

The Landscape Changes in Mento Toelakan Plantation, 1863-1950s

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Abstract: This research studies the landscape change of Mento Toelakan Plantation in Wonogiri (Periode). Mento Toelakan was a private plantation located in the Duchy of Mangkunegaran. The existence of this plantation was a sign of the triumph of the liberal economic era. This research used a historical method, landscape, and environmental history approach. Several problems discussed were (1) the causes of the Mento Toelakan area experiencing the landscape change, (2) the forms of landscape change, and (3) the impact of the landscape change in Mento Toelakan Plantation Periode. The results showed that the landscape at the Mento Toelakan Plantation underwent landscape changes in several stages. The reason was the rented land by European investors and the political dynamics after the end of Dutch colonialism. First, land rent converted forest areas in Mento Toelakan into plantations. Second, coffee cultivation introduced the local society to coffee culture. Third, changing coffee plantations to agave plantations introduced the local community to natural fiber processing. Fourth, the Japanese military occupation used Mento Toelakan land for military purposes. Finally, the Mento Toelakan plantation was taken over by the village community to become dry land and rice fields in the independence era. This indicates that many factors, such as capitalism, politics, human activities, and nature itself, influenced the changing landscape of Mento Toelakan.

Abstrak: Penelitian ini bertujuan untuk mengkaji perubahan lanskap Perkebunan Mento Toelakan di Wonogiri 1863-1950-an. Mento Toelakan merupakan perkebunan swasta yang berada di wilayah Kadipaten Mangkunegaran. Keberadaan perkebunan ini menjadi tanda kejayaan era ekonomi liberal. Eksploitasi modal asing memengaruhi perubahan lanskap di wilayah Mento Toelakan, Wonogiri. Penelitian ini menggunakan metode sejarah dan pendekatan lanskap dan sejarah lingkungan. Beberapa permasalahan yang dibahas adalah (1) penyebab area Mento Toelakan mengalami perubahan lanskap, (2) bentuk perubahan lanskap, (3) dan dampak perubahan lanskap Perkebunan Mento Toelakan 1863-1950-an (Periode) Hasil penelitian menunjukkan lanskap di Perkebunan Mento Toelakan mengalami perubahan lanskap dalam beberapa tahap. Penyebabnya adalah penyewaan lahan oleh pemodal swasta dan dinamika politik pasca berakhirnya kolonialisme Belanda. Pertama, sewa tanah yang dilakukan pemodal swasta mengubah area hutan di Mento Toelakan menjadi perkebunan. Kedua, budidaya kopi mengenalkan masyarakat dengan budaya kopi. Ketiga, mengubah perkebunan kopi menjadi perkebunan agave telah mengenalkan masyarakat dengan pengolahan serat alam. Keempat, pemerintah militer Jepang memanfaatkan lahan untuk kepentingan militer. Terakhir, perkebunan Mento Toelakan diambil alih oleh masyarakat desa sehingga menjadi tanah-tanah tegalan dan sawah pada era kemerdekaan. Dengan demikian, perubahan lanskap Mento Toelakan dipengaruhi oleh banyak faktor, seperti kapitalisme, politik, ulah manusia, dan alam itu sendiri.

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INTRODUCTION

In the nineteenth century, the colonial government implemented several models of economic exploitation in the *Dutch East Indies* (Kurniawan, 2014, p. 164; van Rossum, 2018, p. 69). First, Raffles tried implementing a land rent policy in Java (Wahid, 2012, p. 263). Then, the Dutch colonial government implemented a policy of cultivation system (1830-1870) (Hartatik, 2014, p. 2; Niel, 1981, p. 40; van Niel, 1964, p. 359; Van Niel, 1972, p. 89). As a result, the colonial government exploited people's agricultural lands (Bosma, 2007, p. 275; Dell & Olken, 2020, p. 1). Moreover, the cultivation system affected the changing landscape in Java because farmers had to grow commodity crops on village lands.

During the liberal economy period, the colonial government rented land and allowed private investors to establish an agricultural industry in Java (Tamon et al., 2018, p. 757). The land rent system was implemented in colonial and local authorities' government areas. The colonial government opened the way for capital owners to connect with local rulers. The aim was to make it easier to rent land. Private investors cleared the forests to become an agricultural, industrial area. It can be assumed that the land rent system influenced the landscape change in the local authority area.

Landscape change affects not only an area's physical changes but also social, economic, and cultural changes. According to Nagari, (2018, p. 146), changes in the plantation landscape affect the formation of new economic systems, new social relationships, and new social organisations. It means that changes in the plantation landscape have a significant impact on people's lives. Later, Yulian et al. (2017, p. 242) found that the planting of one type of crop or mono-culturization of plantations changed the forest coverage, impacting the ecosystem of the region. Therefore, studying landscape change is significant to illustrate its impact on the ecosystem and the lives of colonized people. The acceleration of forest or vacant land use started when the *Agrarische Wet* Regulation was issued in 1870. This regulation made it easier for capital owners to rent land long-term and establish plantation companies Afghani (Afghani & Husain, 2018, p. 25; Wertheim & The Siauw Giap, 1962, p. 223). This regulation also intervened in agrarian law in *vorstenlanden* areas.

