



RESILIENCE ISSUES

IN
TUNTANG RAYA

Delik - Tuntang - Lopait -
Kesongo - Candirejo



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I. SEMARANG REGENCY PROFILE

Semarang Regency is the capital of Central Java Province with total administrative area of about 950,21 km². Administrative boundaries of this area are Grobogan Regency, Demak Regency, and Boyolali Regency (*kabupaten*) in the east, The City of Semarang in the north, Kendal Regency, Temanggung Regency, and Magelang Regency in the west and Boyolali Regency in the south. Semarang Regency is divided into 19 districts (*kecamatan*) and 235 villages (*kelurahan*). The largest is Pringapus Municipality with 78,35 Km² (8,25 %) and the smallest is Ambarawa Municipality with 28,22 Km² (2,97 %). Geographically, it is located between 110°14'54,75" - 110°39'3" East Longitude and 7°3'57" - 7°30' South Latitude. The most of territory is a plateau with an average altitude about 544,21 meters above the water surface. Getasan, Sumowono, and Bandungan Subdistrict is the highest area, and Bancak Subdistrict is the lowest area. The rivers that flow in Semarang Regency include Garang, Rawa Pening, Tuntang, and Senjoyo rivers.

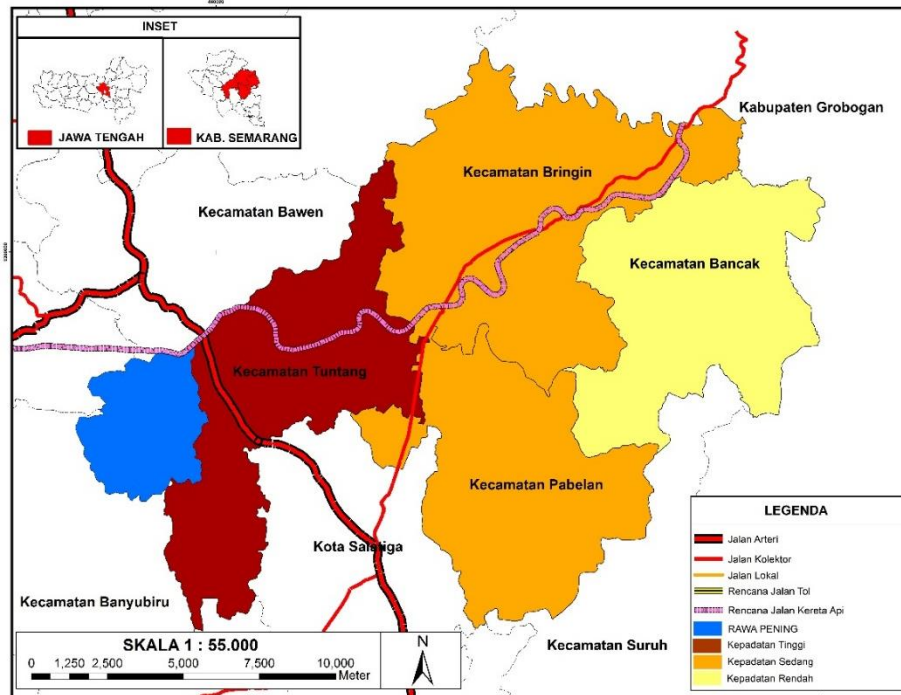
In 2016, the population of Semarang Regency is about 9,6 hundred thousand people with growth rate of about 2,96% per annum. The densest is West Ungaran Subdistrict with 2.162 people per km², while the least dense is Bancak Subdistrict, is about 463 people per km². The number of population with productive age (25-29) in Semarang Regency is quite large, reaching 8,6% of the total population. On the other hand, formal education level of residents in the village observed is still relatively low. The percentage of residents who did not attend schools reaches as much as 15,16%. While the number of people who did not complete elementary school and those who complete elementary school is as much as 17,18%. Thus, approximately 29,62% percent of residents are in low level formal education structures. The number of residents who are junior high school graduates is as much as 17,8%, high school graduates is as much as 16,25% and university graduates is as much as 3,96%. The main livelihoods of Semarang Regency are farmers (35,89%), industry workers (22,25%), trade (16,03%), services (13,51%) and construction workers (6,41%). These livelihoods are the main contributor to the Gross Regional Domestic Product (GRDP) in Semarang Regency. Gross Regional Domestic Product of Semarang Regency is largely contributed by industry (39,27%), followed by construction (13,12%), trade (11,64%), Agriculture (11,36%) and information and communication (3,93%). Water supply and management only contributes 0,08% to GDP.

2. AGRICULTURAL IN TUNTANG RAYA REGION

There are 58 villages located in Tuntang Raya region. Tuntang Raya region dominated by altitude <300 m above sea level and there is slope classification for the ramps slope (0-8%) in Bringin Subdistrict and Tuntang Subdistrict and the steepest slope (> 40%) in the Bancak Subdistrict. There is a large river that crosses the region as Tuntang Subdistrict named Tuntang River.

In the 2015, the population of Tuntang Raya region reached 162.761 people with the average growth rate - an average of around 0.49% per year. The largest population in the Tuntang Subdistrict

is 38% of the population in Tuntang Raya region. This is related to urban status in Tuntang Subdistrict because pass through to the arterial road access Semarang-Solo. While the Bringin Subdistrict contribution to Tuntang Raya region population by 26% or 41.770 people, Pabelan Subdistrict 23%, and the Bancak Subdistrict 12%. The highest of population density in the Tuntang Raya region is Tuntang Subdistrict amounted to 1.112 people / km², while the lowest population density in Bancak Subdistrict of 463 people / km² that can be seen in Figure 1.

