

## Strategic Planning to Control Land Conversion Risk in Paddy Pre-Cultivation: A Sharia Perspective

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**Abstract:** The massive paddy wetland conversion is a risk that will lead Indonesia to face the staple food crisis and place the country dependent upon exported food. The research aims to prioritize Land Conversion Risk (LCR) mitigation by identifying risk event and agent. The research was conducted June-September 2016. The qualitative approach succeeded to explore the potential risk event, risk agent and mitigation strategy. Similarly, the quantitative approach has succeeded to measure severity level of risk event, occurrence of risk agent and its impact to the severity of LCR. By HOR-1 analysis, the research revealed two major agents of LCR included the agri-land has become a commodity and the absence of land price control. In the light of HOR-2, the priority of mitigation is to control the increase of agri-land price and to guarantee the staple food procurement cost. For this mitigation in Sharia agribusiness perspective, the state owned land should be placed as the main rice production center.

**Key words:** Land conversion risk, agent of risk, mitigation strategy and state owned land, quantitative, production center, LCR

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### INTRODUCTION

The massive paddy wetland conversion in Indonesia has led the FAO (Food Agricultural Organization), IFAD (International Fund for Agricultural Development) and WFP (World Food Program) to classify Indonesia as risk country of a food insecurity. The 3 world institutions (2014) delivered an important note that Indonesia has not gotten successful to control food agri-land conversion despite, the parliament and the government has adopted a law to hold land conversion. It is not surprising because the Indonesia paddy wetland is continuously decreasing from 16,704,272 ha in 1993 to 14,139,895 ha in 2003. The 2013 AC revealed the alarming data that Indonesia has lost almost half of paddy field compared to 1993 Agricultural Census (AC). For more detail, the rest of paddy land in Indonesia is 8,685,888,7 ha according to 2013 AC or loss of 8,013,384 ha, that means Indonesia, lose 267,279 ha per year compared to the data gained in 1993 AC (NDPA, 2014).

The wetland conversion is traceable to the local or regional level. Barokah *et al.* (2012) which conducted a research in two local areas of Jaten and Jumantono in Karanganyar Region, Central Java, proved that the land conversion has occurred between 0.053-0.283 ha per

farmer household. In 1998 in Karanganyar, the average of paddy land ownership is still 0.3 ha but in 2010 dropped only 0.296 ha.

The same trend is also occurred in other local areas. The research by Handari (2012) in Magelang, Central Java as post graduate thesis of Universitas Diponegoro pointed out that within a period of 6 years from 2005-2011, the Magelang's paddy wetland area is continuously declining. The wetland area was recorded of 37,445 ha in 2005 and shrank to 37,219 ha in 2011. Handari emphasized, the tendency of wetland conversion will continue. It is based on data of Magelang Land Office about the archive of agricultural land use change proposal. In the year of 2010 the proposal was amounted 47 files in 2011 were 22 files and in 2012 as many as 15 files. It does not include the land conversion without going through the official licensing procedures. Similarly, the observation Apriyana (2011)'s has predicted the coming of massive food-agri-land conversion in some areas of Java, both the close and relatively far area to the capital of Indonesia. The two areas close to the capital are Cianjur and Tangerang, the both areas have a tendency of paddy farmland decline. The area which is far from the capital is Mojokerto has also the same tendency of farmland

conversion. In the middle of paddy wetland decreasing in contrary the population has constantly been increasing. The Indonesian population in 1983 was 158.1 million people. The number has been growing each year to be 161.6 million in 1984, 165.2 million in 1985, 168.7 million in 1986, 172.2 million in 1987, 175.6 million in 1988 and leaped to 255,461,686 people in 2015. In 2016 the amount of Indonesian habitant was about 258,704,986 people and for the next 3 years in 2019 is predicted will come to 268,074,565 (Ritonga, 2015).

The paddy wetland conversion and the growth of population are two subjects that led Indonesia to face the high risk of food insecurity. That is why FAO, (2014) identified Indonesia as high risk state for food-insecurity.

The dynamic of development caused the increase of infrastructure need is a high pressure and risk for food-agri-land sustainability. This is the apparent reason and easy to catch for huge number of food-agri-land conversion. But in this context, the farmer attitude and behavior toward their land because of the capital flow to the countryside (Rahardjo, 1999) is a subject to investigate. The unwilling to work at paddy-agri-land and a tendency to sell their land and converted by the other side to non-agricultural usage is also a risk endanger the future food availability. The series of government effort to control the risk by providing the food-agri-land tax incentive, the package of paddy-means production aids and the agricultural extension in which it consist a model of farmer field school to educate farmer to make a right decision in managing food-agri-land does not get a proper target. The tax incentive and the aids of mean paddy production failed to encourage the farmer to work at food-agri-land (Handayanti, 2016). The agricultural extension in which it is farmer field school did not obtain the proper result of rice increasing product and deliver the farmer awareness of innovation (Feder *et al.*, 2004; Maman *et al.*, 2015).

