







Cultural Traces of the Plantation Industry of Gutta Percha Cipetir in Sukabumi Regency, West Java, Indonesia

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Abstract. The cultural traces of the Cipetir gutta percha plantation industry in Sukabumi are the cultural traces of colonial heritage from the Dutch East Indies Government era, which are important historical evidence of the existence of an export commodity trading industry that sells well in the world market. The research method used is the archaeological research method with historical approach and applying *structure concepts* for analysis and interpretation. Data collection techniques adapted to *the framework of industrial archaeology*. The results obtained are traces of the old culture as *tangible traces*, in the form of buildings, structures, remaining foundations, and other artifacts. The old gutta percha plantation building has a typical plantation architectural style that emphasizes function and simplicity. These tangible traces lie within the industrial cultural landscape, as a blend of *natural* and *industrial landscapes*. Then traces of *intangibles* in the form of stages of the production process in the plantation and in the factory and the company's organizational structure which was hierarchical and racial in the past.

Keywords: Cultural Traces · Plantation Industry in Sukabumi · Gutta Percha Cipetir

1 Introduction

The industrial culture of the Gutta Percha Cipetir (*Tjipetir Onderneming*) Sukabumi Plantation industry still survives today. The cultural traces found are of various types, but only a few remain intact. The results of the 2021 research inform that Cipetir has become a plantation section of PTPN VIII's Sukamaju Parakansalak Plantation. In the past, Cipetir was the first garden in Priangan (West Java) to produce *Gutta Percha*. The

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presence of Cipetir and gutta-percha plantation is shown in a statistical map reproduced in 1933 [1]. Gutta Percha (*Palaquium gutta*) comes from the rubber tree Getah Perca, which comes from the Malay language. Sap is a form of this material, while patchwork is the name of the producing tree [2]. The locals call it oblong rubber, because it is known by a Latin name, namely *palaquium gutta oblongipolium*.

Most people who know gutta-percha rubber only exist in the Cipetir Sukabumi area. Based on old topographic maps [3], information was found about the existence of a gutta percha factory in the Bandung area (Regency of Bandung West). There are three gutta-percha factories, namely *guttaperchafabriek Ciboengoe*, *guttaperchafabriek Cimangsoed*, and *guttaperchafabriek Lemhadoehoer*. The three factory locations are in the Bajabang and Pasir Ucing Plantation areas. The findings on the old map require verification by own research. This paper will discuss the cultural traces of the gutta-percha plantation industry in Cipetir, Sukabumi.

The product of Cipetir's gutta percha industry is in the form of white slab, which need to be reprocessed for its utilization. In general, gutta-percha rubber is currently used as a coating material for golf balls, basic materials for medical devices, a mixture of gypsum for bone dressing, as well as dental care and the manufacture of dentures. An important function of gutta percha rubber in history was to support communication between countries in the world during World War I and II. Then it was also used as an installation material (coating) for underwater cables (*telegraph charts*) (1856–1896), which shortened the distance in sending messages between countries between continents [4]. In the previous period, around the 16th and 17th centuries, gutta percha rubber was also used as a material for household appliances, appearance equipment and accessories, as well as office equipment. Among them are buckets, clotheslines, bowls, mugs, hats, shoe soles, inkwells, and pen trays [5].

The important function of gutta-percha rubber was shocked by Tracey William, who found pieces of Tjipetir gutta-percha on the Cornwall coast, England in 2012. In 2013, it was also found on the Miyazaki Maru ship owned by Japan during World War I. Then in 2017, the leader of the German submarine, U-88, Captain Walther Schwieger, also recovered pieces of Cipetir's gutta percha. Furthermore, the results of Tracey William's research in 2021, were also found on the coasts of Germany, the Netherlands, France, Sweden, Denmark, and Norway. The discovery of these chewy rubber slabs finally reached Cipetir Sukabumi, and in the same year an indirect order for gutta-percha slabs was made in Surabaya to the Cipetir Sukabumi Factory. Orders came from Germany for dentistry purposes [6].

