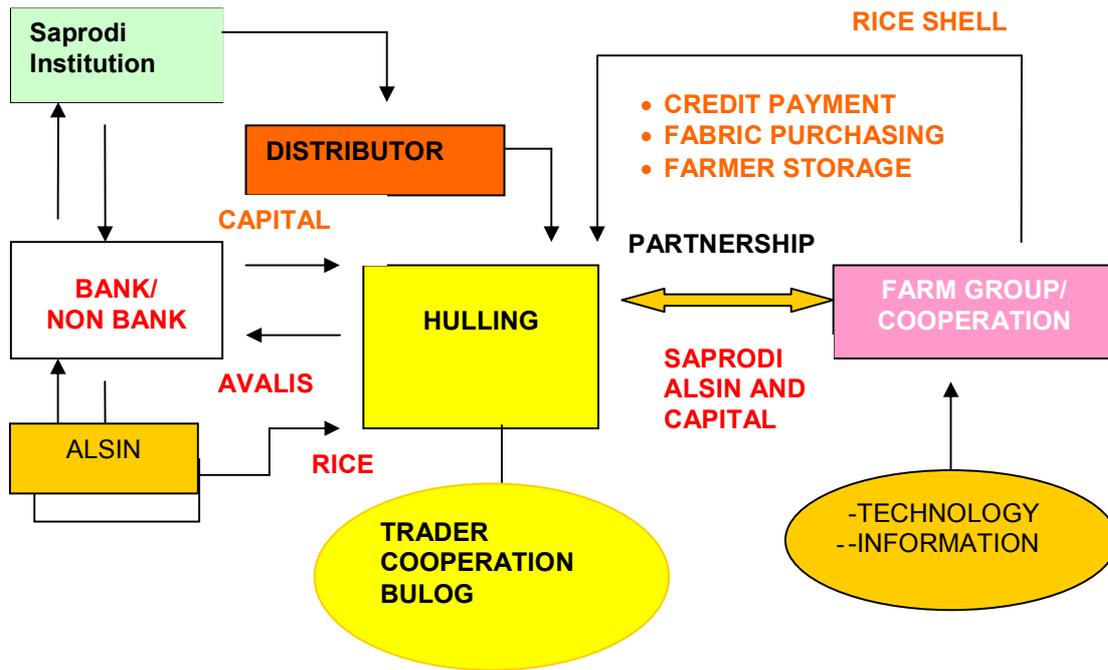


Figure 1. Cooperation network that established between subak as social organization and relevant parties.