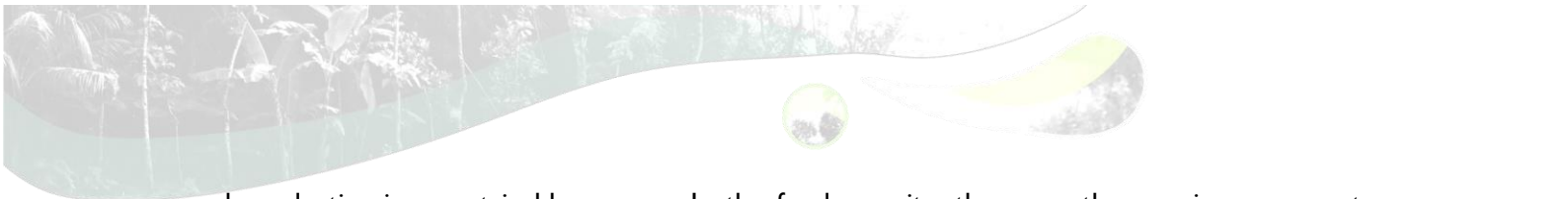


Source : Analysis 2A Group, 2016

Figure 1 Mapping of Density in Tuntang Raya Region

On the other hand, there are also people who don't finish primary school and a community that only primary school by 58%. Then community who is graduate from junior high school (SMP) by 21% and senior high school (SMA) by 15%. Tuntang Raya region's economy is largely supported by the agricultural sector. Can be seen from the GDP data in 2013, the agricultural sector dominates the GDP of Tuntang Raya's territory at 32%, followed by the services sector at 30%. The rate of economic growth in the Tuntang Raya region has increased significantly, from -9.97% to 11.86%. In 2013, the economic growth rate has decreased 6.46%.

Resilience is a dynamic condition, a condition to face and overcome all challenges, obstacles and threats that come from indisde and from outside. The issues that linkages Tuntang Raya region resilience in the region closely related to food security. Food security, according to UU No. 18/2012, that food for the fulfillment of the conditions up to individual countries, which is reflected in the availability of adequate food, both in quantity and quality, safe, diverse, nutritious, equitable, and affordable and doesn't conflict with religious beliefs and culture, to be able to live healthy, active,



and productive in a sustainable manner. In the food security, there are three main components, namely food availability, food access, and food utilization. The three components are:

- The availability of food means the ability of a person, group of people has a number of food sufficient for basic needs.
- Food access means the ability to have the resources economically and physically to get nutritious food.
- Food utilization means the ability to take advantage of good food with proportionally.


Endangerment of food security in Tuntang Raya region will cause food insecurity. Food vulnerability is the inability of a household / individual to access and consume food in sufficient quantity at a certain time, either as a result of failure to issue production and purchasing power. Vulnerability to food in an area can lead to a food crisis in terms of provision of basic needs becomes inhibited even less food and can become a problem that must be overcome for the continuation of the peoples concerned. The food crisis can also be referred to as the scarcity of food sufficiency in the region due to the lack of optimal management of commodity crops. As for connectivity issues resilience in Tuntang Raya region include drought agricultural land, crop failure, and sedimentation on Rawa Pening.

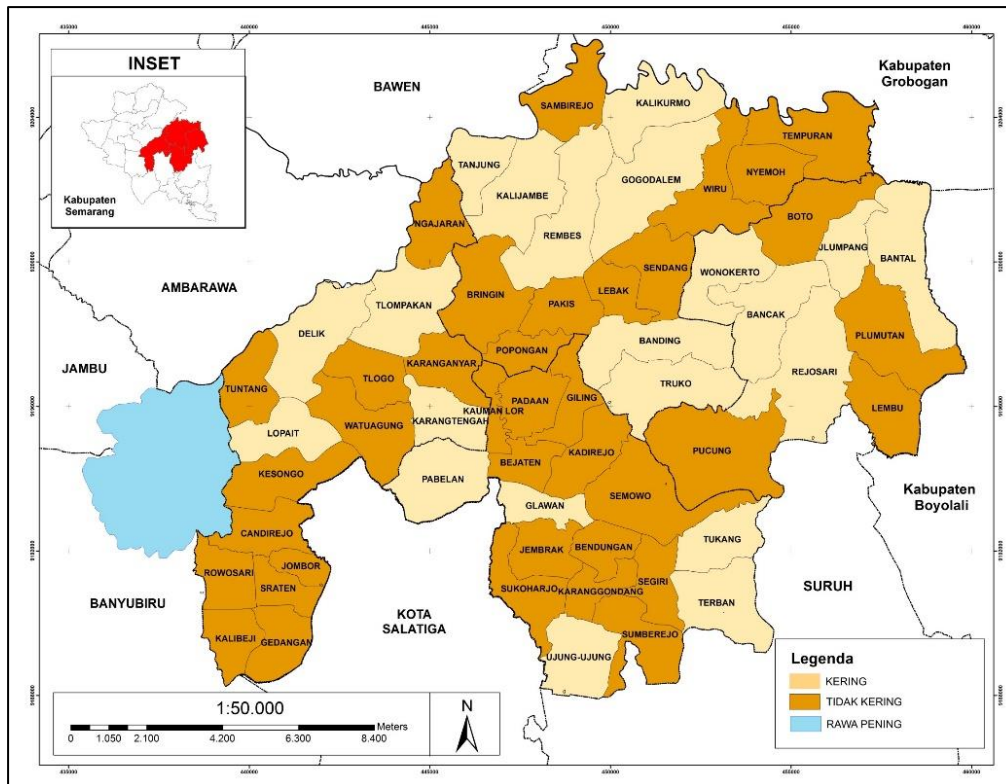
3. ISSUES ABOUT FOOD SECURITY IN TUNTANG RAYA REGION

ISSUE I : Drought in Agricultural Land

Drought is a condition where the region lack of water supply in a long term. Commonly, drought caused by the rainfall is below-average. Most of population feel so hard to get clean water for their daily life. However, the irrigation of agricultural land will be obstructed caused lack of water supply. The long drought can give bad impact, such as production of agricultural decreased. Beside that, the low agricultural productivity can give bad impact for food security.