The gutta percha plant was tested in the Cipetir experimental farm, under the Bogor Botanical Garden in the mid-19th century (1885). The Gutta Percha State Plantation Company was officially established in 1901, under the auspices of *the Nederlandsche Gutta Percha Maatschappij, The Hague*. The definitive factory was built in 1914 and mass production occurred when the definitive factory was completed in 1921 [7]. The traces of culture in the Cipetir plantation contains important historical and cultural values, which is the main issue in this paper.



Fig. 1. Location of Sukabumi Regency on the Regional Map of Indonesia

2 Rationale of Study

Research on plantation sites includes industrial archeological research on artifacts, building structures, and the layout of buildings in residential emplacements and plantation environments [8]. The plantation environment is in a particular landscape, influencing the yields obtained and the types of plants planted [9]. Industrial archaeological studies are artefactual studies by conducting site descriptions and physical evidence (*material culture*), as well as technological developments. Then, the site, structure, and landscape are interpreted. Furthermore, it is analyzed in depth to understand the social and cultural meaning of the artefactual remains, by providing a social context, and social life formed from different social classes in its time [8].

Interpreting every aspect of material culture left in the past will produce a general pattern by applying the structure concept. The general pattern of *wholeness* as a transformation contrasts, the dichotomy in the social system and power distribution. In the early days of the birth of the structure of society, they were played by the elite to form a new system and change the structure of the previous phase, as a group strategy in society [10]. The structure concept has three basic things: *wholeness*, *transformation*, and *self-regulation* [11].

3 Location and Research Methods

The research location is in the Cipetir Plantation as part of Sukamaju Plantation, administratively located in the Cikidang District, Sukabumi Regency, West Java, Indonesia (Fig. 1). These locations are generally located west of Sukabumi City and south of Bogor,

covering the area south of the Mount Salak complex, west of Mount Gede-Pangrango, and west of Mount Walat. The location is in the hills in a west-east direction, composed of weathered volcanic breccia.

The archaeological research method used is a surface survey or direct field observation, with a *framework of industrial archeology*, according to Eleanor Conlin Casella, namely *surface surveys, excavations, archival research, and oral history interviews*) [12]. In this study, no excavations were carried out because the data sources on the ground surface were sufficient for description, analysis and interpretation.

4 Data and Discussion

Traces of cultural objects in the Cipetir gutta percha plantation can be divided into two groups, namely the Factory Area and the Administrator's House Area which are ± 500 m apart. The Factory Area is located to the north of the Administrator's House Area (Fig. 2). The location is in the valley of the Ciletuh River, which flows eastward, with the flow not too fast, and the water looks clear. The two areas are separated by a plantation street and gutta percha plantation land and are connected by the Cikidang street.

The Gutta Percha processing carried out at the Cipetir Factory requires a lot of water, which is taken from the Ciletuh River by damming it in a water pool. Then the water from the pool is pulled up by an electric water pump and stored in Water Tank 1 which is on a higher ground, close to the office building. From Water Tank 1 it is distributed by the Chemical Factory, to Water Tank 2 near the Mechanical Factory, as well as to the water taps for the daily needs of factory employees.

The cultural footprint of the Cipetir Plantation industry consists of two types, namely *tangible culture* and *intangible culture*. Traces of cultural objects that are still intact in the Factory Area (Fig. 3), namely the Cipetir factory which consists of two buildings, namely the mechanical factory and chemical factory, a former laboratory, and the departmental office. Other cultural traces include the former clinic, the former water pump house, a mosque, a warehouse, an old bridge, a chemical water tank, a mechanical water tank, the remains of a house foundation, the remains of a lorry carrying gutta leaves, the remains of the foundation and the remains of an iron frame like gasoline. Meanwhile, in the Administrative House Area (Fig. 4), a new Suhunan Seven building was found which stood on the foundation of the old Suhunan Seven. The old Suhunan Tujuh building is the former home of the Cipetir Plantation Administrator. Then there is vacant land that used to be the old building and the Cipetir Kindergarten building.