Based on the fact of strong tendency of the farmer to leave the food-agri-field, it actually needs a micro approach to formulate a program to empower the farmer based on the risk or even the agent of risk that probably brings them to sell and convert the food-agri-land on the internal farmer perspective. For such purpose, the research should be conducted on the farming area that has gotten experience of massive wetland conversion. In the Indonesian context, the region of Cianjur is one of the paddy-production centers of West Java but the area has acquired the huge number of wetland conversion (Apriyana, 2011) and of course the area is suitable for the research purpose.

**Research objective:** Based on the fact, the aims of the research is to identify the farmer's perception on the fact or reality of paddy wetland in pre-cultivation lead to land conversion as a risk; the agent of risk namely the fact or condition aroused the risk, the rank of risk agent and main risk agent mitigation strategy to control the land conversion risk in Sharia perspective. Consequently, the successful of land conversion risk mitigation indirectly will bring the problem solving of food insecurity of the country.

**The framework analysis:** The study presented 3 variables that have to be explored: the Land Conversion Risk (LCR), the Risk Agent (RA) and Risk Mitigation Strategy (RMS). Literally, the risk is the possibility of loss, injury or other unwelcome circumstance. In other literal definition, risk is an unpleasant as a consequence of an action and it probably threatens a successful aim or a target of an organization or individual. Relevant with the above meaning, according to Ajupop *et al.* (2016), the risk is adverse effect.

Terminologically, Baranoff the risk is not easy to define. But in general, the risk contents the meaning of uncertainty that affects the unexpected condition such as a damage of asset, loose of the company and unsuccessful target from the low to upper situation. Similarly, Sotic and Radenko (2015) emphasized, risk could be defined based on the probability, expected value, uncertainty and the objective of the action in which it comes to unpleasant condition. In general, Ajupop *et al.* (2016), the risk is the action or condition that has a possible adverse effect and could happen in all condition. However, according to Baranoff the level of unpleasant and the volume of disadvantage is relating to the decision making based on the specific condition. For the certain people, the level of certain lose is an extraordinary but for the other the grade of disappearance is still reasonable. In this context, Sotic and Radenko (2015) outlined, the level of risk is sometime based on the people perception in which the outcome is different with planned, desire and expected result.

About the source of risk, Baranoff identified the natural hazard such as the hurricane, flood and tornado as well as the man-made hazard such as a terrorist which devastates the market place. The scope of the risk indirectly can be categorized into the macro and the micro level based on its coverage to the national stage and the individual, family and the small company. The shortage of staple food as the risk aroused by wetland conversion covered the nation as the FAO's note on Indonesia (FAO, 2014). The risk of the nation is of course a gradual

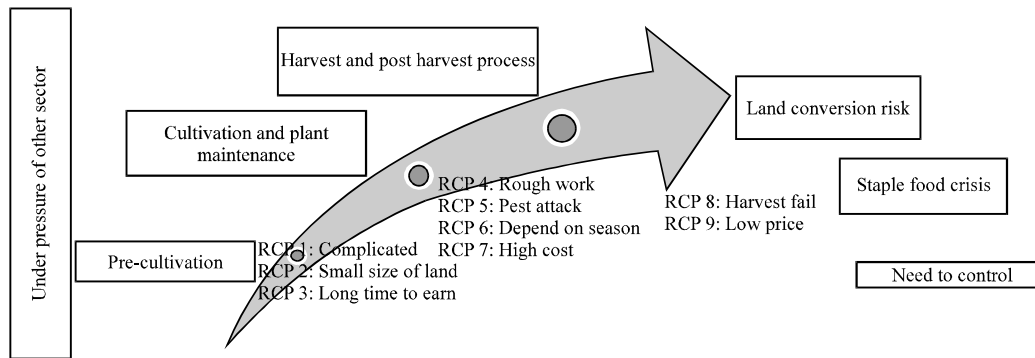


Fig. 1: Land conversion risk in supply chain approach

accumulation of risk on the all sides related to the life of the nation. The studies by Fujimoto (1996), Nabangchang and Srisawalak (2008), Susilawati and Maulana (2016) which is strengthened by NDPA's data affirmed the thesis that the agri-food in Indonesia is a family farm which is indicated by the small size of paddy wetland farming. The family household is responsible for staple food supply and procurement. The source of food crisis as a national risk and caused by wetland conversion should be detected to the risk faced by the farmer family.