In the *vorstenlanden* area (principalities land), European private investors had the opportunity to rent land from the local rulers with the help of colonial officials. One of the locations rented by private European investors was Mento Toelakan, Wonogi-

ri, since the 1860s. They negotiated with the local authorities while the colonial government acted as guarantor.

Planters tried several commodity crops, such as coffee, tobacco, and *agave*. Society began to plant commodity crops under plantation policies. The contour of the soil in this area was uneven, which affected the planting pattern. In addition, the colonial government and the plantation companies built transportation facilities to support plantation activities. Exploitation in Mento Toelakan influenced landscape changes during the colonial era.

Pembangunan perkebunan memiliki dampak terhadap lingkungan seperti kerusakan ekosistem, banjir, dan serangan harimau.

After Dutch colonialism ended, Mento Toelakan was taken over by the Japanese military government. Plantation activities changed because the Japanese military government captured Europeans. The plantations grew crops according to the policies of the Japanese military government. When Indonesia declared independence, the plantations were in a slump. Political and security conditions made it hard to recover the plantation's production. In the 1950s, villagers divided plantation land into agricultural land. This reality shows that the plantation economy, political dynamics, and landscape were interconnected. Thus, exploring the landscape change of the Mento Toelakan plantation can identify the potential threats to environmental, social, and economic sustainability. This can help to create a better future for local communities and the environment. Previous studies have examined the plantation economy, political dynamics, and landscape change. Pradita et al. (2021) wrote about the history of *Onderneming* Mento Toelakan but did not examine the changes in the landscape that occurred in the plantation area. In addition, Pradita et al.'s research did not use a landscape and environmental history approach to examine the relationship between the community and the plantation environment. It discussed the influence of foreign capital and changes in crop types from each period. However, the study should have discussed the analysis of the change from forest to plantation area. Thus, this study examines changes in the area and their impact on the area's ecosystem.

Muhamad et al. (2014) studied community perceptions of the forest-agricultural landscape in West Java. However, their research did not examine the plantation landscape in the colonial era. Meanwhile, Nagari (2018) reviewed the landscape of the Kebonarum and Gayamprit plantations that supported social change in rural communities.

Darini (2021) found that plantation companies influenced changes in transportation systems, health services, clean water supply, and education from 1869 to the 1940s. Meanwhile, Itawan (2020, p. 30) examined the influence of colonialism on landscape change in East Sumatra. For example, colonial policies paved the way for land tenants to convert forests into plantation areas.

Hartatik (2019) examined the relationship between plantations and rail and road transportation construction to support plantation activities. However, Hartatik should have discussed the changes in the landscape caused by the development of the transportation system in Java.

Wasino (2005) analyzed the expansion of rented land and local rulers' land. The land rent system turned barren land into productive land. The colonial government persuaded local authorities or landowners to rent the land. Exploiting land with private capital benefited the colonial government and the mother country (Wasino, 2005, p. 32).

Margana (1997) analyzed the early development of land rent for coffee plantations. The capital owners expand the coffee plant by renting land from local authorities. These lands were converted into coffee plantations. Other research on coffee plantations in the era of the liberal economy was conducted by Iswanto et al. (2020). They studied coffee plantations in the Takengon Gayo Highlands during the Dutch colonial era (1904-1942). The study found that plantations recruited workers from Java on a contract basis.

These studies did not discuss the changes in the landscape that occurred in Mento Toelakan, Wonogiri. Therefore, this study aims to fill the historiographical gap of the Mento Toelakan plantation landscape from the colonial to the independence era. Some of the problems in this study include (1) the causes of landscape changes in the Mento Toelakan Plantation area, (2) the forms of landscape change, (3) the impact of landscape change in Mento Toelakan Plantation from the colonial to the Indonesian independence era.

METHOD

This study used historical methods consisting of heuristics, source criticism, interpretation, and historiography. The data used were contemporary photos, magazines, and books about the Mento Toelakan Plantation. In addition, this research used a landscape and environmental history approach. Landscapes are specific approaches to expressing conceptions of the arena and are also a way of regarding bodily entities (Layton & J.Ucko, 1999, p.

1). Primary sources include photographs of the plantation area, newspapers, and regerings almanak that report the area used and the crop type. These were used as the primary references in analyzing landscape change at the Mento Toelakan plantation. The landscape approach examines the cultural systems that structure and regulate people's interactions with the environment. Various spatial and temporal variables in the structure and organization of the material footprint can be investigated using a landscape approach (Anschuetz et al., 2001, p. 162). Landscape examines the spatial relations between people, land, raw materials, and water resources (David & Thomas, 2016, p. 25). In landscape studies, there are several contrasting but complementary aspects: (1) settlement ecology, (2) ritual landscape, and (3) ethnic landscape (Anschuetz et al., 2001, p. 176). This study used a landscape approach to analyze the spatial relations and plantation resources with communities in Mento Toelakan.