The Administrator's home area is at the top of a small hill on the ridge plains, facing north-northwest, towards Mount Salak. The morphology of this hilltop has a very good view of the lower land. Views to the south show the valley of the Cicareuh River and the Cikidang Hills, to the north and east to the gutta percha plantation area [7].

The Cipetir Factory Area emplacement settlement in van Gelder's old photo (Fig. 5) provides information on the layout and whereabouts of staff houses and worker's emplacements [7]. The definition of staff is a term for leadership/officials under *the administrato*, originating from Europeans (Dutch), such as *deputy administrators (emploje, heads of sections, and supervisors. The administrator* is the highest plantation official who oversees several section heads, while the *emploje* is the Administrator representative under the Administrator but does not supervise the section heads/sinder. The

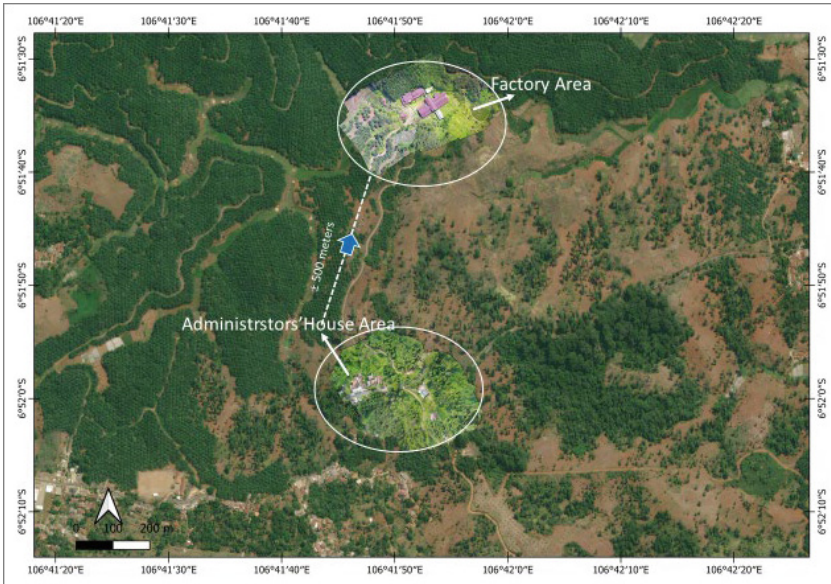


Fig. 2. Location of the Factory Area (500 above the sea level) is located to the north of the Administrators' House Area (562.5 m above the sea level) (Image. Google Earth and Drone Photos. Modification of Astyka Pamumpuni 2021 and Lia Nuralia 2023).

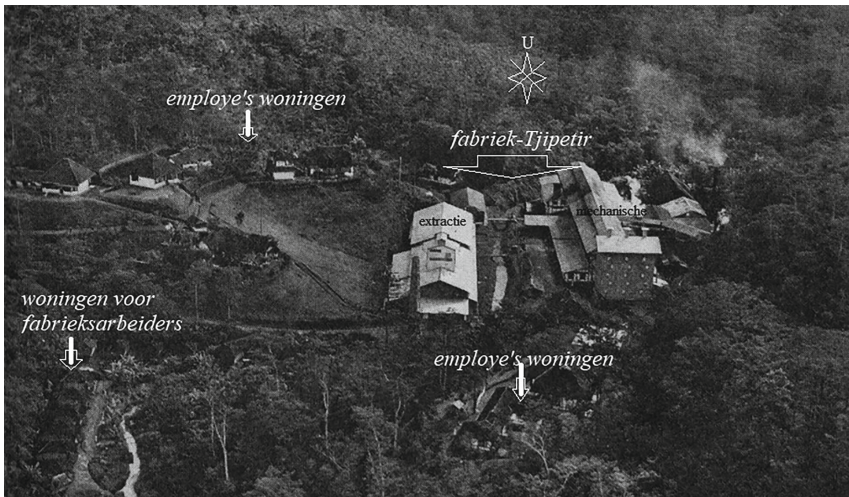


Fig. 3. Gutta Pecha Cipetir Factory Area in the Past (1921) (Cipetir Factory Doc. Van Gelder, 1950: 499. Modification by Lia Nuralia, 2022)

term *employe* is then very attached to his position, so it is often shortened to “*Epe*” and indigenous workers now in West Java, tends to refer to him as Pak “*Epe*” [13, 15].