To trace the risk affects land conversion could be detected in the supply chain approach. Tang and Nurmaya (2011) emphasized the coherence between risk, uncertainty and supply chain process. The two researchers stated, "Risk is unreliable and uncertain resources creating supply chain interruption whereas uncertainty is matching risk between supply and demand in supply chain process". It is true, the risk analysis, uncertainty and supply chain are originally the subject of risk management and logistic but it innovatively could be applied in other related field. Maman and Mahbubi (2015) got succeed to apply the supply chain model to explore the halal risk in abattoir beef processing. Based on the experience, the supply chain process probably gets excellent result to detect LCR from the internal side of the farmer.

Like the beef processing start with breeding, paddy production is also begin with germination and nursery, tillage, cultivation, plant maintenance, harvesting, post-harvest processing and production selling. The stages of paddy production could be a critical point to detect risk sharply which lead the farmer to sell the land. Referring to Wastra and Mahbubi (2013), the important risk of agribusiness is seasonal product which depend on the season, perishable or easy to damage, the low price transmission that the price change in consumer level does not impact significantly to the price received by the

producer; the market is monopsony in which the farmer is facing big market and powerful to determine the price. In addition, the innovation of farming practice, like breeding, tillage, cultivation and plant maintenance is too complicated in farmer perspective (Rogers, 1983). The pest attack and diseases is still disturb the farming process that bring the farmer to get loss and the effort to control the pest in farmer field school has not yet get proper success (Feder *et al.*, 2004). The risks above hypothetically will accumulate to bring the farmer to sell the land and converted by the other sides.

The probable risk above should be blended with the cultural change and economic disadvantage approach to explore the risk wetland conversion. Rahardjo (1999) outlined the change of village from rural to urban life because of the economic development, accessibility and extension of urban area. The children of the farmer which inherited the farming area have a tendency to leave the farming life because of the coming of urban pattern along with the cultural change. The complexity of farming practice will bring the youth of village to behave that the farming is unsuitable with the emerging urban culture.

Relating to risk above, the small income of farmer and the long time to earn is serious potential of land conversion risk. According to Krisnamurthi, the Agricultural Sector Workers (ASW) in 2000's received only a third of the industrial worker income. Factually, farmers who have been converting land, according to Asmara (2011) earn a lot better, though temporary and risky for their future life. Based on the fact, theory and above research experience, the conceptual framework analysis to explore the conversion risk potential is presented in Fig. 1.

Based on supply chain approach, there are nine Risk Control Points (RCP) that could probably be explored. However, basically and it should be prioritized, the research focused on three Risk Control Points (RCP) in

**Table 1:**The research methodology of the land conversion risk mitigation

Research stage	Output	Data source/data analysis	Data collection technique
Identify the probable LCR Event, Land Conversion Risk Agent (LCRA) and LCR mitigation in paddy pre-cultivation	Qualitative data about LCRE Measuring LCRE, LCRA and LCRM in Likert scale	Agricultural local services The agricultural extension services staff The chairman of farmer group	Literature review FGD In depth interview
Identify and measure LCRE, LCRA, Land Conversion Risk Level (LCRL) and LCRM in paddy pre-cultivation	Severity level of LCRE Occurances of LCRA The quantitative impact of LCRA to LCRE	The agricultural local services The agricultural extension services staff The chairman of farmer group	Indepth interview supported by direct observation
Mapping and sort the LCRA level in paddy pre-cultivation	Aggregate of LCR potential (ALCRP)	Quantitative HOR-1 Model analysis	
Formulate the LCR control model in paddy pre-cultivation	Priority of LCRM	Quantitative HOR-2 Model analysis	

pre-cultivation in which the RCPs are the breeding practice is too complicated, small size of land and long time to earn. The three RCPs could be detected in farmer perception.

In the light of the three RCPs, the research will detect the risk potential in pre-cultivation by depth interview, literature review and direct observation. The risk event will get measured by the severity level or impact to arouse the actual risk (Pujawan and Geraldin, 2009) or by its strong potential to bring the actual risk (Maman and Mahbubi, 2015). In the logic by Baranoff the risk is potentially aroused by the condition, event and fact outside of the organization and companies. Following the logic, the exploration of the risk agent which induces the LCR is essentially urgent. Pujawan and Geraldin (2009), the risk agent should be measured by its occurrence level and impact to bring the risk. The finding of risk agent rank by Pujawan and Geraldin perspective is very important. The priority of mitigation strategies is based on the rank of the risk agent potential.