Environmental history examines the reciprocal relationship between humans and the environment in a certain period (Cronon, 1992, p. 1349; Hughes, 2012, p. 1). Humankind has long been a part of nature. However, it has a unique feature, especially over the past few thousand years, as it has gained the power and numbers to become rebellious mammals, increasingly affecting the Earth's ecosystems (McNeill, 2003, p. 6). According to Hughes, humans cannot be separated from nature. Second, it teaches the significance of technology to historians in tracing the interplay of people and nature. Third, it teaches that present-day environmental troubles and issues have their roots within the past and that studies to recognise their precedents are legitimate and rewarding. Fourth, it teaches an attitude of scale. Local adjustments unavoidably arise within the planetary environment's procedures (Hughes, 2012, p. 1). This study used environmental history to examine the relationship between the Mento Toelakan plantation community and the environment.

MENTO TOELAKAN

The Mento Toelakan area has now merged with Wonoharjo Village, Wonogiri Regency. Traces of the area can be identified from the toponyms, namely Mento and Tulakan Hamlet. Mento Hamlet is the administrative center of Wonoharjo Village. Meanwhile, in Talun Ombo Hamlet, there is a market called Mento Market. The name of the market shows people's memories of economic activities in the Mento Toelakan area during the colonial era. These memories are passed down from generation

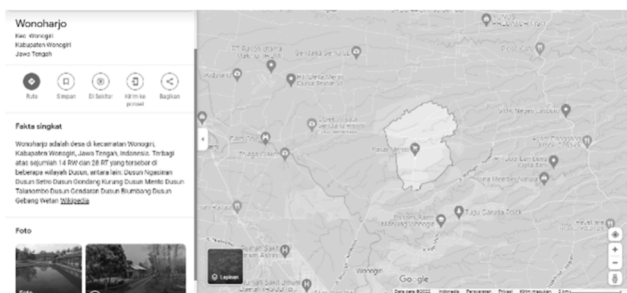


Figure 1. Map of Wonoharjo Village.

Source: maps.google.com

to generation (Pradita et al., 2021, pp. 110–112).

Mento Toelakan was located in the Duchy of Mangkunegaran in the colonial era. Based on the address book of the Dutch East Indies era, Mento Toelakan is recorded as an enclave of the Mangkunegaran Duchy (*Adresboek van Nederlandsch-Indië Voor Den Handel*, 1884, p. 184). It can be assumed that Mento Toelakan was bordered or surrounded by the Surakarta Sunanate area. The boundaries of the territory belonging to the Mangkunegaran and Kasunanan were defined by *paal* or boundary monuments.

Initially, the Mento Toelakan area was an apanage land managed by the Mangkunegaran aristocrats. Presumably, Mento Toelakan land had been managed by *sentana* (royal relatives), *narapraja* (royal officials), or Mangkunegaran Legion members (Pradita et al., 2021, p. 70). The indication is the grave of an aristocrat named Raden Mas Djojomisono in the ex-Mento Toelakan area. According to *Theosophie in Nederlandsch Indië* (1915), Djojomisono was listed as a member of the Theosophical Society. However, the title in the record was Raden Panji Djojomisono from Wonogiri. Further evidence is the symbols on R.M. Djojomisono's grave, namely the Ankh/ Tau cross. The Ankh cross symbolizes victory over death (Coon, 1958, pp. 67



Figure 2. The symbol of the Ankh Cross at the RM. Djojomisono's Grave.

Source: Documentation of Masyarakat Sejarawan Indonesia Komisariat Wonogiri, 2020

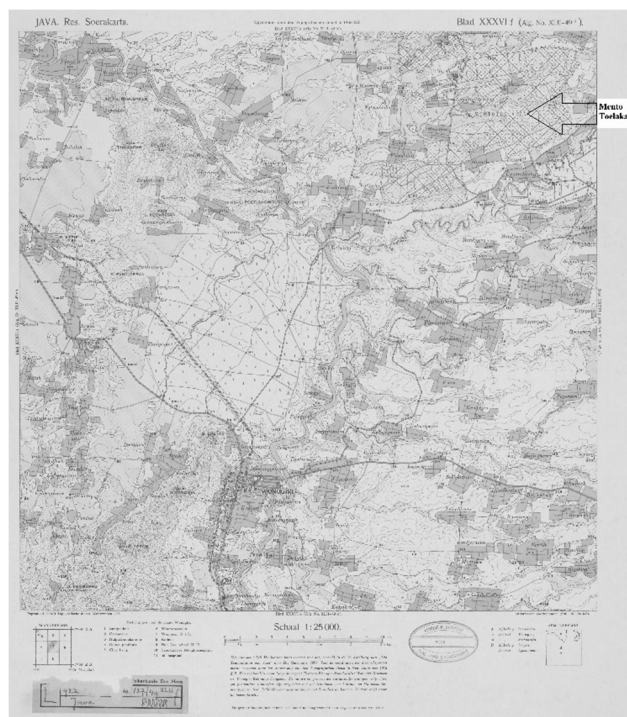


Figure 3. The location of Mento Toelakan

Source: Topografische Dienst (Batavia), 1927, [Universitaire Bibliotheken Leiden Collection](#)