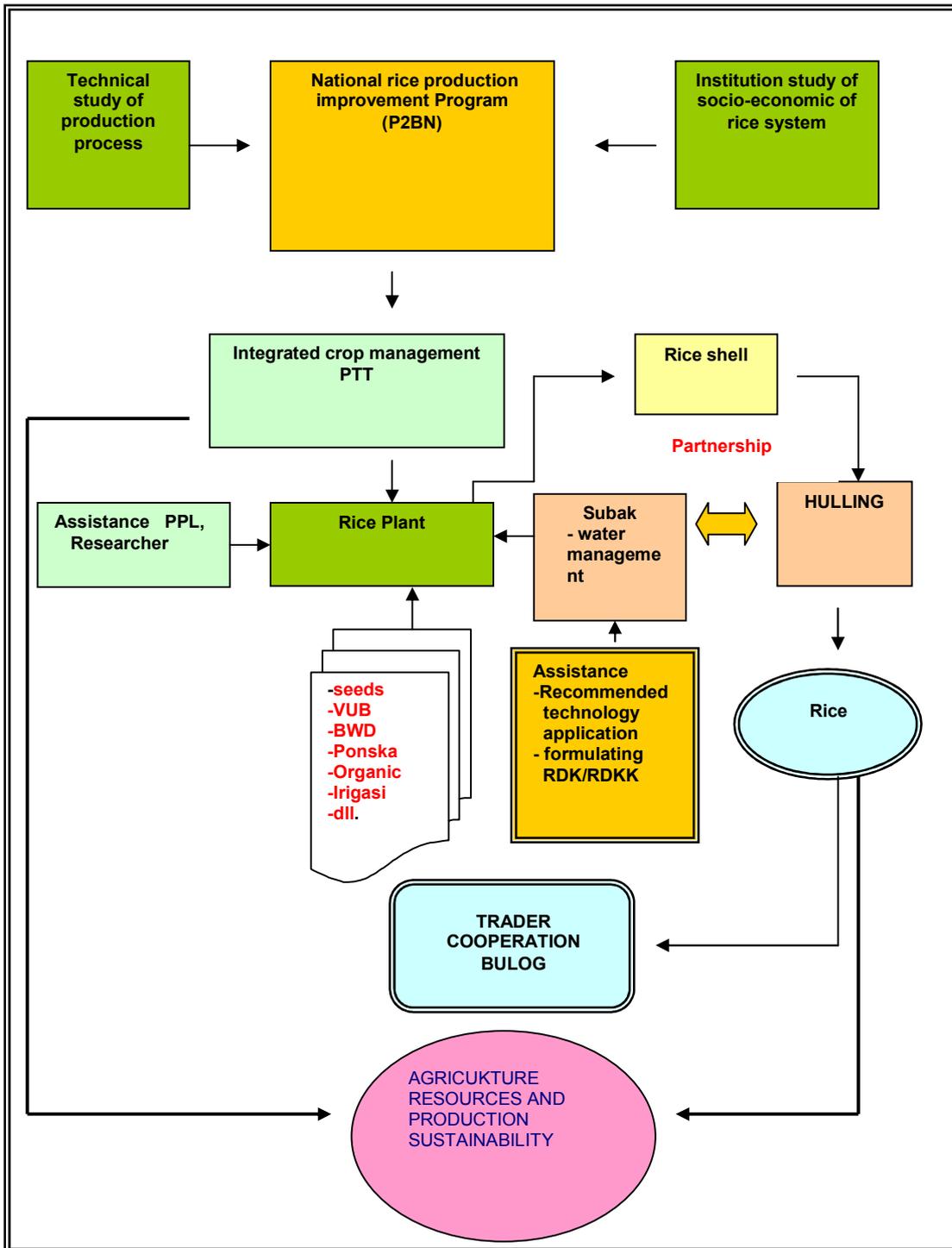


Figure 2. Subak cooperation network model to achieve national rice production improvement Program

EMPOWERMENT PATTERN OF SUBAK INSTITUTION

As so far, local autonomy often still become a discourse that give opportunity to local small powers that indifferent with old pattern. Autonomy at community level remains walk improperly that creating apathetic society to what has been implemented by the government. Any implemented program after local autonomy is not yet addressing root of problems that exist in rural areas because the planning still minimize public involvement. Though the autonomy was aimed to improve community involvement to manage local resources that able to be optimally used for public welfare. Local autonomy policy should not desist in district level but touch the community level.

Autonomy is not merely delegation effort from center government to local government but efforts to make effective public services. Therefore there must be transparency, participation, responsiveness, interaction and accountability between local government and society. The government will able to achieve the autonomy target if good governance can be realized (trustworthy government) by intense communication and collaboration that able to empower smallest administrative territory.

There are immeasurable community empowerment pattern that depend on space, time and ethnic of interested subject of the empowerment process and the stakeholder. For the Balinese that having own characteristic, empowerment pattern for rural society should be relied on three pillars namely economics, environment and institution

Empiric experiences indicate that there are strong linkage between the successful community empowerment and effectiveness of development either for broader level (local and national) and grassroots level. The marginalization of grassroots level from development benefits will sharpen existing conflict. Community become receiver of negative externality from development project and will fight the inequality. The conflicts will reduce working productivity and government. Therefore, development planner should consider community participation in development regions.

INSTITUTION ROLES IN COMMUNITY DEVELOPMENT

Institution has been interpreted as embraced or obeyed rules or organization that established by a given community to make transaction each others. Institution also interpreted as organization or formal and informal arrangement that control behavior and action of given community, in the daily activities and also as efforts to achieve certain goals. The are various institution in community ; having genuiness character from custom adaptation hereditarily, or created by inside or outside community.

Institution is rule of the game in society that formally can be said as means of human being to arrange individual member behavior that build interaction among members in society. In some cases, institution is constraints for individual members freedom because individual often make action that generating externality especially the negative one, that threat common interest. Therefore, society needs to limit the individual freedom in order to make the behavior meet to community interest.