**MATERIALS AND METHODS**

**Research approach, sample and location:** The research uses the supply chain logic and analysis to get information clearly the main agent of risk and priority of LCR mitigation (Pujawan and Geraldin, 2009). Following the supply chain logic, the research focused on paddy production process from pre-cultivation (seed breeding and tillage), cultivation and plant maintenance and harvest, post-harvest process and selling. But primary the research emphasized on pre-cultivation stage. In other word, the research tried to explore not to represent the population by sample the LCR potential in farmer perception in pre-cultivation stage. By this argument, the represented sample is not very important but the research needs the parties who able to present the LCR potential, especially in paddy pre-cultivation.

For this purpose, the sample is purposively defined in which it included the staff of local agricultural services and the leaders of farmer groups in which the number

is 60 respondents, located in one of the paddy production centers in West Java which is popularly called Cianjur farming area. By 60 samples, it is predicted to get information clearly about the LCR potential in paddy pre-cultivation.

**Research stages, data collection and analysis:**

Methodologically, the research has two main stages, mapping the LCR prioritized to mitigate and formulating strategic planning to control the agents of LCR the facts or the condition induced the coming of LCR. For more detail of research stages, it is presented in Table 1.

To elaborate the mitigation strategy in Sharia perspective, the research conducted literature studies, referring to ancient as well as recent literatures. The Siroh of Nabawiyah is the main source to explore the Prophet’s Policy and management to provide staple food supply and distribution.

**RESULTS AND DISCUSSION**

**The land conversion risk:** Based on the three HCPs in paddy pre-cultivation, the research got successful to collect seven LCRs (Table 2). The risk collection and identification is based on Focus Group Discussion (FGD) with the field extension services staffs who know deeply and completely about the problem of LCR in the local context. The FGD was also conducted with chairmen of farmer groups who are prominent and know much about the problem of LCR potential in the view of the internal farmer under pressure of other development sectors who have big interest to purchase and convert the land to other usage.

In the light of above methods, the research revealed that the small size of land and long time to earn is two big potential induced the farmer to sell and or convert the land into other usage. From the seven indicators with sequencing code from LCR 1-7, the potential LCR events that should be outlined are: unwilling to farm because of the small size of land due to inefficient; unwilling to farm because by the narrow land, the profit is

Table 2: The probable land conversion risk in paddy pre-cultivation

Score area/Risk control point	Codes	Land conversion risk	Si
<b>Pre-rice cultivation</b>			
Complicated (RCP-1)	LCR-1	Unwilling to farm because the farmer think it is too difficult to prepare the rice seed breeding	3
	LCR-2	Unwilling to farm because the farmer think it is too difficult to maintain the rice seed breeding	1
Small size of land (RCP-2)	LCR-3	Unwilling to farm because of the small size of land due to inefficient	7
	LCR-4	Unwilling to farm because by the narrow land, the profit is limited	7
	LCR-5	Selling the land is more profitable than small size land farming	7
Long time to earn (RCP-3)	LCR-6	Unwilling to farm because paddy cultivation needs long time to earn	7
	LCR-7	Better selling the land and work outside the agricultural field to eam faster	7

Table 3: The agent of land conversion risk and its occurrence

Score area/Risk control point	Codes	Agent of land conversion risk	Oi
<b>Pre-rice cultivation</b>			
Complicated (RCP-1)	ACR-1	The absence of mental readiness for farming within farmers	3
	ACR-2	The insufficient of farmer skill to maintain the paddy seed breeding	3
Small size of land (RCP-2)	ACR-3	The unsuccessful to promote partnership among farmers to overcome the inefficiency because of the narrow size of land	7
	ACR-4	The unsuccessful to develop commodity to support the paddy more efficient in a narrow land	6
	ACR-5	The agri-land has become a commodity with the price depend on the market mechanism	8
Long time to eam (RCP-3)	ACR-6	The absence of living assurance for farmer in paddy cultivation process	8
	ACR-7	The absence of land price control which is constantly increasing	9

limited; selling the land is more profitable than small size land farming and better selling the land and work outside the agricultural field to earn faster. Based on the severity level of LCR in Likert scale, it should detect the agent of risk. The agent in this context is the fact or the condition or the fact of the farmer economic life directly or indirectly caused the coming of LCR. Based on the perfect and complete information, it will lead easily to mitigate the agent by certain action and or conditioning.