& 187). Meanwhile, one of the administrators of Mento Toelakan, P.W.C Blankwaardt, was a Theosophical Society and *Vrijmetselarij* (Freemasonry) member (*Algemeen Handelsblad*, 1930; *Bataviaasch Nieuwsblad*, 1930; *De Indische courant*, 1930; *Soerabaijasch Handelsblad*, 1930; *Theosophie in Nederlandsch Indië*, 1915). However, the relationship between the Theosophical Lodge in Wonogiri and the Mento Toelakan Plantation remains unknown.

Mento Toelakan's land was converted into plantations in 1863. Therefore, Mento Toelakan had been rented out before or since the 1860s. Kanjeng Gusti Pangeran Adipati Arya (KGPAA) Mangkunegara IV (1853-1881) had a policy to withdraw apanage land. Therefore, Mento Toelakan's land may have already been rented by European investors when Mangkunegara IV implemented the policy. Another possibility is that Mento Toelakan would get an exception, or the land was not included in the policy scheme. In addition, part of Mento Toelakan's land was included in the Surakarta Sunanate area. According to Praja Mangkunegaran (1918a, 1918b), Mento Toelakan's land rental rates were *f* 1.009, *f* 1.009,02 in 1917 and *f* 1.465,29 in 1918. In addition, Mento Toelakan's land managers often changed according to the interests of private investors.

EARLY LANDSCAPE CHANGE

The Mento Toelakan area was a forest before being converted into a plantation. At some points, it was upland and rice fields processed by villagers. There is no data that mentions the initial conditions of this area with certainty. Nevertheless, there are strong indications that people have been cultivating land in this area for a long time. According to Padmo (1995, p. 96), the community around the plantation got under much pressure during the colonial era.

On the one hand, they had to meet the needs of food crops. On the other hand, they had to divide their land into plantation areas. The cultivated land was then converted into plantation land rented by foreign private entrepreneurs. Farmers then turned into labourers on the plantation.

Padmo's opinion was corroborated by Peluso, who stated that the state has the power to take over the forests for large-scale developments under the pretext of being in the common interest (Peluso, 2006, pp. 10–11). Although the natural condition of Java from the seventeenth to the twentieth centuries was described as a dense forest (teak) area from the north to the south coast, the community managed this forest to serve the rulers and businessmen (Peluso, 2006, pp. 39–40). As a result, forests inhabited and managed by the community "for the common good" had undergone several changes in function. At first, this area might have been a forest area or an area that the community or authorities had not widely processed. Then it began to be considered an area that could be used as plantation rental land.

The assumption that the Mento Toelakan area was inhabited is strengthened by several relics dating back to the pre-plantation period, such as the existence of a *punden* (sacred place to glorify nature or ancestors). Furthermore, there are remains in the form of a cemetery and reports from the Netherlands about traditions that have developed in several previous periods. Communities in the rented land then developed into workers in the plantation company. The Mento Toelakan plantation opened in 1863, initially intended for coffee plantations. Coffee plants could grow well from 300 feet to 500 feet (Richard P. Tucker, 1988, p. 135). The Mento Toelakan area was recorded at 1,416.5 *bouws* or about 1,048.21 ha. The Mento Toelakan area had various contours, from mountain slopes to lowlands (Pradita et al., 2021, p. 7).

Mento Toelakan was planted with coffee, and other crops such as sugar cane, pepper and tobacco were added. Coffee dominated the early plantations



Figure 4. Condition in northern Mento Toelakan, circa 1930

Source: Universitaire Bibliotheken Leiden Collection

in Mento Toelakan with sugarcane or tobacco as companion crops until 1895. Several factors affect plantation development. First, changes in ownership had an impact on changing the orientation of the plantation. Second, the contours of Mento Toelakan had an impact on changing the planting pattern.

Figure 4 shows the ground slope. It was taken from the middle of the plantation area, while the photographer did not take a picture of the lower area. In terms of the area and the diversity of contours, the Mento Toelakan plantation was suitable for planting various types of plants or planting one type of commodity plant that can live at various heights. The first step taken by the private investors was to combine various types of plantation crops (Margana, 1997, p. 73). Some of these plants were planted by a private investor in Mento Toelakan. Mangkunegara IV mostly cleared forest land for coffee plantations. Private investors leased forests for plantations. One of the land rental points in the Mangkunegaran area was Wonogiri. Some plantations cultivated coffee as commodity plants (Margana, 1997, p. 97).