The term worker is manual labor or laborer or coolie (*koelie*). The staff house emplacement (*employe's woningen*) stands on higher ground than the factory workers' emplacement (*woningen voor fabrieksarbeiders*). Based on an old photograph (Fig. 3), the emplacement staff houses are to the southeast and northwest of the factory, while the workers' houses are to the southwest of the factory [16]. The staff houses southeast of the factory are on higher ground than the factory grounds. The houses' traces were the remains of foundations on banana, cassava, oil palm and weed plantations. Meanwhile, in the southwestern part it has been covered with oil palm; previously, the land was intentionally vacated in gutta percha plantations [7].

The factory building is the center of industrial activity in Cipetir, surrounded by warehouses, water tanks, offices, laboratories, residential houses, and other public facilities. The factory is located in a lowland area in the form of a valley surrounded by gutta percha plantation. At present, there are only a few gutta percha forests, most of the land has been converted into oil palm plantations. Then the water flow path of the Ciletuh River can be seen dividing the factory complex into two (Fig. 4). Between the two banks of the river are connected by a bridge that is purposely made for traffic from the mechanical factory to the chemical factory and laboratory. Then there is a bridge near the department office leading to the west garden. The Cipetir Gutta Percha Factory may also utilize the river flow to drain the remaining water from the Gutta Percha processing. Thus, the selection of a factory location is more influenced by water availability, namely the water of the Ciletuh River [7].

Industrial buildings in general, especially factory buildings, are more functional without special architectural styling. The factory now no longer displays the wholeness and complexity that it possessed. The facade of the building used a frame structure with (possibly) wooden partitions at first, but it has been replaced with a zinc facade with minimal maintenance, giving it a rundown impression. Some parts were replaced with



Fig. 4. Traces of Industrial Culture in the Cipetir Factory Complex Area Today (2021) (Aerial Photo by Aves. Modification by Lia Nuralia, 2021)

plastered and painted brick walls. Then the former Laboratory as part of the Lightning factory, the condition of the building was destroyed. At the rear, only the back wall is left without a roof. The rear wall has a ventilation hole decorated with a plus sign (+). The rest of the building shows columns and walls using red bricks, as well as large wooden and glass windows [7].

Openings (windows, doors, ventilation) in the former laboratory and office sections are the result of the reconstruction which produces various types of openings. Openings are an important component for air circulation and lighting, as well as the style or visual beauty of the exterior and interior of a building. The composition of the forms and proportions of the openings show the quality of the proportions and compositions of the openings of the Dutch East Indies architecture in the early 20th century, but they are not modern styles. The architectural characteristics of the gutta-percha plantation industrial buildings are responsive to the surrounding environment, through a sober European-style building process and local techniques. Unknowingly, plantation architecture has been born with its own style (typical) which emphasizes functionalism, simplicity of form and construction, in contrast to urban and local architecture [7].

In addition to the buildings and structures, traces of the old colonial period also contain old tools and machines that are still in use, such as a milling machine and conventional five granite milling stones originating from Italy; *oilcake* cooking vessels (cakes are the result of grinding gutta leaves); gutta sheet printing machines; white gutta *vacuum* machine (white gutta pieces ready for distribution). Then around the factory and laboratory also found fragments of porcelain, stone, broken glass laboratory, and electrical tools.