**The agents of land conversion risk:** The risk agent in this context is a condition, behavior and or the fact that probably bring out the paddy wetland conversion. In the light of FGD with the same participants, the research detected the potential agents induced the coming of LCR events. The research described seven agents presented sequentially from ACR 1-7 (Table 3). The research also deliberated the occurrence level of the agents by Likert scale. From the seven agents, the research pointed out the main agent that got high score of occurrence level, namely “There is no control of land price which constantly increasing”. The agent got highest score of nine while the other agents got the score of occurrence level of eight and below.

Table 3, the research also pointed out two high occurrence level of agent of LCRs in which it gets score of eight. The two agents are: the absence of living assurance for farmer in paddy cultivation process and the agri-land has become a commodity with the price depends upon the market mechanism. The other agents

that get score of seven and six sequentially are: the unsuccessful to promote partnership among farmers to overcome the inefficiency because of the narrow size of land and unsuccessful to develop commodity to support the paddy more efficient in a narrow land. In this context, it should be emphasized that the occurrence level means the frequency of the agent to bring out the risk of LCR.

**The land conversion risk level:** The risk level in this context is the percentage of risk agent’s contribution quantitatively to the coming of LCR events. The contribution of each risk agent will get benefit to mitigate the risk agents. The more and biggest contributor of risk agent to emerge the LCR, it should be prioritized to control. Based on the question and its importance to control the risk agents, the research formulated the LCR level in the form of Aggregate Risk Potential (ARP) or in this case Aggregate of LCR Potential (ALCRP). The equation to count the risk level is: in which means:

$$ARP_j = O_j \sum_i S_i R_{ij}$$

Where:

ARP = Aggregate Risk Potential/aggregate land conversion risk potential

O<sub>j</sub> = The occurrence level of risk agent

S<sub>i</sub> = Severity level of risk event

R<sub>ij</sub> = The correlation of risk agent<sub>i</sub> to the risk event<sub>j</sub>

To operate the equation, the severity of LCR (S<sub>i</sub>), the occurrence level of risk agent (O<sub>j</sub>) and the score of the

Table 4: The proposed mitigation strategy to control LCR

Score area/Risk control point	Codes	Land conversion risk agent mitigation	D <sub>k</sub>
<b>Pre-cultivation process</b>			
Complicated (RCP-1)	M-1	Agricultural extension should be focused on the establishment of farming mental readiness	5
	M-2	Need a training to escalate the skill of paddy seed breeding management	3
Small size of land (RCP-2)	M-3	The extension through farmer group cooperation should be a focus on the agricultural development	5
	M-4	Food diversification is an obligation in the agricultural development	5
	M-5	The government has to regulate fertile agricultural land selling mechanism	5
Long time to earn (RCP-3)	M-6	The government should have to bear and guarantee the staple food procurement cost	5
	M-7	The government should have to issue a regulation to control the increase of agricultural land price	5

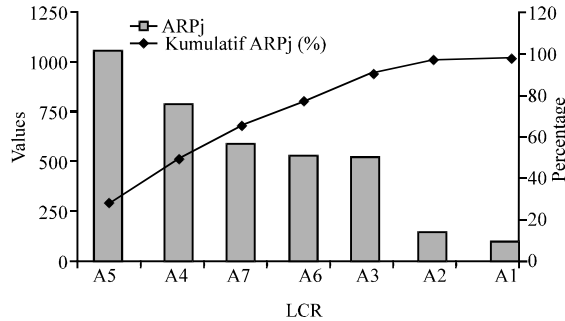


Fig. 2: The aggregate LCR potential in pre-cultivation

impact of risk agent to the coming of LCR were entered into the HOR-1 (House of Risk)-1 (Pujawan and Geraldin, 2009). The output of HOR-1 gets visualized in Pareto Diagram to know exactly the contribution of each agent and the accumulative of the several agent contributions. The process and the analysis of HOR-I Model is used in this context to get the risk agent's contribution sequentially from the biggest to the lowest. In other terminology, the output of HOR-1 is called Aggregate Risk Potential (ARP) or in this context the Aggregate Land Conversion Risk Potential (ALCRP).

By such process, the research revealed that ACR-5 in which the agricultural land has become a commodity with the price depend on the market mechanism contributed 28% to the coming of LCR. The ACR-4 that is the fail of Government to develop commodity to support the paddy more efficient in a narrow land contributed 21% to the emergence of LCR. The next agent (ACR-7) that should get pay attention is the absence of government control to the land price which is constantly increasing and it contributed 16% to the coming of LCR. The last agent in which it contributed 14% to the emergence of LCR is the absence of assurance of living for farmer in paddy cultivation process. For more clear, the contribution of each of four agents is presented in Fig. 2.