Semarang Regency is one of the growth areas in Central Java Province where most of the population work in the agricultural sector (48.28%). Data showed on 2015, 671 ha of agricultural land in Semarang Regency affected by drought, one of them is in Tuntang Raya region. Drought is almost engulfed the entire Tuntang Raya region, which is consists of Tuntang Subdistrict, Bringin Subdistrict, Pabelan Subdistrict, and Bancak Subdistrict. The area of Tuntang Raya region which affected by drought 9.760,82 ha of the total area of 20.995,39 ha, so there is 46% area Tuntang Raya region caused by drought that can be seen in Figure 2. Based on interview, drought in Tuntang Raya region occurs every dry season.



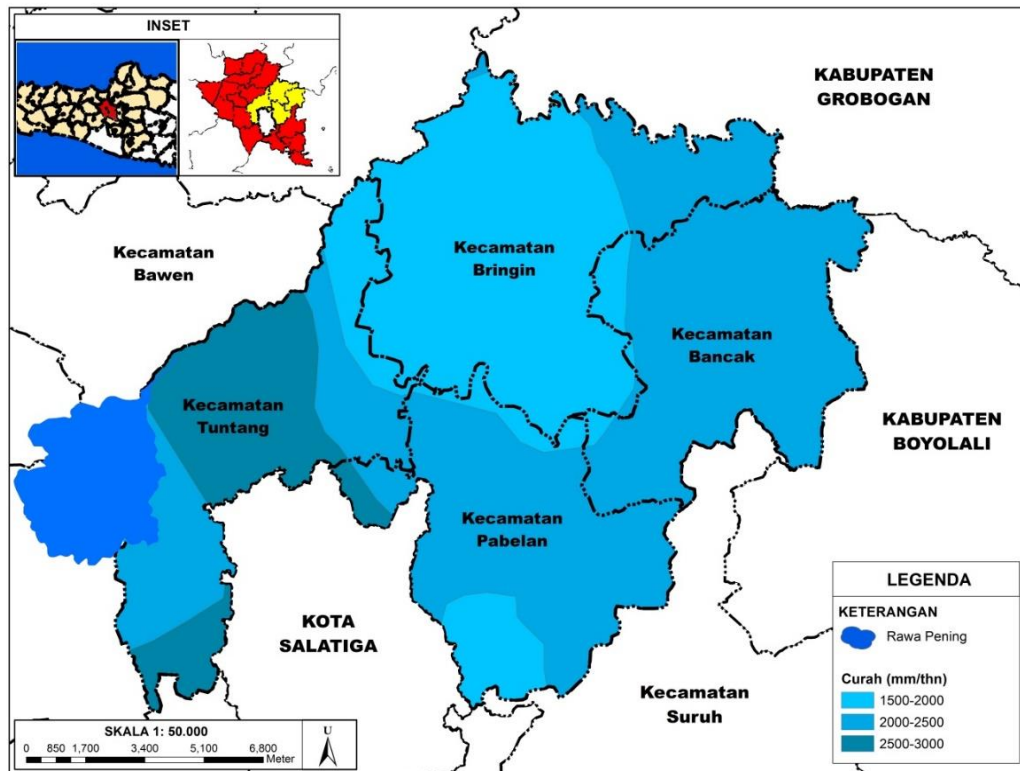


Source : Analysis 2A Group, 2016

Figure 2 Mapping of Drought Agricultural Land in Tuntang Raya Region

One of the causes of drought in Tuntang Raya region has bad irrigation system. For example, most of population hadn't been able to take advantages of Tuntang River as a source of irrigation. It causes there's no appropriate technology, such a water pump. The other cause is most of agricultural land are rainfed (22% of all agricultural land in Tuntang Raya region). Therefore, it will cause Tuntang Raya region always occurs drought every dry season.

Related with drought issue in Tuntang Raya region, another things that should be ponted is rainfall factor. Influence of rainfall decide how can rainfed is well-irigated or not. Based on the map below that can be seen in Figure 3, sub-districts which dominated by rainfed are Pabelan and Bringin Sub-district. In fact demands of water for irrigation in Tuntang Raya Region is very high. So, we can conclude the need of water for irrigation could not be fulfilled.