Traces of industrial culture in the Administrator's Home Area are no longer left. The "Suhunan Tujuh" building that is visible now is a new building that has lost 100% of its original shape. The building is no longer part of the Cipetir plantation, even though it is located in the Cipetir Plantation environment. Then the former TK Building is also no longer functioning and has undergone many changes. Meanwhile, the employees' houses in the northwest of the Administrator's House Area are not old Dutch-era buildings. Previously, workers' houses were non-permanent homes, so they did not last long and were no longer found. There is one permanent house as the house for the head of Cipetir plantation, but the old model he shows is not the old Dutch building (Fig. 5).

The gutta-percha plantation areas, which are still in production today. There are about six plantation areas: Cipetir production and seed orchards, Cicareuh I and II production and seed orchards, Pasir Rarangan production orchards, Cijambrong orchards and production, and Cikidang (non-production) estates (Fig. 6). The area of plantation land has greatly shrunk, because production is dwindling and there is land conversion to oil palm plantations [7].

The condition of the gutta percha forest land in the Cipetir garden, Cijambrong, Pasir Rarangan has also experienced land shrinkage. The conversion of functions causes the narrowing of land into oil palm plantations and the construction of residential buildings without permission by retired gardeners and local residents, as well as control of land for paddy fields and fields or other functions by individuals or groups.

One of the gutta percha plantations that has become a nursery is the Cicareuh plantation (Fig. 7 and 8), with hundreds of-year-old gutta trees. However, it is a pity that there



Fig. 5. The Administrators' House Area on the edge of Cikidang street, south of the Factory Area (Image of map of Azhar Rachman, 2021. Modification of Lia Nuralia, 2023)

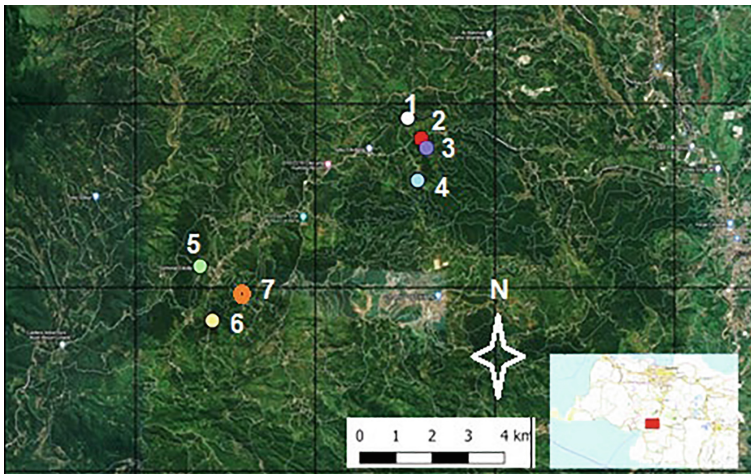


Fig. 6. Location of Gutta Percha Plantations: 1) Cipetir Factory, 2) Cipetir Production Plantation, 3) Cicareuh I Nursery, 4) Cicareuh II Nursery, 5) Cikidang Garden, 6) Cijambrong Nursery, and 7) Production Plant Rarangan (Map Image by Prima WK Hutabarat, 2021. Modification by Lia Nuralia, 2022)

are only a few old trees left; some of the plantation lands have been converted into oil palm plantations and new “settlement or guest houses” areas, which were deliberately established by “cutting down gutta forests”. According to the statement of the plantation manager, the land has been cooperated with the community “Kesatuan Keluarga Besar Kasepuhan (KKBK)” or Kasepuhan Grand Family Union in West Java-Banten Province.



Fig. 7. Gutta Percha Nursery in Cicareuh II, Cikidang (Documentation and Modification by Lia Nuralia, 2022)

Officially the 200 ha of land is the Hak Guna Usaha (Business Use Rights) area of PTPN VIII's Sukamaju-Parakanasalak Plantation, but it is being used for cultivation by the KKBK marked with a sign that reads “Sundanese Cultural Heritage”. Then the information obtained from the foreman or supervisor of the construction of the *pesanggrahan* was that the land belonged to a “figure”, with the right to cultivate that was given to him [17].