Referring to the data presented in Fig. 2, the risk agents that should be controlled and mitigated are A5, A4, A7 and A6. Sequentially, the contribution of each risk agent is 28, 21, 16 and 14%. The four agents have accumulated 80% of the risk agent. The successful

mitigation of four agents will get prevent about 80% for the coming of LCR. But, it should be realized, the risk agent in this case is viewed from the internal farmer when they get pressure from other sector of development in Indonesia.

**The land conversion risk mitigation:** The LCR agents that should be priority to mitigate are: agricultural land has become a commodity with the price depend on the market mechanism; unsuccessful to develop commodity to support the paddy more efficient in a narrow land; the absence of control of land price which constantly increasing and the absence of assurance of living for farmer in paddy cultivation process (Fig. 2). The steps to mitigate are the following.

The first step is to identify the probable action to mitigate which in this case the research got succeed to collect seven preventive action by literature review and in depth interview with extension services staff in local context as presented from M 1-7 code in the left of Table 4. The next step is to measure the degree of difficulty to perform the action (D<sub>k</sub>) by Likert scale in five ranks from strongly difficult to strongly easy.

To complete the control of the risk, the agent that should be treated with each ARP's score are entered into House of Risk (HOR)-2. The treated agent are in the left side of the HOR-2 figure and each ARP is in the right side of the HOR-2. The identified and proposed mitigation are put in top line of HOR-2 (Table 5). By the HOR-2, the research should count the correlation or the impact of action of mitigation to the risk agent (E<sub>jk</sub>) in which it induces the coming of LCR. The correlation also indicates the effectiveness of the mitigation performed. The degree of the impact of mitigation strategy was measured by Likert scale in three rank of 1-3 that means low, moderate and high.

The degree of difficulty of performing the action of mitigation (D<sub>k</sub>) should be determined in this case, it is also by Likert scale in five rank from the strongly easy to strongly difficult. The next step is counting the Total Effectiveness (TE) of mitigation strategy (TE<sub>k</sub>) by the following equation; that means:

Table 5: Process of Planning to control the agent of land conversion risk in house of risk model approach (Pujawan and Geraldin, 2009)

The agent of land conversion risk to control	Proposed action to control land conversion risk (the impact of mitigation to control the risk agent)							ARPj
	M-1	M-2	M-3	M-4	M-5	M-6	M-7	
A-4	1	3	1	1	1	1	1	795
A-5	1		1		3	1	9	1057
A-6	1					3	9	536
A-7	1	1				1	9	595
Total effectiveness of action k	2983	2980	1852	795	3966	4055	16,999	
Degree of difficulty performing action k	5	3	5	5	5	5	5	
Effectiveness to difficulty ratio	597	993	370	159	793	811	3,240	
Rank of priority	5	2	6	7	4	3	1	

A4 = The unsuccessful action to develop commodity to support the paddy more efficient in a narrow land; A5 = Agricultural land has become a commodity with the price depend on the market mechanism; A6 = The absence of living assurance for farmer in paddy cultivation process; A7 = The absence of control of land price which constantly increasing

$$TE_k = \sum_j ARP_j E_{jk} E_{jk}$$

Where:

- Te<sub>k</sub> = Total effectiveness of each action of mitigation
- ARP = Aggregate of risk potential
- E<sub>jk</sub> = The correlation or the impact of mitigation strategy to prevent the risk agent

The result of TE<sub>k</sub> equation is presented in HOR-2 which the highest score is 16,999 and the lowest is 795. The Te<sub>k</sub> and D<sub>k</sub> is a raw material to get ETD<sub>k</sub> (the effectiveness to difficulty ratio) which the equation is: which means:

$$ETD_k = \frac{TE_k}{D_k}$$

Where:

- ETD<sub>k</sub> = Effectiveness to difficulty ratio
- TE<sub>k</sub> = Total effectiveness of each mitigation strategy
- D<sub>k</sub> = Degree of difficulty to perform the action of mitigation

By this equation as presented in HOR-2 (Table 5), the research came to a rank of priority of the action of mitigation. From the seven of proposed mitigation (from M1-7), it could be divided into the very urgent mitigation (The first and second rank); the urgent mitigation (the third and the forth rank of mitigation) and the less urgent of mitigation (the 5-7th rank of mitigation). For more clear, the very urgent mitigation strategy to control the LCR, especially in pre-cultivation is the government should have to issue a regulation to control the increase of agricultural land price and the training need to escalate the skill of paddy seed breeding conduct.