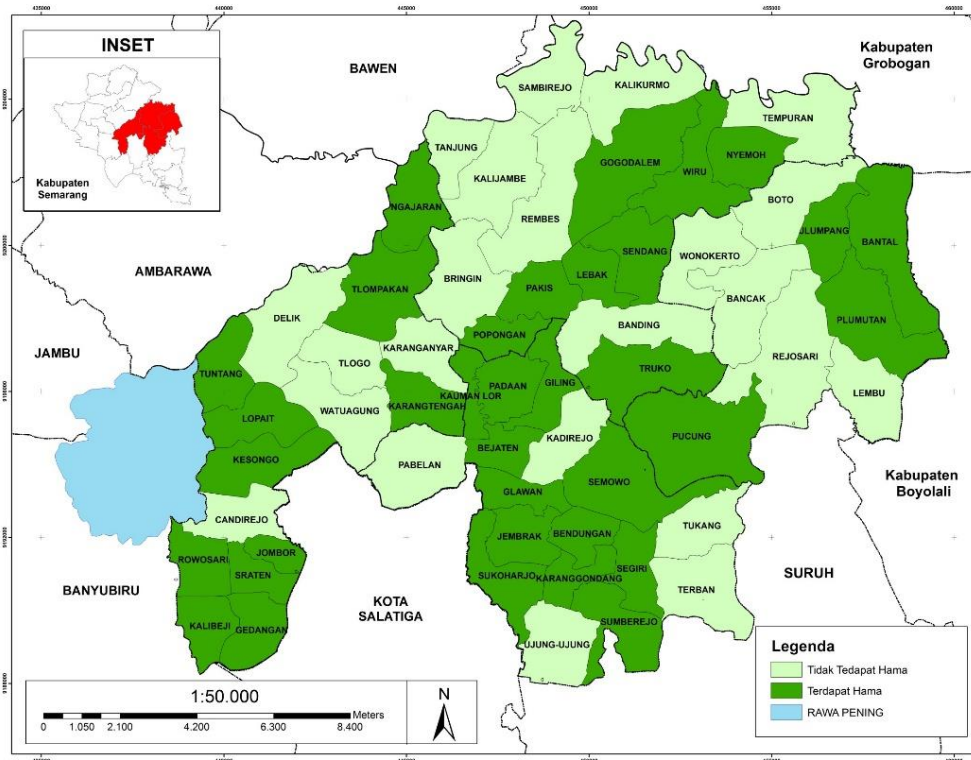
Source : Analysis 2A Group, 2016

Figure 3 Mapping of Rainfall in Tuntang Raya Region

The production of agricultural decreased impact to food supply that will be hampered. The decreased of agricultural productivity can directly impact to decreased of farmers income. Later on, the decreased of farmers income can indicate that the quality of life becomes low then affect to needs daily fulfillment, specifically in food. The decreased of agricultural productivity affected for the specific region which is became the destination of market place for agriculture in Tuntang Raya region, such as Ungaran Subdistrict, Salatiga City, and Semarang City. In the end, this food supply can't be fulfilled because Tuntang Raya region has no longer able to supply agricultural products.

ISSUE 2 : Crop Failure

Crop failure (also known as harvest failure) is an absent or greatly diminished crop yield relative to expectation, caused by the plants being damaged, killed, or destroyed, or affected in some way that they fail to form edible fruit, seeds, or leaves in their expected abundance. Crop failure can be caused by catastrophic events such as plant disease outbreaks, heavy rainfall, volcanic eruptions, storms, floods, or drought, or by slow, cumulative effects of soil degradation, too-high soil salinity, erosion, desertification, usually as results of drainage, overdrafting (for irrigation), overfertilization, or overexploitation. Kind of plant disease that make land agricultural damaged such as an insect farming, “wereng”, and “hama putih” that can be seen in Figure 4. Crop failure almost happened in village in Tuntang Raya which have areas about 11.883,09 Ha of 20.995,39 Ha so it's about 56% of total areas in Tuntang Raya in 2016.



Source : Analysis 2A Group, 2016

Figure 4 Mapping of Spasial Pests in Tuntang Raya Region

Crop failure directly impact to farmers cause most of them usually consume their product. Based on interview, there are 60% of farmer that consume their product. As a result, many family farmers experienced a food security if crop failure occurred.

ISSUE 3 : Sedimentation on Rawa Pening

Rawa Pening becomes largest reserves of water resources for Tuntang Raya region. The potential is certainly a big opportunity because it can be use as a source of irrigation for agriculture in Tuntang Raya region. As we can see, recently, agricultural sector in Tuntang Raya region hasn't progress progressive while agriculture Tuntang Raya region has a great chance to develop into one of the region with the largest rice producers (as known as *lumbung padi*) in the province of Central Java. The beginning function of Rawa Pening as a source of water for irrigation chanals, water supply for daily activities, power generation and tourism. But, in the reality Rawa Pening haven't been used optimally. Moreover, Rawa Pening potentially become problem for land agricultural caused by pollution and trivialisation. Recent problem is focused on water quality and weed waters.



Source : Observation 2A Group, 2016

Figure 4 Rawa Pening located in Tuntang Subdistrict

The main causes siltation of Rawa Pening is sedimentation. Sedimentation is the transport of the material result of erosion and weathering by water, wind or glaciers to a region which is then deposited. All rock the result of weathering and erosion will be deposited and then over time become sedimentary rocks. This sedimentary rocks caused siltation in the Rawa Pening. Sedimentation in Rawa Pening caused by 2 factors, the first factor is the particles of river will settle to Rawa Pening and the second factor is decaying process of water hyacinth (as known as *eceng gondok*). There are 3 rivers that caused sedimentation, Parat, Panjang and Legi which are the 3 biggest rivers and closest to settlement. Household waste and agricultural land erosion is also impact of sedimentation.

In 1994, Rawa Pening with 2.667 ha has depth about 15 meters. However, in this time, the depth of Rawa Pening only about 8 meters. The sedimentation of Rawa Pening impact to agricultural land in Tuntang Raya region, directly border on villages around Rawa Pening, such as Tuntang, Lopait, Kesongo, and Candirejo. The serdimentation of Rawa Pening caused by land conservation in upland and uncontrolled growth of water hyacinth, then cause flood. This flood will have a direct impact to agricultural around Rawa Pening which causes the growth of plant will be suspended, then possibility caused crop failure.

From the above issues related to resistance of food, drought is agricultural land, crop failure to sedimentation of Rawa Pening, the third of that will have an impact on food, especially in Tuntang Raya region. Lack of food availability will certainly caused food crisis, which is can also caused the limited of agricultural land. This food crisis will have an impact on the economy in the Semarang Region, especially Tuntang Raya region. There is no overcome the problem of food insecurity, is certainly going to cause acute food crisis for 20nyears ahead.

4. CHALLENGES ABOUT FOOD SECURITY IN TUNTANG RAYA REGION

Challenge 1 : Optimization of Water Resources for Agricultural Irrigation

Tuntang Raya region has a potential water resources. Those water resources are from Tuntang River and Rawa Pening. In the other side, Tuntang Raya region also has “embung” for intercept rain water which can potential. Whole water resources has a function to irrigation for land agricultural and also fulfill needs of people around.


However, the availability of abundant water is not a guarantee for the region to be free from drought. Tuntang Raya region that has abundant water resources still face drought. Drought in Tuntang Raya region caused by bad quality of irrigation system. The irrigation system has not been able to drain the water toward farmland because it hasn't support of technology. Poor irrigation systems agricultural land is one of the challenges facing the region Tuntang Raya region to drought. Water sources that can not be channeled properly will give impact to farmland drought. The issue regarding drought in Tuntang Raya region, indirectly can exposes the region to decrease in agricultural production.