The land clearing for the Mento Toelakan plantation was carried out in stages. It was done because the first crop planted in this area was coffee. Coffee plants need "protection" from other plants when they are young. Coffee plants have a pattern or spacing of 6x6 m to 12x12, depending on the type of coffee grown on the plantation.

The land used for coffee cultivation has been designed according to a plan by the plantation administrator. Although thus, coffee could grow well, coffee shoots or small coffee plants need protective plants, such as *dadap* and *lamtoro* plants, until they are about one year old (Noeh, 1930, pp. 37–38).

The plants in the Mento Toelakan area underwent slight changes in the early plantation peri-



Figure 5. Young coffee plants that need big plant protection

Source: Jr, G. van Iterson, Vezelstoffen, 1917

od. Some cultivated plants were young coffee plants but still retain some plants or trees as coffee protection from the hot sun.

Coffee plants do not need many protective plants when still teenagers or adults. Protective plants were getting reduced; thus, there was a shift in the plants in the Mento Toelakan plantation. Other plants already exist in the area were gradually being evicted to grow coffee cultivation. The opening of the Mento Toelakan plantation may have started from the north side of the area. It is referred to in terms of the contours of the Mento Toelakan area, which were very diverse. The northern area of Mento Toelakan was a sloped area of Mount Lawu, which had a higher contour when compared to other areas. The coffee plantations on the north were probably mountainous areas, and the supporting plants were on the south side of the plantations.



Figure 6. Plants that Live in the Highlands
Source: collectie.wereldculturen

Coffee plants can live at a certain altitude or in highlands such as Mount Lawu. Coffee plants can grow in mountains or lush old forests at an altitude of 2,500 to 4,000 feet, while sugarcane usually lives in lowlands (Margana, 1997, p. 87; Noeh, 1930, p. 36; Wasino, 2005, p. 33).

The coffee plantation area in the north was opened first. The system used was to clear the forest. The southern area might have been inhabited. The Lowland area was converted into plantations as well. However, the existence of the surrounding community was relevant to the opening of sugarcane plantations in the southern region. The lower south area was suitable for sugar cane and could be rotated with community food crops.

According to the data collected, changes to the landscape in Mento Toelakan were not carried out quickly. However, the land was cleared first from the north side, prepared for *pakeopen* and some parts for intercropping plants. The inclusion of the idea of planting *kapok* and *Agave sp.* was a sign of a significant change in the Mento Toelakan landscape. The Mangkunegaran *enclave* area was converted into a large pineapple leaf fibre plantation, with an interlude of kapok plants. In 1897, Mento Toelakan started to try fibre plants such as kapok and then pineapple leaf fibre as a companion to coffee besides cocoa, pepper, and tobacco. In 1905 coffee plants began to be marginalised and turned into fibre plants (Pradita et al., 2021, pp. 84–87).

Some cultivated plants were grown by plantation companies according to the seasons. Plantation crops such as sugarcane or tobacco are seasonal crops that only require about five to six months to grow. After the land is used for sugarcane or tobacco plantations, the land can be reused for food crops (Padmo, 1995, p. 59). Tobacco cultivation in Java generally begins in the dry season around July–October (Noeh, 1930, p. 70). The conditions described by Padmo are plantation areas in Java in general. For the conditions in Mento Toelakan, no supporting data were found. The data were in the form of a coffee cultivation system accompanied by sugar cane, pepper, and tobacco. It is possible that farmers or people there also used the land after it was used as seasonal plantation land, such as mangroves.

The type of tobacco grown in Mento Teolakan was the same as in other tobacco plantations in *Vorstenlanden*. There were several types of tobacco grown in the Dutch East Indies. Tobacco grown in *Vorstenlanden* was a type of tiny leaves and reddish colour (Noeh, 1930, pp. 69–70).



Figure 7. Mento Toelakan Plantation Administrator's Office

Source: Universitaire Bibliotheken Leiden Collection

The period from 1863 to 1906 was dynamic in this plantation area. Various types of cultivated plants were tried on this plantation so that the area had a variety of plant species. However, heterogeneity in this area soon faded when entering 1908. This year was the end of the initial story of coffee in the Mento Toelakan plantation (Pradita et al., 2021, pp. 84–87).

Plantation land became a magnet that attracted Europeans or Indos (Eurasian) to live at Mento Toelakan. Europeans or Indos settled and married local people. Some of the evidence is the family grave and also the family tree. Europeans and Indos residing in Mento Toelakan lived in groups near the administrator's office, commonly



Figure 8. Kapok in Mento Toelakan Plantation.

Source: Universitaire Bibliotheken Leiden Collection

known as *sinderan* (*sinder's* official house). Europeans or Indos usually held high positions in the management of Mento Toelakan Plantation.