There are three categories of institution, that is: (1) Constitutional Order, (2) Institutional arrangement, (3) Normative behavioral codes. The first category stated basic rules about how to organize the community, the rules for making rules. Institutional arrangement was constructed according to rules that specified by constitutional order. The arrangements are including laws, order, association, land property rights and contract. Normative behavioral codes are cultural values that

legitimate the arrangement and limitation. Constitutional Order and normative behavioral codes expand slowly, while institutional arrangement is easier to be modified.

An institution will be functioning and obeyed by the members if contains incentive structure of rewards and punishment. The effectiveness of transaction in the organization will be determined by who has power in each decision-making process.

Intrinsically, organization represent a media to make negotiation among the members and the management in determining organizational target and direction and conducting necessary activities to improve productivity in implementation activities to achieve organization purpose. Besides that, also represent place to make cost and benefit transaction between the members and the management.

Informal institution that rooted in society often has tested wisdom that able to overcome any existing conflicts with cheap transaction cost. The society by means of rooted informal institution has wisest means to manage their resources based on knowledge and experience that inherited from their ancestors. Carefully resources management system should be based on society interest because the resources are source of subsistence for them. Institution that deeply rooted in agriculture community in Bali is Subak. In some region, subak is a formal institution with written rules, however in other areas, subak still represent an informal institution because only has unwritten rules. Besides the subak, agriculture society in Bali also has Sekaha, a social instituion, as a part of village, having close interaction among the members.

Subak and Local Wisdom : improving land Productivity and efficiency of rice field water usage

Understandings of local wisdom that exist in a region require understanding of the culture. According to Geertz (1973), culture are configuration of values system, qualitative meaning and idea development in life. Conceptionally, local wisdom is part of culture. local wisdom is traditional culture element that deeply rooted in human life and community that related with human resources, source of culture, economic, security and laws. local wisdom can be viewed as a tradition that related with farming activities, livestock, build house etc.

Revitalization of local wisdom should be viewed in holistic manner from two different option and not stand in opposition, not trapped in narrow traditionalism echo and fanatic to face present and future reality which more and more complex. The option for revitalization of local wisdom are : (1) local wisdom in static, dogmatic, and fanatic of past traditionalism context that related with historical establishment and excellence and (2) local wisdom in context of present transformation and adaptation and dynamic, flexible and selective on changing in the future.

Local wisdom can be classified as part of social capital that should be paid attention in the implemented development. Local wisdom, in the form of norms and traditional network will be sustained if trust feeling among society members established as basis for moral behavior.

Morality provide direction for social coordination and cooperation of all activities so that human being can coexist and interacted each others. Build of trust feeling is the part of affection process that early established in a family. As long as trust feeling exist in behavior and family relationship, hence the reciprocity and trade off principles will be established (Bordieu, 1986; Fukuyama, 1995). The cases can be observed in subak society in Bali.

As traditional organization, members of subak always has behavioral basis on religious teaching that emphasize the relationship balance between God, human being and the environment. Effectiveness of subak in managing irrigation resources for agriculture activities have been confessed by foreign countries. Members of Subak is farmer which process agriculture farm in one irrigation stream so that dependency of each member on availability of water binding the subak members with common purpose to to maintain the irrigation system. Any arising problems and/or conflict that exist among the members will be resolved according to awig-awig (the rules) or sima (norms).

Subak is water management organization for agriculture activities that has been long time established and as so far still plays important roles in efficacy farming in Bali. During the time, there is no formal contract system for each subak member. Water division was carried out on mutually trust among the subak member according to determined rules. The determined norms are known as awig-awig and agreed and obeyed by the member. Awig-awig can be in the form of written and unwritten rules and having the same power. Membership of Subak is not on residence basis but on farming location. Therefore, it is possible that member of subak comes from different neighborhood or reside in one administrative or custom village.

As so far, subak's society still hold local wisdom especially relate to water and rice field management. They believe that there is a value that must be sacrificed for each activities. Believe support to behave wise behavior on their own resources. Traditional norms like paros paros sulunglung sabayantaka was well practiced therefore krama subak is not reluctant to help other member.