Fig. 8. Cicareuh-Cipetir Garden Area and West Java-Banten KKBK Land (Source. Google earth image 2022 Maxar Technologies. Modified Lia Nuralia 2022)

The Cicareuh nursery, as a typical gutta-percha forest habitat has several plant species around the *Palaquium gutta* plant, both naturally and intentionally planted. The existence of these plants is thought to be a form of association, namely the relationship between organisms in the *Palaquium gutta forest community environment*. Plants that live close together in a habitat are interconnected with one another, naturally filling niches in an ecosystem. In a community, there will be relationships between species, with a level of attachment that further studies can measure. This association can be positive, negative or neutral [7].

The plants in the gutta forest of the Cipetir, Cicareuh I and Cicareuh II nurseries are relatively similar because the three locations are still close together. Some of the species found include *Curculigo latifolia*, *Etlingera elatior*, *Macaranga triloba*, *Miconia crenata*, *Melastoma malabathricum*, *Heptapleurum rigidum*, *Selaginella* sp., *Pleocnemia irregularis*, *Eupatorium inulifolium*. The temporary hypothesis is that this plant species is associated with *Palaquium gutta*. The loss of the presence and role of associated plants can cause an imbalance in the ecosystem within a community, directly or indirectly interfering with the growth and development of *Palaquium gutta* plants. Meanwhile, the Cijambrong nursery and the Pasir Rarangan production garden differ slightly. Plant species in nurseries are pioneer species commonly found in secondary forests or invasive plants. Plants that are deliberately planted as cultivated plants include robusta coffee (*Coffea canephora*), salak (*Salacca zalacca*), cassava (*Manihot esculenta*), and bananas (*Musa accuminata*) [7].

The gutta percha plantation is the initial location for the production process, namely gutta percha leaves to be brought to the factory. Processing at the factory consists of two major stages, namely mechanical and chemical/extraction. The mechanical process starts from grinding the gutta leaves until they form fine lumps (dry powder) that are yellow in color (yellow solution). Then move on to the chemical process with the initial process of cleaning the yellow solution several times from other materials attached to it until it becomes a white solution/white gutta (Fig. 9 and 10). Then there is the process of forming and printing the white gutta, to be then stamped “Tjipetir” and packaged in a container ready for distribution. The processing process at this chemical factory takes from two weeks to one month, depending on the quantity.

Production results at the Cipetir Factory are large in the number using a mixed production procedure between manual and machine. The production is based on the Western social system with a modern economic system or money economy system,



Fig. 9. Results of Processing of Gutta Percha Leaves at the Cipetir Mechanical Factory (Photo Source of Research Activities in Cipetir 2021. Modification by Lia Nuralia 2022)



Fig. 10. Results of Gutta Percha Leaf Processing: Fine Jonjot (Yellow Solution) and White Gutta Slab, Past and Present (Source. Research Activities in Cipetir 2021. Modification of Lia Nuralia 2022)

resulting in white and round gutta pecha slabs. The production results describe industrial activities by workers and factory managers. Workers as errands in the industry do not only work in the factory for the company's benefit, but work outside the factory to fulfill their daily needs by farming, cultivating and raising livestock. This situation is carried out in traditional ways that have been passed down from generation to generation or sustainable traditions. In addition to fulfilling his family's daily needs, he also sells some as additional income [18]. Thus, the western-modern-capitalist economic system goes hand in hand with the subsistence-traditional-Eastern economic system, giving rise to a contrasting dual socio-economic system [7, 15].