Mento Toelakan also succeeded in attracting the Chinese ethnic group to live in this plantation area. The Chinese people came to trade in the plantation area. Those who work as traders lived in economic centres such as markets. The presence of the Chinese ethnic group on the plantation supported the fulfilment of needs or food for workers at the plantation, while Europeans played an essential role in running the company's economy. Important company policies rest with the owners of capital or administrators. Important corporate policies rested with the owners of capital or administrators. One of the policies affected changes in the types of commodities grown. The most significant change occurred when the company wiped out the entire coffee plant and replaced it with *Agave sp.* During this period, there was a transition, namely the experiment of several types of fibre plants such as kapok.

Kapok is a plant from America that can survive in hot weather or temperatures. This plant is easy to grow in Java. The kapok tree can grow up to 30m. The stem of this plant can be used as a vine for other plants such as betel, vanilla and pepper. Kapok plants can grow well at less than 1000m (Noeh, 1930, p. 81).

Based on the plant's character, the opening of coffee plantations on the southwest side of Mount Lawu has not changed much. It is because coffee plants have annual characteristics resembling wild wood as native mountain plants. However, there were only changes in plant varieties at Mento Toelakan. Coffee plants can grow up to 8 or 9 meters long and have flexible leaves. Meanwhile, *Agave sp.* has a more assertive character when compared to coffee. *Agave sp.* can survive in less fertile soil or dense clay type and does not require much water (Heyne, 1927, p. 449). Changes in the types of plants in the Mento Toelakan plantation were possible due to different soil fertility or soil contours. Variations of soil contours in height make it challenging to optimise plantations; thus, efforts were made to change plants that can grow in all conditions. In terms of soil fertility, perhaps the soil in Mento Toelakan was also not maximally fertile.

Infertile soil in Mento Toelakan can be seen from the reports of young *Agave sp.* with growth disorders. During the dry season, young or newly planted *Agave sp.* wilted, even almost died. However, this plant could live again when it enters the rainy season (Helten, 1924, pp. 61–62). *Agave sp.*,



Figure 9. Agave Forest in Mento Toelakan
Source: Universitaire Bibliotheken Leiden Collection

more commonly known as pineapple fibre, Javanese people call it *nanasan*, or konas rope material, is an annual plant. Two fibre plants dominated Mento Toelakan: *Agave cantala* and *Agave sisalana*. These two types of *Agave* have different characters. *Agave Sisalana* is 5-10 years old, while *Agave cantala* can last 10-15 years and grow to 4-8m (Iterson Jr, 1917, p. 13).

Agave sisalana can grow in less fertile soil with an altitude of 2,000 feet; while the type of *Agave cantala* is stronger than *Agave sisalana*, this species can survive in rocky and dry areas and can adapt to an altitude of 5,000 feet, spacing between plants 5-6 feet to facilitate *Agave sp.* leaf harvest.

The change from the area thought to be a forest then turned into a coffee plantation area and finally became an *Agave sp.* also impacted changes in the Mento Toelakan area. These plantation crops had various characteristics, but the same was the occurrence of homogeneous plants.

Coffee plants that could only grow at a certain height were carried out on the north side. The clearing of the area, as reported for the opening of

coffee plantations in Wonogiri during the Mangkunegara IV period, did not change the landscape. The structure of coffee plants, which tend to have tall stems and dense leaves, did not appear to have changed in the area other than the uniformity of plants on the hillside. Adding several plants in Mento Toelakan, such as pepper, which has a creeping character and requires other plants to propagate, did not change the structure of existing plants or plants much. At the same time, tobacco plants were cultivated for the lowlands and can be done alternately with rice planting. Rice planting in plantation areas is usually done outside the tobacco or sugar cane season, which usually falls from July-September. Tobacco plants take five months from the time the seeds are planted until they are ready to harvest (Nagari, 2018).

Mento Toelakan underwent a transition period when there was a change of ownership. The new owners tried to try other crops such as kapok and started trying to grow pineapple leaf fibre. The transition period took several years, and the climax of the change in plantation crops was when all coffee was replaced with *Agave sp.* There were two types of *Agave sp.* developed in Mento Toelakan that can survive in all conditions. Thus, almost the entire area of Mento Toelakan was filled with *Agave sp.* and also interspersed with kapok and Java jute (*Hibiscus cannabinus*).

From 1943 to 1945, Mento Toelakan was under Japanese supervision. During the Japanese occupation, the Mento Toelakan Plantation did not experience a significant change in landscape because the Japanese Military Government used the production for war purposes. At that time, Japan needed fibre for various purposes as a material for clothing, sacks, ropes and several other war purposes (Pradita et al., 2021, pp. 103-104).

"*Agave sp.* forest." in Mento Toelakan ended when Mento Toelakan Plantation went bankrupt in the 1950s. Entering the period of power transfer from the Japanese imperialism period to the Indonesian independence period became a different obstacle for the sustainability of the company and the "Agave Sp. Forest". As a result, the Mento Toelakan Plantation company could not run its economy and fired workers (Linblad, 2008, p. 157).

1951 was the culmination of the decline of Mento Toelakan Plantation. Several years earlier, the Mento Toelakan area had become a looting area. As a result, assets from Mento Toelakan Plantation were targeted for looting. This condition lasted until almost all assets ran out (Pradita et al., 2021, pp. 84-85).

