

Collaboration Effort to Maintain the Water Resources Degradation at Batu Municipality, East Java, Indonesia

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Abstract

As the municipality that located in the upstream of the Brantas River, Batu Municipality, East Java, Indonesia faces some many problems that caused the degradation of the water resources. The degradation of the water resources was including the degradation of water quality and water quantity in the river and the spring source. This degradation will have influence to the downstream area of the Brantas River watershed as the supporting source of the water resource availability.

Some activity have conducted by the Batu Municipality government and the community that still have concerning to the environment issue in the Batu Area. The communities that include in this effort action were the university, NGO, the student, villager and other community organization. This study was shown some activity that used as the effort for supporting the preserving the water resources availability.

These efforts were common activities that conduct to the water resources management in the watershed. But according to the specific conditions at the Batu Municipality, these activities that collaborated between the government and the community organized have shown that the water resources management at the certain area was depending on the condition of the area and community at its area.

Keywords: Water Resources Management, Batu Municipality, Collaboration Activity

Introduction

Batu Municipality, East Java, Indonesia is the municipality that the area where the biggest river in East Java Province, Brantas River, begins. The Brantas River is flowing across to 14 prefecture and city in East Java Province before ended at the Java Sea. This river is the one of the water resources for more than 5 million populations that depends on the water from this river. This water river was used to purpose as the irrigation water, electricity water, fisheries water and the raw water for the drinking water. This river has approximately 320 kilometers and 12,000 square kilometer width of the watershed. Along the river located more than 7 multipurpose dams that regulated the river water for serve the availability of water.

The Batu Municipality width area is 4,850.68 hectares that lying at the Brantas watershed, that including 12 villages and 4 sub-districts. The area of municipality was covered by paddy field, backyard, apple field, vegetables field and the forest with the slide conditions more 15% in average. This area have more than 107 spring water resources that still used as the raw water for drinking water for the population in Batu municipality its shelf and the region that located at the downstream of the municipality.

As the origin of the Brantas River, Batu Municipality has the specific role at the development

of the Brantas River watershed. The municipality must be maintaining the conditions of the water that flowing into that river, even in quality and quantity of the water. As the municipality that located in the upstream of the Brantas River, Batu face some many problems that caused the degradation of the water resources. The degradation of the water resources was including the degradation of water quality and water quantity in the river and the spring source. This degradation will be because the degradation of the environment, especially availability of water, to supporting the conditions of human lives that living at the Brantas River watershed.

The degradation of the water resources supporting that faces such as the decreasing of the width of the forest area near the spring source that cause the degradation of water spring source, the sedimentation in the river that cause by the erosion at forest area and changing of land use from the farm land where the cultivation in the farmland was the short periodic cultivation such as potato, carrot and the other type of vegetables.

This condition was aggravated with the degradation of the water quality especially in the river. The pollution came from the population that lives in the municipality. This municipality was dominated by occupancies of the household and the hotel, because the Batu municipality is the one famous recreation area in the East Java Province. The household and some number of hotels were not having the wastewater treatment, and flow the wastewater directly into the river. Beside that the waste water came from the small to medium industry was supporting the degradation of the water quality. From the farmland, the degradation of the water quality was supporting by the pollution that caused from the using of pesticide and fertilizer at the farmland. The farmer using the pesticide and fertilizer for their cultivation, this un-treatment waste water from that farmland will be directly flowing into the river.

Methodology

The research was conducted to shown the effort of the government of the Batu Municipality and the community in the Batu surrounding area to prevent the degradation of the water resources in Batu Municipality area. This effort in government stage was conducted by the Batu Municipality Government (Pemerintah Kota Batu) that implemented the Office of Board of Regional Planning (Badan Perencanaan dan Pengembangan Daerah /Bappeda) that collaborate with interrelated office that have responsibility in the environment issue in the Batu Municipality such as the Agriculture Office, Energy, Water Resources and Mineral Office, Sub-District Office and the Village Office. The Perum Jasa Tirta I, the government office that responsible to the maintaining the Brantas River from the upstream area to the downstream area, have active role to support the other institution to implemented the program of water resources preserving and management.

Beside that some community and organization have done some effort to support the government effort to prevent the degradation of the water resources availability. The community and the organization that had conduct the effort such as from university, Non Government Organization (NGO) and other community organization. This effort was including the social effort and physically effort. This effort was collaborated the entire element of the community, such as the villager, the student from the kindergarten until the university student, and the other element of the community by implemented some activity that all the purpose was connecting with the preserving the water resources and environment.

Government Effort

As the daily responsibility to manage the water resources in the Batu municipality, the BAPPEDA conducted some activity to prevent the degradation of the water resources availability. These activities were the implementation of the government program that organized by the BAPPEDA. These activities including the forest preservation, river preservation and spring water resources preservation. These activities such as:

- Maintain the origin spring water of the Brantas River.

The government and Perum Jasa Tirta was preserving the area where the spring water resources that believed as the origin of the Brantas River. This area was locate at the Sumber Brantas Village, Junggo sub-district. The area recently was developed as the “Arboretum”, where the origin of Brantas River located. This activity had purpose beside to preserve the spring water resources by reforest activity, the government want to make the area as the “museum”, where the community in the future has some awareness to support the preserving the water resources by watching naturalists of the Brantas River origin area. In this area the community can cultivated the some plants as the one activity to support this area.

