

# Innovation of Channel Blocking on Tripa Peat Swamp; Perceptions and Trust of Community

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Abstract: Innovation is something new in terms of ideas, ideas and technologies introduced. Blocking canals, channel blocks or blockages are bulkheads made in a canal where the canals contain peatlands. This research uses descriptive explorative qualitative research method. Based on the research results found various obstacles in the construction of channel canals in peatland occurred in Rawa Tripa. These constraints include, among other things, the understanding of the benefits of a canal block. This condition is also influenced by the perception and public confidence in the presence of programs that previously existed in Rawa Tripa.

## 1 INTRODUCTION

Indonesia is one of the countries that has large peatlands, the Head of Indonesia's Peat Restoration Agency (BRG) said that the current peat land area in Indonesia is 18.9 million hectares. Of the total area, 12.9 million hectares of land are located in the provinces of Riau, South Sumatra, Jambi, Central Kalimantan, West Kalimantan, South Kalimantan and Papua. Of the seven provinces, about 50 percent of the peatland have been cleared and drained, while the remaining 45 percent are intact and good, must be maintained according to the President's order, so BRG's top priority is 2.5 million hectares in the seven provinces (Kompas online, 2017).

Peatland is a land with peatland criteria that can be classified into organic soil categories. The distribution of peatlands in the world varies considerably, with almost 60% of the tropical peatlands in Southeast Asia, most of them in Indonesia, Malaysia, Brunei and Thailand and the Filipinos and Vietnam (Rieley *et al.*, 1996; Joosten 2004; Rose *et al* 1996, Adriesse 1988, Posa *et al.*, 2011). According to Ratmini (2012), the main physical characteristics of peatlands in the use of peatlands as agricultural land include moisture content, bulk density (BD), bearing capacity,

subsidence (surface drop) and non-irreversible drying).

Restoration of degraded peatland usually begins by restoring the water surface to moisten the surface to control the fire and initiate reforestation. A channel blocking strategy is a potential way to achieve this. In the experimental plot in the northern part of Block C of the Rice Mangku Project (MRP), a series of dams constructed and surface soil and rate of decline are monitored to assess the effects of dam construction on hydrology of peatland. The higher water table generated does not fully offset the negative effects of subsidence enhancement near the channel. The canals, which "feed" themselves into peatland, create depressions on the surface of peatland leading to overland and interflow interception and an increased risk of dam runoff during extreme precipitation events. Lessons learned are used to improve blocking and dam design strategies. Topographic changes in peatland caused by drainage (Ritzema *et al.*, 2018).

Tripa Swamp is one of the peat swamp areas located in Nagan Raya and Southwest Aceh districts. 60% of Tripa Swamp area is located in Darul Makmur sub district, Nagan Raya. While remaining in Babahrot sub district, Aceh Barat Daya (Abdya) from three swamp forests located on the west coast of Aceh with an area of ± 61,803 hectares.

Administratively, the Tripa Peat Swamp Function is one of regulating the freshwater and flood cycle and natural fortress for the tsunami disaster. In addition, Tripa can also maintain local climate stability, such as rainfall and air temperatures that play a positive role for agricultural production in the vicinity. But after the entry of palm oil into Tripa Swamp, the physical condition of peatlands in the area is changing. The number of channels (canals) built in oil palm plantations causes dry and flammable peat during the dry season, while in the rainy season the Tripa Swamp area is flooded.

Based on the results of field monitoring of several environmental NGOs conducted in May 2009 and NOAA satellite spot (burnout) reports in November 2008, February and April 2009, until early October 2012 still found hot spot spots in the HGU area located in Swamp Tripa. The Tripa Swamp Rescue Coalition Team (TKPRT) noted that during March of 2104 there were at least 69 fire points on the west coast of Aceh, especially the Tripa Peat Swamp area within the area of the Plantation Business License.