Challenge 2 : The Change Land Use of Rawa Pening Sub Das and The Growth of Water Hyacinth can't be Controlled

Rawa Pening located in the focus planning region surrounded by four subdistricts (kecamatan) which is located in the Semarang Regency (kabupaten) is Tuntang Subdistrict, Banyubiru Subdistrict, Ambarawa Subdistrict and Bawen Subdistrict. The lake is about 2,667 hectares. Rawa Pening's existence is very useful for local residents. Residents who live around the Rawa Pening lake usually utilize this as a source of water and their daily livelihood.

But along the development of industrial and urban, silting happened in Rawa Pening. The size and capacity of Rawa Pening on the wane due to some river that flows towards Rawa Pening bring agricultural and industrial wastes go to the Rawa Pening can impact to the growth of water hyacinth, which is can dies. Then, the lost of water hyacinth will fall into the bottom of the lake and causes shallowing of the Rawa Pening. Furthermore, in rainy season the water of Rawa Pening will overflow due to silting of reservoirs. Flood waters have an impact on existing agricultural lands surrounding the Rawa Pening.

The changes land use of Rawa Pening Sub Das is also one factor that causes the silting of Rawa Pening. Rawa Pening Sub Das consists of 9 Subs Das with several rivers that flow into Rawa Pening lake as inlet and one of river as outlet it is Tuntang River. The 9 Subs Das was Subs DAS Rengas, Panjang, Torong, Galeh, Legi, Parat, Sraten, Ringis, and Kedung Ringin (Semarang Regency, 2000). There are three major rivers causing sedimentation, which are Parat, Panjang and Legi. All this




three rivers are the major rivers that many settlements and agricultural lands around it. Household garbage and erosion of agricultural land included in the river that cause of shallowing.

Challenge 3 : Climate Change is Getting Extreme

A decrease in the intensity of rainfall is one of the impacts of climate change. According to studies conducted by the Angles, et al., (2011) mentions that the reduced intensity of rain is the biggest reason of declining yields in dryland farmers in Dharmaputri, India. According Sumberejo, 2009, the climate is closely related to weather change and global warming, reduce agricultural production between 5-20 percent. Thus, global climate change extreme can be considered as a threat to agricultural development and food security. The negative impact of extreme changes of global climate include: (1) the degradation of land and water resources, (2) the occurrence of damage to the infrastructure of agriculture / irrigation, (3) the incidence of floods and droughts, and (4) an increase in pests and plant diseases. The impact of global climate change has the potential to threaten a decrease of productivity, production, quality of agricultural products, as well as decreasing the efficiency and effectiveness of food distribution, which led to food insecurity in the region and could ultimately have a negative impact on the social and economic life and social welfare.

The impact of climate change is also happening in Semarang Regency, one of them in the Tuntang Raya region. Based on interviews, some farmers say that there has been a shift in seasons that it is difficult to predict the beginning or end of the rainy season or dry season. The impact of climate change is causing the dry season becomes increasingly longer. Plantation Director General Ministry of Agriculture (Dirjen Perkebunan Kementerian Pertanian) explain that climate change affects the population of OPT (Organisme Pengganggu Tanaman or Plant Pest Organisms) and difficult to predict. This is because of the balance between the OPT with the host plant. Plants with pressure / stress due to climate change are more susceptible to OPT attack. Pest and more thermophilic microbes benefited by increasing the length of the summer / drought and rising temperatures.

For example, there are around the Rawa Pening, because the pattern of climate change led to the number of pests around the Rawa Pening becomes more. The number of pests that increasingly make farmers around the Rawa Pening experience crop failure. In the end, the crop failure will cause a declining yields and reduction in farmers income. The decline in farmers' income is a result of short-term, while the long term impact is the expiration profession dryland farmers (offfarm employment). Drought and the effect of plant pests diseases in Tuntang Raya region is a cause of crop failure in an agricultural activities. However, the biggest factor is the influence of the crop failure, where cause about the plant pest. Most of village in Tuntang Raya region face this problem. Global warming is already happening in Indonesia triggering climate change will affect plant pest attack in every village on Tuntang Raya region. Therefore, this problem is a biggest challenge for people, especially for farmers. This biggest challenge cause changing their planting cycles, so it can be



more challenging for the future. Seeing that the existence of the problem of global warming, it will occur continuously necessarily be accompanied by an increasingly extreme climate change.

5. WAYS TO FACE THE CHALLENGES IN TUNTANG RAYA REGION

Planning on the settlement of problems or challenges related to the area Tuntang Raya region in dealing with issues of food security can be done with some innovative plans or solutions that can be implemented in the region Tuntang Raya region. The innovative solutions for the challenges of food security issues suitable with the concept of regional which is Integrated Agribusiness Development and the concept of local which is Tuntang Organic Agropark :

I. The use of appropriate technology for irrigation of agricultural land

Integrated Agribusiness Development concept which is defined as an area that consists of one or more centers in rural areas as agricultural production systems and natural resource management indicated by the presence of a functional linkage and spatial hierarchy, the settlement system of units and agribusiness systems. In increasing agricultural production in Tuntang Raya with an integrated development can be realized by utilizing appropriate technology.

Appropriate technologies that will be applied to the area Tuntang Raya region as an innovative solution to control drought problem is to use a sprinkler irrigation system. (Sprinkler Irrigation or spray) is a method of giving water to the rest of the land to be irrigated using pressurized pipe through the nozzle. Sprinkler irrigation is an irrigation system that is flexible which in addition can be used for watering plants can also be used for fertilization and treatment and to maintain soil moisture and control the climate conditions in order to conform to plant growth.

Sprinkler irrigation system is suitable to be applied to all types of land in accordance with the infiltration capacity of the soil. Also included on marginal land that has the capacity infiltration or low water storage capacity. In addition, the sprinkler system can be used for different types of crops, especially high-value commodities such as fruits, vegetables and crops. Sprinkler irrigation system is the right solution to be applied to the area Tuntang Raya region for the irrigation system has one advantage that can manage and minimize the use of water for irrigation of agricultural land properly so that it can intervene in problems related to water supply treatment in Tuntang Raya region.