Some of local wisdom that still holds by krama subak are maintain chastity of rice field. The effort can be seen from the existence of holy building (sanggah) as place for krama subak to pray the God from all of blessing prosperity. The krama believe that anything that they do is aimed to maintain all existing blessing.

Besides subak, other active organization in rural areas is sekaa. Sekaa is group of person with the same activities, both temporary and permanently, such as art activities, social and maintain environment sustainability. As so far, activities of sekaa that still active and obtain government aid by culture department is sekaa that train artistry. But in some places, productive sekaa still exist for example sekaa nandur, sekaa manyi, sekaa semal, sekaa nampah, etc. This Sekaa is characterized by seasonally activities and most the member is one dadia family (a place for pray for extended family). Differ to seasonally sekaa, sekaa in artistry field is more formal such as sekaa gong, sekaa geguritan, sekaa pesantian, sekaa dance, etc. training for the formal was conducted both by district and provincial government

Subak Activities : Subak Guyama and Subak Ayunan

In general, the two kind of subak in research area has similar social institutional characteristic. The principal difference are wide of area, amount of membership, meeting activities and a organization structure of subak. As rice provider, Dsutrict of Tabanan has relative wide of rice field than district of Badung. Geographically and topographically, to eastern direction, Bali tend to have lower fertility level. The condition

also affect on agriculture activities. Social characteristic of subak in research area presented at Tables 1.

Tabel 1. Characteristic of Subak Guyama dan Subak Ayunan, 2007

Characteristics	Subak Guyama	Subak Ayunan
Wide	161 Ha	122 ha
Number of Krama Pengayah	464 persons	342 persons
Organization tools	Prajuru, Krama, Awig-awig	Prajuru, Krama, Awig-awig
Organization structure	Pekaseh, Penyarikan, Petengan, Kelihan Munduk, Kesinoman, Krama	Pekaseh, Penyarikan, Petengan, Kelihan Munduk, Kesinoman, Krama
Annual prajuru meeting	12 times	12 times
Annual krama meeting	4 times	12 times
Mutually helps per planting season	3 times	3 times
Financial sources	Government aid, member's retribution	Government aid, member's retribution

Source : Analysis of primary Data, 2007

Subak Krama still strongly holds collectively specified rules in each member meeting. Existing problems in subak area is well communicated in prajuru and krama subak meeting. Regularly, prajuru (management member of subak) carrying monthly meeting, even the meeting up to 20 times in one year. Meeting of Krama subak carried out in early planting season and also regularly conduct monthly meeting.

Activity of mutual help (gotong royong) was carried out to maintain main channel and/or at the time before praying (for each 7 months). On average, the mutual help conducted for 3 times in one year. However, some of subak's member was not participate in the activities. Local wisdom that related environment conservancy is still maintained especially culture and custom related activities e.g Tumpek Wariga day, a day when all of people grateful for plant creation to maintain natural balance. In other hand, there is activities series that conducted by krama.

Long time ago, paddy cultivation process in rice field was initiated by good time determination to initiate activity series of paddy planting. But in this time, the activity is no longer be conducted in four subak. Religious ceremony was started from Ngendag activity (engage in rice field), *Mawinih muang ngurit pari* (start to seedling paddy), *Mabuwhin* (seedling), *Kekambuhan* (monthly time for paddy planting), *Wusan Majukut* (after weeding), *Makukungan padi* (paddy have mature), *Caru* (praying) before paddy harvesting, *Nyangket pari* (harvesting), *Pemendakan* (Dewaning Pari), *Ngunggahan pari* (storing paddy in a mow) and *Nedunang pari* (uploading paddy).

Determination of good time is conducting for seedling, soil cultivation, planting and harvesting. Some of traditional tools that believed have spiritual meaning and installed in rice field are pindekan, kepuakan, teluktak, petakut and sunari.

Enclosing

Social capital of subak divided into bonding capital social and bridging social capital. Bonding social capital emphasize on tying, norms and trust feeling that established among subak member and benefited to strengthening bargaining position of the subak. In other hand, bridging capital social are tying, norms and trust feeling between subak organizations with other organization that making possible to generate value added from yielded product. This research indicate that reinforcement of subak bridging social capital by means of cooperation with university, government and the subak will improve material and immaterial benefit such as increasing sales value of product and improving environment and land quality.

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