The end of Mento Toelakan Plantation caused the area "Agave sp. forest" to become a no-man's-land. The community pegged or took over the company's land to be used as dry land or rice fields. Each family or stakeholder controlled an average of 2.5 ha (Pradita et al., 2021, p. 88). The area of "Agave sp. forest" during the late 1940s to early 1950s slowly disappeared and left only a few parts to be continued as cottage industries. The community has converted most of the area into dry land or rice fields (Pradita et al., 2021, p. 91).

The *Agave sp.* plants in Mento Toelakan were removed, and then there was a rearrangement of the soil management system in the plantation. *Agave sp.* has deep roots, and the stems are partially buried in the soil. Thus, the stilt process takes a long time and leaves a hole of several tens of centimetres that requires special treatment to plant other types of plants.

During Indonesian independence, changes in the area were carried out in stages because the area changes were done manually, and each family could only take over 2.5 ha of land—uprooted soil required special care, especially to cover the former stems of *Agave*. In addition, changes in land tenure from company land, which one person only controls, to land controlled by many people also need to be handled, such as making boundaries and planting systems that cannot be uniform.

Dry or rice fields are usually planted with secondary crops or rice when entering the rainy season. Based on the Mento Toelakan contour, the dry land area was mainly located in the northern part of the plantation because this area tended to be higher or on the slopes of Mount Lawu. At the same time, the rice fields area was located in the southern part where the condition was in the lowlands.

The irrigation system in the former Mento Toelakan plantation only relied on water channels from other areas, making it difficult to grow rice continuously. Moreover, the irrigation system could only be channelled to the southern or lower areas, while the northern area was challenging to use the existing waterways. As a result, the cropping system for the northern part only relied on a rain soil system or waiting for sufficient water to be available for planting. This condition differed from the conditions during the plantation period of *Agave sp.* *Agave* plants tended to be more drought tolerant than other fibre crops. In addition, this plant is an annual plant, while the moor is a farming system with a seasonal system or in a monthly period and is prone to drought.

At the beginning of the change from planta-

tion areas to dry fields, the northern area in the dry season became barren because the secondary crops had difficulty adapting to conditions that lacked water. Waterways were challenging to reach the highlands. It was different from conditions in the south which could be planted with secondary crops. Only a few perennial plants remain in the northern area, such as kapok or Java jute and remnants of *Agave sp.* These plants were still used as raw materials for industries developed by villagers in the 1950s. Low southern conditions could be planted throughout the year and used as rice fields during the rainy season.

IMPACT OF LANDSCAPE CHANGE IN MENTO TOELAKAN

The development of the Mento Toelakan plantation had an impact on the surrounding environment. In addition, the foreign capital system influenced changes in the environment. In the Mento Toelakan area, environmental changes were influenced by the land rent system and the entry of foreign capital, which impacted changing forests into plantation areas.

Changes in environmental areas for agriculture or plantations were common in the colonial era. The system of "exploding" the region has been standard since the pre-colonial era and almost occurs in various parts of the world. The owner usually clears the land by burning the forest and leaves the area when the land is no longer fertile (Worster, 1993, p. 53). However, the problem of land change that occurred during the shifting cultivation period and the liberal economic period was different. During the colonial era, especially the liberal economic period, land clearing and change occurred in large numbers. The land became an object of commercialisation that could be rented to generate more profit.

Exploited land had an impact on the environ-



Figure 10. The Condition of Mento Toelakan Plantation during Agave Sp. Regeneration
Source: Universitaire Bibliotheken Leiden Collection

Figure 10 represented the Agave plant cycle which is about 15-20 years. From the time of clearing old Agave sp. to replant, this plantation area was like a barren area. During planting period, young Agave sp. plants have been unable to absorb water or restrain the erosion rate on the southern slopes of Mount Lawu.

The Mento Toelakan Plantation area was one of the portraits of deforestation in the Wonogiri Region. During the early twentieth century, the Wonogiri area was under the spotlight due to the high rate of deforestation and the conversion of forest functions to plantation areas. The total forest damage in Wonogiri up to that period reached 60,000 ha. Furthermore, the conversion of forest land into plantations in Wonogiri caused this area to look more barren during the dry season (De Nieuwe Vorstenlanden, 22 January 1923; Het nieuwsblad voor Sumatra, 18 February 1953).

The expansion of plantation areas to replace forests had an impact on water catchment areas. During the rainy season, several areas in Wonogiri could not accommodate rainwater absorption and impacted flooding at several points. One report mentioned flooding on the Wonogiri-Sukoharjo route, which was in the surrounding area of Mento Toelakan Plantation. (Nieuwe Tilbursche courant, 24 December 1914).