Source: <http://mtpr.org/post/melissa-hornbein-challenges-negotiating-flathead-water-rights-compact>, 2016



Figure 5 Technology of Sprinkler Irrigation System

The concept of local which is Tuntang Organic Agropark is a concept as input supply subsystem, subsystem farming or production processes, subsystems support, subsystems agro-industrial / processing, and marketing subsystems. The use of technology as a means of production by exploiting the resources from Rawa Pening by flowing water into rice fields. Aside from Rawa Pening source of irrigation water also comes from rivers in Tuntang Raya as Tuntang River and Parat River. Planning of Rawa Pening drainage systems and rivers in Tuntang Raya is through the construction of water reservoirs in each village and then the water is channeled to agricultural land belonging to residents in the village associated with the use of hydraulic pumps (Hydraulic Pump Ramp).

II. Empowering Communities in the Management of Rawa Pening

Empowerment of the community can be done in 2 ways related to the management of Rawa Pening as an innovative solution to overcome the challenges of Rawa Pening's silting, among others:

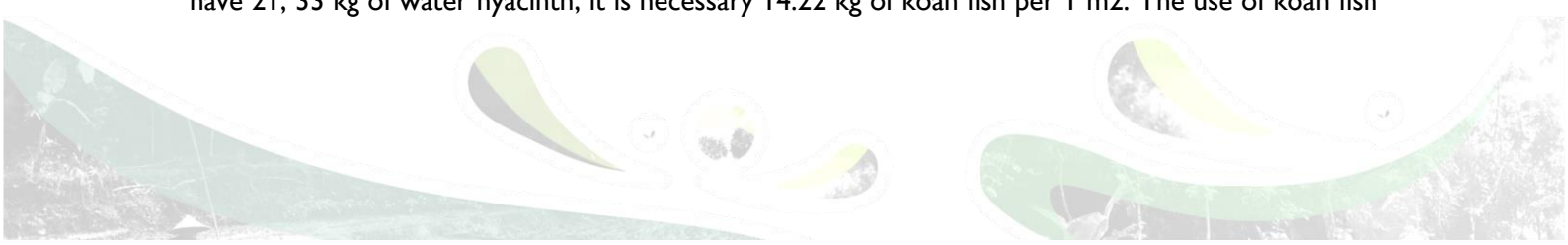
a. **Greening or reforestation in the upstream Rawa Pening Sub Das**

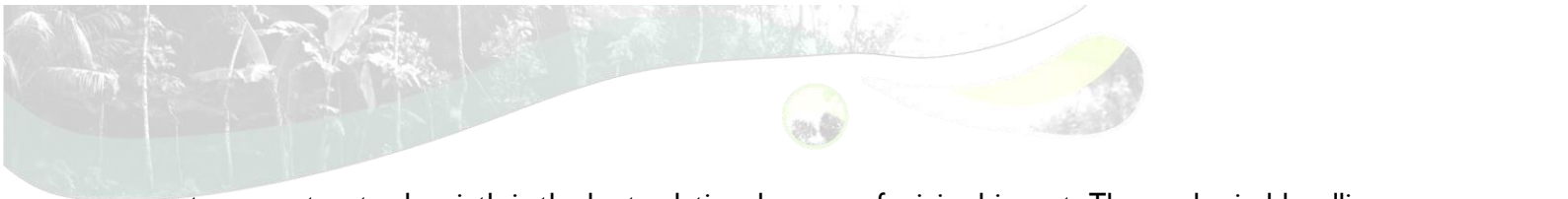
Greening or reforestation in the upstream Rawa Pening Sub Das using types of trees which has strong roots that can hold the rate of erosion of river water. Then do a rejuvenation along the do a rejuvenation along the river banks through the purge stream of solid wastes (industrial, agricultural and household) and illegal buildings. Hopefully, through this effort, solid wastes household waste products, agriculture and industry as well as the erosion of the river that goes inside that causes the silting in Rawa Pening can be overcome.

Community empowerment in this case the empowerment of people, especially the unemployed. It is because the unemployment rate in Tuntang Raya reached 35%. In the implementation of activities carried out through the cooperation relations between the regions involved in the program. The partnership between Tuntang Raya and areas in the upstream Rawa Pening Sub Das such as Banyubiru Subdistrict, Bandungan, Getasan and Salatiga City. Stakeholders involved in this plan is the government, private and public. Stakeholders involved in this plan is the government, private and public. The government responsible for the planning stages of a reforestation program in the Rawa Pening Sub-Das to the monitoring and evaluation of programs. The private company plays a role in the provision of trees will be planted and community role is to conduct contribution and active participation in the execution and implementation of the program.

b. **Controlling the Growth and Utilization of Water Hyacinth in Rawa Pening**

Handling the water hyacinth can be done by means of biological and mechanical. Handling biologically with the smallest environmental impact is by using Koan Fish. Koan Fish able to consume water hyacinth 1.5 times the weight of the body, so that based on the data of the koan fish, the water hyacinth that consumed by koan fish is 92.745 kg. If it is assumed that 1 m² of water hyacinth have 21, 33 kg of water hyacinth, it is necessary 14.22 kg of koan fish per 1 m². The use of koan fish





to prevent water hyacinth is the best solution, because of minimal impact. The mechanical handling of water hyacinth can be carried out continuously through community empowerment, through the utilization of water hyacinth for crafts, organic fertilizer, biogas, and animal feed. Stakeholders involved in this plan is the government, private and public. The government responsible for the planning stages of program utilization of water hyacinth in Rawa Pening to the monitoring and evaluation of programs. The SKPD which contain this phase is BLH (Badan Lingkungan Hidup or the Environment Agency) and the Department of Cooperatives and UKM. The private companies act as providers of advisory services and related training programs and community role is to conduct contribution and active participation in the execution and implementation of the program.