The Tripa Swamp Rescue Coalition Team (TKPRT) also noted during March of 2014 there were at least 69 fire points on the west coast of Aceh, especially the Tripa Peat Swamp area within the Plantation Business License (TKPRT Report, 2014).

Improvement of peat hydrology in Tripa Swamp can be done one of them through channel blocking (canal block). Canal blocking or blocking canals are barriers made in a canal in which the canals contain peatlands. The benefits of this canal is one of them is to keep peatlands wet and difficult to burn. In principle, the channel canal does not have a large discharge (wastewater), but only a water overflow (Ministry of Environment and Forests, 2015).

Based on the research results UNSYIAH (2013) in Tripa Swamp about the condition of Tripa Swamp waters. There are several factors that strongly support some of the technical requirements required in reclaiming swamps into plantations in Tripa Swamp, among others, with the following considerations:

- a. As an outfall on the built drainage system is the Krueng Tripa river, Krueng Seumayam and Krueng Tripa of the Krueng Tripa river, Krueng Seumayam and Krueng Batee at the downstream pias having a lower elevation than the elevation of the land that needs to be drained.
- b. The availability of three peat domes where the surrounding land makes it possible to create a water storage pond that is used to accommodate

rainy season waters and is used as a water supply to the duct system during the dry season to avoid over-drained in the reclamation field.

- c. If the availability of water in the container pond is insufficient then it is necessary to find a new water source as water recharge which in Tripa water system can be taken from river Krueng Tripa and Krueng Batee.

## 2 THEORITICAL BACKGROUND

Definition of perception according to Robbins (1999) is the impression obtained by the individual through the five senses and then analyzed (organized), interpreted and then evaluated, so that the individual gets a meaning. Individual perceptions are influenced by several factors. According to Irwanto (1991) understanding of perception is the process of receiving stimuli (object, quality, relationship between symptoms, and events) until the stimulus is realized and understood. A person's reaction to an object can be manifested in a person's attitude or behavior about what is perceived.

As expressed by Toha (2003), the factors that influence one's perception are as follows:

- a. Internal factors: individual feelings, attitudes and personalities, prejudices, desires or expectations, attention (focus), learning process, physical condition, psychiatric disorders, values and needs are also interests, and motivation.
- b. External factors: family background, information acquired, knowledge and needs around, intensity, size, vulnerability, repetition of motion, novelty and familiarity or non-existence of an object.

According to Mitchell (1994), there are three characteristics of social cohesion, namely:

1. individual commitment to norms and general values,
2. the interdependence that arises because of the intention to share (shared interest), and
3. individuals who identify themselves with a particular group.

According to Fukuyama (2001), trust is an attitude of mutual trust in the community are united with each other and contribute to the improvement of social capital. According to Pretty and Ward (2000), there are two kinds of beliefs: the belief in the individuals we know, and the belief in people we do not know, but will increase because of our comfort in the knowledge of social structure. Mutual trust in others in a community has more hope to participate in solving environmental problems (Liu

*et al.*, (2014), Krishhna and Uphoff, (1999), Jones (2005, 2010); Pretty and Ward (2001).

According to Bryk and Scheider (2002), people who own the trust are marked with:

- a. Consistency, namely the provision in giving a message to others without distinguishing one from another. Thus a person's confidence level will be even greater because of the sense of security of that provision produce a trust.
- b. Compassion, which is a high concern is important in mutual relationships believe with mutual compassion, it is a form of protection so it will not appear the feeling of harming others.
- c. Communication, which focuses on how to share which information the information will not be exploited freely. In other words, this is refers to openness as a strategy in maintaining that confidentiality is private.
- d. Competency, which is the responsibility and konsistensi someone in a work and how well the results obtained.