The 1937 flood showed evidence of the real impact of ongoing deforestation in Wonogiri. This flood caused the paralysis of transportation routes from Wonogiri to Sukoharjo or Solo. One of the affected points was the area around Mento Toelakan because this area was in the Wonogiri-Sukoharjo border area. In addition, changes in the Wonogiri forest directly impacted the environment



Figure 11. Flood in Wonogiri 1937
Source: De Locomotief, 5 January 1937



Figure 12. Irrigation Channels in Mento Toelakan
Source: Pradita's documentation

in Wonogiri. One of the most visible and felt impacts was the onset of flooding in several areas. Whereas previously there had never been any reports of flooding, flooding has occurred since the forest's function has changed.

In the early twentieth century, the forest area in the northern part of Wonogiri turned into an "Agave sp." forest with an area of about 1,000 Ha. The existence of the forest "Agave sp." indeed required an irrigation system. However, the Mento Toelakan area did not have a special spring for irrigation for this plantation. The water used only depended on one source of water and rainwater. Another environmental impact of forest conversion to plantations of *Agave sp.* was a poor irrigation system. Irrigation channels only relied on irrigation channels from the surrounding area.

Plantations relying on existing waterways to be used as sources were still networks with rice fields; thus, there were often conflicts of interest between plantations and farmers. Waterways only relied on one path and shared it with the surrounding area, which was an agricultural area. Irrigation management policies were expected to involve the government, tenants and villagers so that all of them could feel the irrigation flow (Angenent, 1933, pp. 19–20; Pradita et al., 2021, p. 104).

The Mento Toelakan plantation area with an area of 1,416.5 *bouws* required qualified irrigation channels that did not depend on or interfere with the irrigation channels that villagers had formed. However, the plantation irrigation canal disrupted the community's agricultural system.

Irrigation conditions became vital when entering the period of the 1950s. There was a change from a plantation system to a dry area or rice field, which requires much water for planting until the harvest period. Furthermore, the communal ownership or management system did not make any rules

regarding the system for using the irrigation system for rice fields or dry fields.

Poor environmental preparation or management at the Mento Toelakan Plantation impacted the surrounding environment. The most significant impact targeted agricultural areas that used the same canal or water source. Moreover, the Mento Toelakan Plantation was large, and changes in the landscape accompanied this. Finally, it also impacted the ecosystems or animals that inhabited the area, which was initially a forest and then turned into a homogeneous area with a slight variation of plants on several sides.

The following impact was the problem of deforestation. Deforestation became a severe problem in large numbers during the colonial period. The change of forest into a coffee plantation, for example, changes were carried out gradually and left native plants from this area, but when the coffee grows large, the plants have turned into nuisance plants.

Changes in the next period that changed plantation areas into dry fields also had environmental impacts. *Agave sp.* plants that enter adolescence to old age have long and strong roots, so at this age, plantation areas, especially those on the northern slopes, tended to be safe because there was a strong root barrier. However, during the post-plantation period, landslides have become a severe problem, especially on the slopes of the mountains. Upland plants, which are seasonal, have short roots and tend to be weaker than the roots of *Agave sp.*

The end of the Mento Toelakan Plantation led to the end of the European, Indo and Chinese ethnic lives in Mento Toelakan. When the company was declared bankrupt, Europeans or Indos immediately left Mento Toelakan, as well as ethnic Chinese who depended on the smooth economy of the plantation as support for their economic activities.

The landscape of the former plantation has changed again. In the previous period, most of the area was dominated by *Agave sp.* However, during this period, the land has become more heterogeneous due to differences in contours that impact different types of plants cultivated by villagers and seasonal changes that affect plant types.

CONCLUSION

The Mento Toelakan area had diverse contours, ranging from mountain slopes to lowlands. In the past, Mento Toelakan's land consisted of forest. Some parts were utilised by the surrounding community for farming. Landscape changes began to occur when forest land was cleared for plantation land clearing. After clearing the land, investors

planted coffee. In its development, the Mento Toelakan plantation cultivated several commodities such as sugar cane, pepper and tobacco. The most drastic change occurred when the entire Mento Toelakan area was converted to pineapple leaf fibre forest in 1905. Land management was carried out so that plantation crops could grow effectively. This process physically changed the landscape of Mento Toelakan. The only crops that grew were commodity crops, affecting the biodiversity of Mento Toelakan. The spatial layout of Mento Toelakan was adjusted to the needs of the plantation. In addition, the opening of Mento Toelakan also impacted the irrigation system due to the lack of water systems and sources. Then the Japanese military occupation used Mento Toelakan land for military purposes. Finally, in the 1950s, the Mento Toelakan plantation was taken over by the village community to become dry land and rice fields. The spatial layout of Mento Toelakan changed because the lands were adapted to the agrarian interests of the village community. The impact of changes in the plantation landscape affected the ecosystem in Mento Toelakan. Other impacts affected the social, economic and cultural aspects of the community. The farming community turned into plantation labourers. The community's economy depended on the existence of the plantation. The money economy changed the subsistence economy of the community. Thus, changes in the plantation landscape affected the social, economic and cultural aspects of the community.

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