The two very urgent mitigation strategies are apparently not related each other but two activities that have to be done separately. The urgent mitigation is also the two activities which include: the government should

have to bear and guarantee the staple food procurement cost and the government has to regulate fertile agricultural land selling mechanism. The two urgent mitigation strategies have a connection each other which focused on the government policy.

The less urgent mitigation strategy is also very important to complete the LCR control and has a strong connection each other. The three less urgent mitigations strategies are: agricultural extension should be focused on the establishment of farming mental readiness; the agricultural extension through farmer group cooperation should be a focus on the agricultural development and food diversification is an obligation in the agricultural development. The three proposed mitigation strategies are related each other in which it focused on the agricultural extension policy that could be done in the local government context.

**Action of LCR mitigation in Sharia perspective:** The LCR mitigation, based on research finding, needs the explicitness of institution or party who are responsible entirely for staple food procurement and supply as a basic need for the people; the clarity of agri-land ownership status as the paddy production center and also it needs a decisive way to control staple food distribution tightly to let it come to the entitled.

In the Indonesia context, the paddy farmers which is commonly a small size of land owner is responsible for staple food supply and off course they are most likely as subsidy giver to the other party. In Sharia perspective, referring to Chalil (2002), the human need is divided into three categories which also hierarchical: the need of Dharuriyyat (basic needs), the needs of Hajiyyat (complementary needs) and the needs of Tahsiniyyat (falsifies). The three hierarchies of needs are both physical and non-physical. The forms of physical basic needs are food, clothing, shelter, health and education.

While the non-physical and very essential basic needs is maintenance of religion, life, intellect, lineage, education and preservation of wealth. Similarly, Maman *et al.* (2017) asserted that the Islamic economic policy geared to meet the needs of individuals and the needs of the group. The individual needs divided into two main categories, namely the fulfillment of basic needs (primary) and support needs (secondary and tertiary). He emphasized, the government is obliged to fulfill the basic needs while fulfilling of the secondary and tertiary needs is not a government obligation but he should make a condition that let people entirely to have an equal opportunity to meet the secondary and tertiary needs.

The case of Khaibar in Prophet's era indicated strongly the responsibility of government to fulfill the staple food. Khaibar is an arable Fay'i land (state owned land) located in around Madina which include: As-Syiqq, Nathah, Al-Katibah and Fadak. The land was originally belonged to Jews, then abandoned by the owner who fled after they defeated in Battle of Khaibar in the seventh of Hijri. The Prophet distributed the land area of As-Syiqq, Nathah and Al-Katibah into 18 Sections and each section consisted of one hundred parts which is directly given to the muslim army and people while the Prophet got merely one fifth (20%) of the land as a state owned land. While, for Fadaq which is also around Khaibar in which it is conquered without any war, the land was totally controlled by The Prophet as a state owned land. Therefore, the majority of Khaibar Land became state owned land (Fay'i land) (Al-Muafiri and Al-Malik, 2003). It is very interesting that the Prophet maintained the Khaibar land as the food production center appropriate with the need of Madina society.

In the light of Khaibar historical fact which is conducted by the Prophet which means the Islamic low process making (tasyrii) the land assigned for staple food production center is the state owned land which is prohibited to change for outside agri-food usage. For more clear, Abdillah (1999) categorized the assets in a state entirely included the land into three groups of ownership: individual, public and state ownership. If the Prophet determined the Khaibar as a state owned land specialized for staple food production center, Umar bin Khaththab had stipulated As-Sawad an arable land along the river basin of Tigris and Euphrates in Iraqi zone after defeating the Persian Kingdom as a state owned land and designated for food-agri center (Maman *et al.*, 2017). The state owned land specialized for agri-land is impossible to be a subject of market mechanism and will prevent the sky rocketing price. However, the presence of the state as the main

responsible for food basic need's procurement and fulfillment, it does not mean merely the government who has a responsible for staple food procurement and prohibited for the other parties to support the process. Based on the people's consciousness, they may play a role in food procurement. It is based on the general proposition that every people, especially heads of households are obliged to work and meet the basic needs for their families. Moreover, many individual land owners in the Prophet era cultivated their land as well as dedicated it as a "Waqf Land" for purpose of food providing. The food plantation is well known in Islamic history as Hawaith the land intended specially for food product plantations. Among Hawaith dedicated to the Prophet and well known by the name of the contributors are the Hawaith of Mukhairiq which is consisted of seven gardens and Hawaith of Abu Dahdah (Ajjaj Al-Karmi, 2012). However, it should be emphasized that the individual has a complete freedom to manage their land, both for food crops or other uses. By the fact of history in the Islamic conception, the government should not force the private land owners to provide staple food for citizens from their land (Maman *et al.*, 2017).