III. Agricultural Intensification Program

Issues contained in Tuntang Raya are directed to the development of the local area which is focused on the establishment of new activity centers are realized by building agropark. Agropark is a multifunctional area as a tourist area of agriculture, education tourism, agricultural products and the development of environmentally friendly technologies. The concept can be realized in agricultural intensification program is an attempt to double agricultural production by using existing land without increasing acreage. Agricultural intensification is usually done by applying the five farming. The program has five main activities in agriculture or called Panca Usaha Tani, which includes five technology packages are:

a. Selection and use of quality seeds

Selection of quality seeds is the first way to produce high agricultural production and quality. In addition to superior quality as the types of plants that can also be resistant to pests of plants, for example VUTW (Varietas Unggul Tahan Wereng or Varieties Resistant planthopper).

b. The management of agricultural lands and well-planned

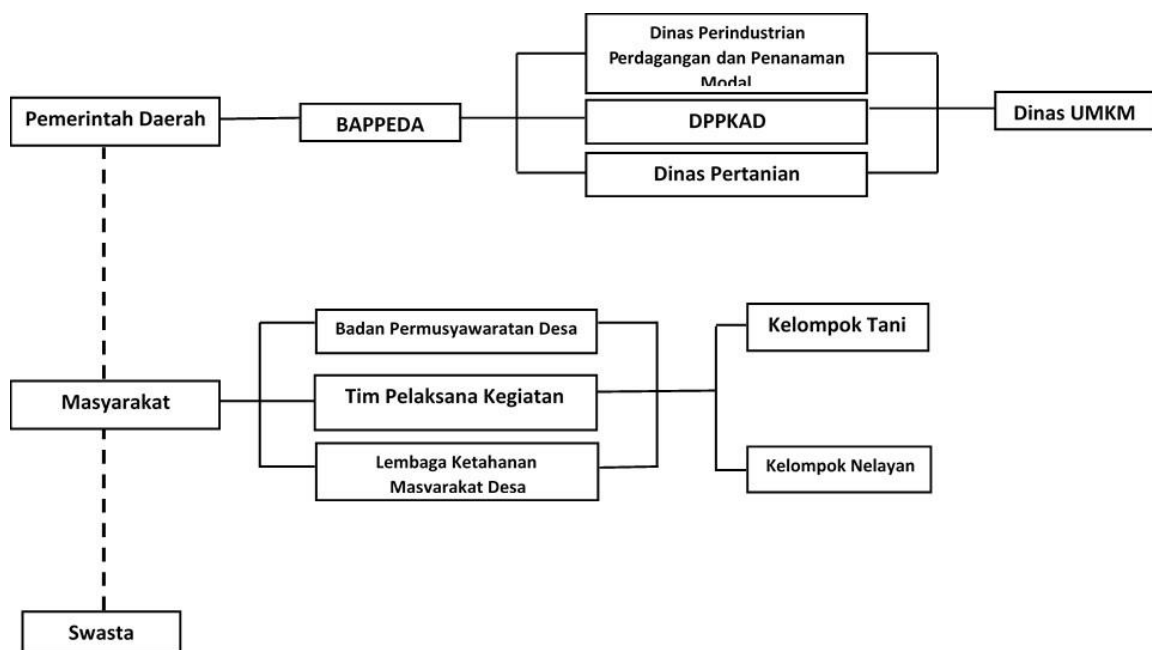
In the management of the agricultural land using modern means such as a tractor or agricultural technology. The purpose of the proper management and planned of the agricultural land so that it can remain the sustainability of production for the future. In addition, these efforts are aimed to prepare the land in the face of climate changes that are not expected (extreme) that have significant impact on the agricultural land.

c. Giving fertilizer plant

Fertilizer program made in accordance with the appropriate dose. Fertiliser application is tailored to the age of the plants with fertilizer placement at the proper distance. Fertilizers used in the form of organic fertilizer means a fertilizer derived from manure, green manure, compost and guana (which comes from bird droppings). Besides adapted to the age of the plant, also need to consider the type and manner that is right and proper fertilization. This program is intended to make the plant stronger with crop pests and are not easily susceptible to disease.

d. Eradication of Plant Pests

Eradication of plant pests intended as maintenance of the plant and as a way to control the development of pest due to extreme climate change. The plans are being made to eradicate pests through the use of organic pesticides are safe for the sustainability of soil and crop quality. The stakeholder involved in plans or solutions related to agricultural intensification program are governments, private and public. For the government SKPD involved are Department of Agriculture, Forestry and Agriculture. The government is responsible for planning the implementation of a program of activities in agriculture, especially in the implementation of agricultural intensification program e.g. provision of fertilizer subsidies and seed crops. The private companies act as the organizer of non-agricultural extension coaching like counseling about how fertilizer is good and right. This outreach in collaboration with the government and people in practice.

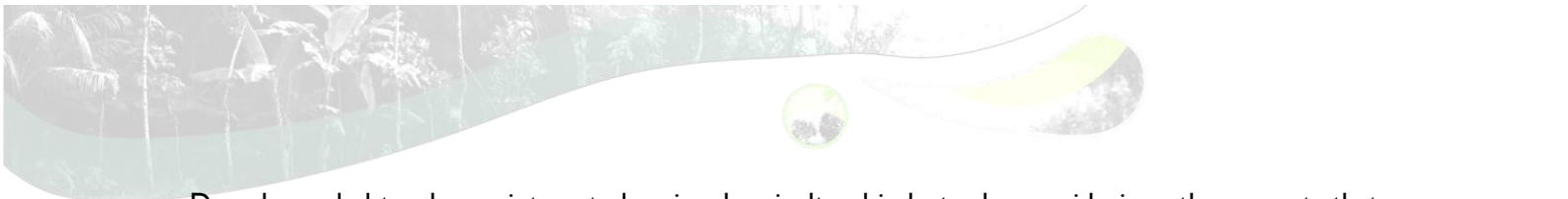


Source : Analysis 2A Group, 2016

Figure 6 Stakeholder Scheme

- **GOVERNMENT**

Dinas Koperasi UMKM as the empowerment of Micro, Small and Medium Enterprises in the region as well as coordination between small and medium enterprises for a balance price. Dinas Perindustrian, Perdagangan dan Penanaman Modal as a provider of trading, supervision will be small in the agribusiness industry is also carried by this service, as well as controlling the circulation of industrial goods outside the agribusiness area management. Dinas Pendapatan Pengelolaan Keuangan dan Aset Daerah Preparation of plans and programs of work in the field of income and financial and asset management areas. Dinas Pertanian as a provider of infrastructure on agricultural activities that required farmers. Pemerintah Daerah Kabupaten Semarang as local governments that have a function as the implementing authority in accordance with the legislation. Badan Perencanaan Pembangunan