### 3 METHODS

The location of the research is in Sumber Makmur and Sumber Bakti Village in Tripa Peatswamp Area of Nagan Raya District. Selection of these two sites with the consideration that in these two villages have implemented peat-channel blocking and there has been community organizing for the construction of channel blocking. The object of research is the community and groups of organizing the construction of blocking channel in the two villages. This research uses qualitative approach, with explorative descriptive research approach. Information was obtained through in-depth interviews with informants with participant observant approach. Researchers observe and follow the blocking activities of the canal in Tripa Swamp.

### 4 RESULTS AND DISCUSSION

One of the innovations that enter into this region is blocking the canal or commonly referred to as a channel canal. The presence of the channel block (block) in the Tripa Swamp area stems from the blocking of canals on the plantation land owned by PT.Kalista Alam in Kecamatan Darul Makmur, Nagan Raya District, Aceh. This staging is done by Yayasan Ekosistem Lestari (YEL) at 17 points. The length of the canal is about four to five kilometers

which limits the former land of PT. Kalista Alam with PT.Surya Panen Subur 2. As for the impact of this channel blocking can be seen that along the rise of water level, secondary forest began to grow in the second layer.

Asmadi, one of the villagers at Seunaám 3 or Sumber Bakti village acknowledged that the existence of the canal is very helpful to the residents, especially during the dry season and the rainy season arrives. The function of the canal itself is to regulate water in peatlands, keeping the wetlands of peat soil constant.

Various obstacles in the construction of channel canals in peatland occurred in Tripa Swamp. Among others related to the understanding and knowledge of the benefits of the canal insulation. For example as in Sumber Bakti village, where there are pro citizens and there are Villagers who cons will the construction of a canal blocking. The opposing group feels if the canal can block the rate of water in their palm plantations that will inhibit the growth of oil palms. While the pro groups feel a lot of benefits from the existence of these canals, where their area is no longer flooded during the rainy season and not drought during the dry season arrived.

The perception of the opposing citizens was then changed, where they then saw that in the rainy season, there was no flooding around their land area, since then the people agreed to the canal construction and demand for the construction of the canal is increasing. Another acknowledgment of the benefits of these canals is that citizens acknowledge that prior to the entry of this innovation, people have difficulties during the climate change. During this time residents can only surrender when the dry season arrives or during the rainy season arrived their land conditions changed drastically.

There is a game against the canal, the difference in the number of canals built up. At the time of the project will be executed the channel of the community canal signatures who agree that the land is made of insulation so will be given goat assistance so that many people who agree to their land in doing the canal blocking construction.

Trust is one of the main capital that must be owned in a development process, especially involving the community. In Tripa, the concept of trust is still very minimal. The authors found, where when the authors settled there and engaged in in-depth communication with the community at Tripa it was clear that their belief in immigrants who would bring a program to their village was very low. Especially if the intended institution is derived from the NGO (Non-Governmental Organization). In

addition, their level of trust in the district government is also low. Among other things, there is one NGO currently based in the Alue Bilie area, but during the working period of the NGO, from 2008 to 2016, this NGO felt by the community has not brought changes to the village condition and changes people's lives.

Some informants stated that during this time they felt cheated, the presence of institutions and staff of these institutions was only using the data of their village, which is the community itself. As an example that occurred in the village of Kuala Seumayam, they have been visited several times by parties from certain institutions, whether it is conducting surveys or interviews to the community. Therefore, every new innovation offered by these institutions, the community is not convinced, this has resulted in the inhibition of innovation adoption process to improve the condition of peatland in Rawa Tripa.

## 5 CONCLUSIONS

Innovation of channel blocks is particularly applicable in Rawa Tripa peatland with the aim of improving the biophysical condition of peatlands through improved water governance in peatlands. The public perception of channel blocking innovation in Tripa Swamp is strongly influenced by the level of community knowledge and understanding about channel blocking. Positive perceptions are influenced by the public's trust in the presence of institutions and parties who have had programs in Rawa Tripa. It is also influenced by the positive impact of the development of channel blocking for regulating water in peatlands of citizens land.

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