Referring to the history of Khaibar, the Prophet did not merely provide the particular land for staple food supply but he also controlled tightly the staple food supply chain process and distribution. By the fact noted in the Siroh Nabawiyah (Al-Muafiri and Al-Malik, 2003) as a legal source of the Muham mad's policy and behavior indicated clearly that the Prophet distributed the dates, cereals, wheat and nuts yielded from protected agricultural area of Khaibar directly to individual citizen in accordance with their needs. The popular passage of history that came to contemporary time told that each individual society in Madinah who participated in Hudaibiyah treaty and in Khaibar battle got certain allocation of Khaibar yields. For example, the family of Usamah bin Zaid obtained 200 Wasaqs; Aqil bin Abu Thalib acquired 140 Wasaqs; the sons of Ja'far got 50 Wasaqs; Rabiah bin Al-Harits got 100 Wasaqs; As-Shalt bin Markhamah and his two sons got 100 Wasaqs; Qais bin Markhamah got 30 Wasaqs; Abu Al-Qasim bin Markhamah gained 40 Wasaqs and other individual got each parts. It should be noted that the "wasaq" is a popular traditional measurement of weight in ancient Arabic society that every Wasaq consisted of 130.56 kg (Al-Baghdady, 1987).

The Prophet surveillance of staple food allocation did not stop until the above action. In his bed death, the Prophet told his testaments in which he ordered



that the group of Rahawiyyin community, Ad-Dariyyin, As-Syubaiyyin as well as Al-Asyariyyin people, each of them should get 100 Wasaqs of Khaibar wheat. This testament was authentically recognized by Umar bin Khaththab in which he obeyed the order (Al-Muafiri and Al-Malik, 2003).

For recent Indonesia, the implementation of mitigation is not too complicated. The Indonesian Ministry of Agriculture (MoA) noted, until the end of 2012 Indonesia has had 11,949, 727.00 ha of mooring land area, scattered throughout the Indonesian provinces and districts (CADAIS, 2013). In addition, the same source described until 2012, the unused land in Indonesia is still 14,252,383 ha which was spread all over Indonesia (CADAIS, 2013). It is possible for Indonesia without any requirement unless the strong political will to utilize the unused land for Paddy Production Center. Actually, it is also in line with the MoA's policy to create new paddy wetland (MOA, 2013). For this aim, it is inevitable to create responsible institution in the central as well the local government to manage the paddy production center to distribute rice product to estimate probable yield and need to handle a close cooperation with the tenant farmer with the schema compliances with Sharia provision.

### **CONCLUSION**

The research revealed probable five events which have a high impact to bring out the LCR in which it included: unwilling to farm because of the small size of land due to inefficient; unwilling to farm because by the narrow land, the profit is limited; selling the land is more profitable than small size land farming; unwilling to farm because paddy cultivation needs long time to earn and better selling the land and work outside the agricultural field to earn faster.

The research got successful to present seven LCR agents included: the absence land price control which is constantly increasing; the absence of living assurance for farmer in paddy cultivation process; agricultural land has become a commodity with the price depend on the market mechanism and fail to promote partnership among farmers to overcome the inefficiency because of the narrow size of land.

The risk agents that should be prioritized to mitigate in pre-cultivation and accumulated more than 70% is agricultural land has become a commodity with the price depend on the market mechanism; unsuccessful to develop commodity to support the paddy more efficient

in a narrow land; the lack of land price control which constantly increasing and the absence living assurance for farmer in paddy cultivation process.

In the light of House of Risk (HOR)-2 Model analysis, the appropriate mitigation strategy to control the risk of massive paddy LCR in phase of pre-cultivation is: the government should have to issue a regulation to control the increase of agricultural land price; the need of training to escalate the skill of paddy seed breeding management; the government should have to bear and guarantee the staple food procurement cost and the government has to regulate fertile agricultural land selling mechanism.

### **IMPLICATIONS**

To implement the propose mitigation, the government should utilize the state owned land to be a Paddy Production Center, supported by responsible institution to manage the center to estimate the yield and the need to make a cooperation with the tenant farmer to distribute and to control tightly the rice distribution to the entitled society.

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