Daerah needed to plan an integrated regional agricultural industry by considering other aspects that influence the development of the area *agropark*.

- **POPULATION**

BPD as the embodiment of democratic institutions in the administration of the village. TPK has a function as a supervisory team development within the village fund budget allocation for rural development. LKMD is one of the social institutions that were in the village for the diggers, utilization and development potential of natural resources and environmental harmony in the village scope. Farmers Group (Kelompok Tani) serves as a forum for members of the teaching and learning in order to improve the knowledge, skills, as well as the growth of self-reliance in trying. Fishermen Group (Kelompok Nelayan) acts as a container training and coaching to increase fish production and incomes and the welfare of fishermen who joined the group organization.

- **PRIVATE**


The private sector has a role in helping accelerate the development of infrastructure for Semarang district government could not rely solely on local fund.

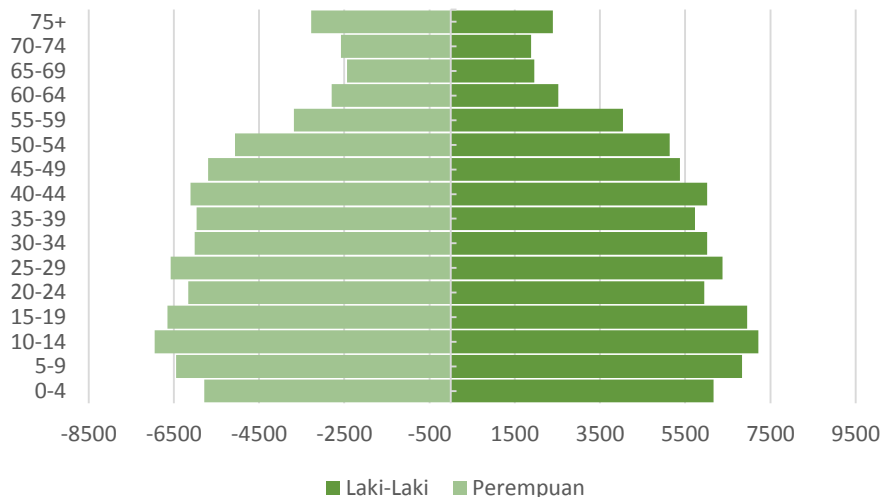
IV. Role of Youth

The role of youth in efforts to resolve the resilience issues in Tuntang Raya. For example:

- **Labor**

In applying the concept of TOA (Tuntang Organic Agropark) as the central region of the main functions of industrial agribusiness with agriculture, education and tourism requires a supply workers who have skills in related fields. Based on the population pyramid Tuntang Raya in 2016, Tuntang highway have the potential number of productive age population is high so that these opportunities can be exploited as a source of qualified labor. This can be realized through the implementation of vocational education programs in agriculture such as climate field school (SLI). With this potential, TOA (Tuntang Organic Agropark) can be realized in facing the challenges related to food security issues that occurred in Tuntang Raya.





Sources: Kabupaten Semarang dalam Angka, 2016

Graphics of pyramid population of Tuntang Raya

- **Problem Solver**

Youth can give a contribution in facing the challenges in Tuntang Raya supported by the basic knowledge about Resilience City. Tuntang Raya could establish a community who concern in environments by involving youths in Semarang Regency to evaluate planning practices with practitioners. Evaluation is not just looking for flaws, but rather look for the root of the problem as well as innovative solutions. For example, participation in the community can conduct an open dialogue between the government and the public.


- **Agent of Public Relation**

The role of the youth generation in relation to the application of TOA city resilience role as public relations between the government and the public. In that role, the generation of a facilitator to disseminate the government's aspirations to connect to the community. The good cooperation between the government and the public becomes important, because in the achievement of resilience city should implement an inclusive planning. Inclusive planning is an approach that was introduced as a form of response to development that emphasizes growth and leaving marginalized groups. Thus, the cooperation between the various parties should be formed.

V. Inclusive Programs

The program is a translation of the concept. Some concepts are made to the resilience of the region Tuntang. The program includes:

- I. Improving the skills in agricultural yields. This program is useful as an effort to improve the public's ability to raise agricultural economy in a superior form of agricultural commodities and varied. In addition, the training can boost the local economy and ultimately to increase food security.


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2. Optimization of the basic needs of agriculture by completing the basic needs of agriculture in the form of provision of quality seeds, environmentally friendly insecticides, tractors and water pumps. Later, a laboratory built agricultural pest total of 3 units. Construction of the basic needs of agriculture can increase agricultural production to enhance food security.
 3. Tuntang and surrounding region has a form of disaster risk areas vulnerable to landslides, and therefore to reduce the risk of landslides constructed retaining wall landslides and reforestation areas around areas prone to landslides.
 4. Construction of public facilities such as vocational agriculture, amounting to 5 units, and the increase in transport for transporting goods.

More specifically, the program will be implemented in three phases. Phase 1, in the year 2020 to 2025, phase 2, in the years 2026-2030, and the third stage, in the year 2031-2040.





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Kecamatan
Bringin



tuntangraya

TUNTANG BANCAK PABELAN BRINGIN



Tuntang Organic Agropark