- Conducting the some study of the water resources

The government conducting some study that connecting with the water resources field. For this purpose, the government has some collaborate with the university or the consultant to serving the availability data to support the action in the water resources preserving. Some study that had conducted such as the study about the sedimentation at the river that related with the erosion that occurred at the forest and the farmland. The study shown that erosion that occurred at the river was 0.42 ton/hectare/year, while the erosion rate was 0.003 cm/year (Fitria, 2007). Beside that hydrologic study was shown that the river discharge and the amount of the rainwater still sufficient to support the availability for the Batu Municipality area supply of water (Anonymous 1, 2006).

- Conducting the preserving of the spring water resources

Perum Jasa Tirta have conducted to collecting the data of 107 number of spring water resources in the Batu municipality surrounding area (Jasa Tirta, 2005). This activity was shown the availability of the spring water discharge that can be used as raw water resources for the community and as the one factor to developing the Batu Municipality in the future era. The data shown that some of spring water resources were used to support not only for the Batu area but also for the region that located at the downstream of this area, Malang regency and Malang Municipality. This situation need some attention for manage the water resources in the future, especially for maintain the conflict that maybe occur between those region.

- Placement the water resources collecting data station

Some station collecting data of the water resources had placed at Brantas River. This station was collecting the data hourly, where the station was connecting with the station at the entire Brantas River watershed, as the one of the part of the Flood Forecasting Warning System in the watershed. The station collecting data was including the rain gauge station, discharge gauge station and water quality data station. These stations were under authorized of Perum Jasa Tirta and Energy, Water Resources and Mineral Office of Batu Municipality.

- Tracking the river and forest

This activity was conducted by surveying the conditions of the river water and forest actually.

The surveying was conducted by watching the conditions directly in the field, at the river and the forest. This activity was implemented routinely to know the real conditions of the field continuously (Anonymous 2, 2006). At the forest, the tracking was collecting the data of conditions of land use changing, type of plant that cultivated farmer activity and the other supporting data. This tracking was conducted with collaborated with the Agriculture Office of Batu Municipality and the university. The river tracking activity had conducted to collect the data of the river condition and its environment, such as the water conditions, sedimentation conditions, water quality, discharge and river banks conditions, sand and rock mining in the river and the other aspect of the river. This activity was conducted by the Energy, Water Resources and Mineral Office of Batu Municipality and supporting by university and interrelated institutions and other organization that have concern about the environment issue especially in the water resources management and development.

Community Effort

These efforts that conducting by some organization was develop in order to encourage the community awareness to the water resources management. These activities such as:

- Brantas River Watershed Week Activity

This activity was conducted by Student Union of Water Resources Engineering Department, Brawijaya University. This activity was including some competition that used the river water environment issue as the theme of the competition such as drawing and painting competition for kindergarten and elementary student, scientific paper competition for the high school and the university student, picture and photograph competition, and the river tracking competition that started from the Brantas River origin area. The entire competition had purpose to encourage the awareness of the community from the student to the public community to have contribution to preserving the water resources in the Brantas River watershed.

- Spring Water Resources Preserving and Construction

This activity was conducted by the local NGO that collaborate with AUSAID. This activity implemented to preserving the spring water resources by build the appropriate construction at that area. The other purpose of this activity was to maintain the buffer area in the surrounding area of spring water resources. The goal of this activity was the organization concern about the sustainability of the spring water resources to support the availability of the water that can be used by the local habitants and to support the local organization to conduct the preserving water spring resources activity.

- Community Development

The NGO organization collaborates with the Agriculture Faculty and Water Resources Engineering Department, Faculty of Engineering, Brawijaya University have conducted the activity to encourage the community development in the Batu Municipality resident. This activity not only encourages the awareness of the resident about the environmental issue and its sustainability but also conduct some activity that related with the law and legacy of the preserving the water resources. The main goal of this activity was to promote the community to eradicate the sustain organization to maintain the water resources even in the water resources operational and maintenance work side or in the legal work side.

- Independent Study of water Resources Management

Agriculture Faculty and Water Resources Engineering Department, Faculty of Engineering,

Brawijaya University had conducted the independent study that located at Batu Municipality. The agriculture was concern at the land use changing from the forest to the farmland area and residential area. The Water Resources Engineering Department conduct the research that related with the water resources management including the disaster potential area that might be occurred at that municipality.

Discussion

The collaborate effort from the government and the community organization had conducted to preserving the water resources at the Batu Municipality. In this chase, these efforts need some contribution from two parties to promote the action to encourage the awareness for the environment issues. The effort that conducted by two parties was depending on the condition where the area will preserve the water resources. Because of that some activities still coloring with the indigenous culture where the area was located.

These activities were the common activities that conducted for the water resources management. The interesting manner was that the activities had elaborated the parties that concern to the water resources management issue, where the parties realize that the activities will be influence to the downstream area. The government effort was have big role in this chase because the government can conduct the some activities of preserving the water resources and can encourage the community organization parties to include and to have big participation on the activities.

Conclusions

To prevent the degradation of the water resources conditions and availability of the water resources on Batu Municipality, some activity have conducted by the government and the community. These activities will be supporting for each other. Even though these activities was the common activities that conducted at the water resources management at the watershed, but some specific activities was conducted by using the specific area approaching and conducting by the government and the community that live at that municipality, Batu Municipality, that had the specific conditions that depend on the where and when the approaching conducted

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