Based on the facts on the ground, there is a contrasting division of labor within the plantation structure [19]. The Cipetir plantations in the past, which have continued to the present, place workers as plantation laborers who have no bargaining power. Most of the time is spent for the company's benefit, which is reflected in the employee's house in the Administrative House Area, which does not have enough space and without yards that are close together. This is different from the house of Assistant Afdeling Cipetir, which is wider by a certain distance and has a yard. Contrasting conditions today are also illustrated in the past from the findings of the remains of structures and foundations on the land of former staff houses (*employe's woningen*) and former workers' houses (*woningen voor fabrieksarbeiders*). Larger staff houses indicate a more prosperous life, with authority to organise their needs and desires. Meanwhile, workers' houses are more narrow and limited as a reflection of less prosperous and high dependence on company managers. The dominant of power of company managers is obtained from the profits of industrial products in the international market [7].

The houses of the workers/laborers are located on low land around the factory in the form of duplexes (pairs/attached) and single houses. Then the staff's houses are located on higher ground, in the form of a single house with access to a plantation street that is separate from the workers' emplacement. Furthermore, the house of the highest leadership (Administrator/Manager) is located on a separate plot, at the top of a hill with its own access road [7].

The pattern of buildings in emplacement settlements shows the corporate bureaucratic structure and power hierarchy, as well as the social stratification of the plantation

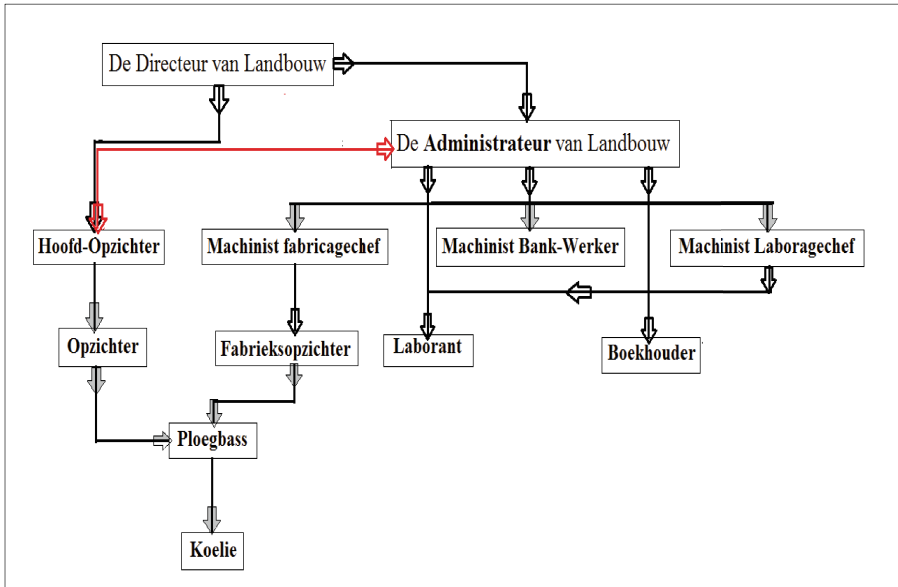


Fig. 11. Organizational Structure Diagram of the Cipetir Plantation State Company 1911–1913 (Source: Colonial Archives No. 7128 Tzg Ag 1920/117, Algemene Secretarie Seri Grote Bundel Ter Zijde Gelegede Agenda 1891–1942, ANRI 2021[20]) (Chart processed by Lia Nuralia, 2021).

community (Fig. 11 and 12). Plantation companies have systems/regulations of working relations between leaders and workers. Regulation in work relations also occurs in daily interactions, where rules apply as an extension of regulations in the work system, resulting in social relations. The social relations of plantation communities during the Dutch era were in a colonial situation, so industrial relations were unbalanced, relations between rulers and those controlled, contrasting relations between white and colored skin, West and East. One example is the position of a separate Administrative house, with the highest leadership being of European race, white, and in a high social status or upper class. The former Administrator’s House reflects the will of “sterilization” as desired by the bourgeoisie. It is also strong evidence of the power factor that gives freedom to create distanced relationships. This relationship also limits verbal communication between plantation managers and workers [7].

At the beginning of the 20th century, colonial relations had given rise to the social stratification of the Dutch East Indies society in general, the 1926 Dutch East

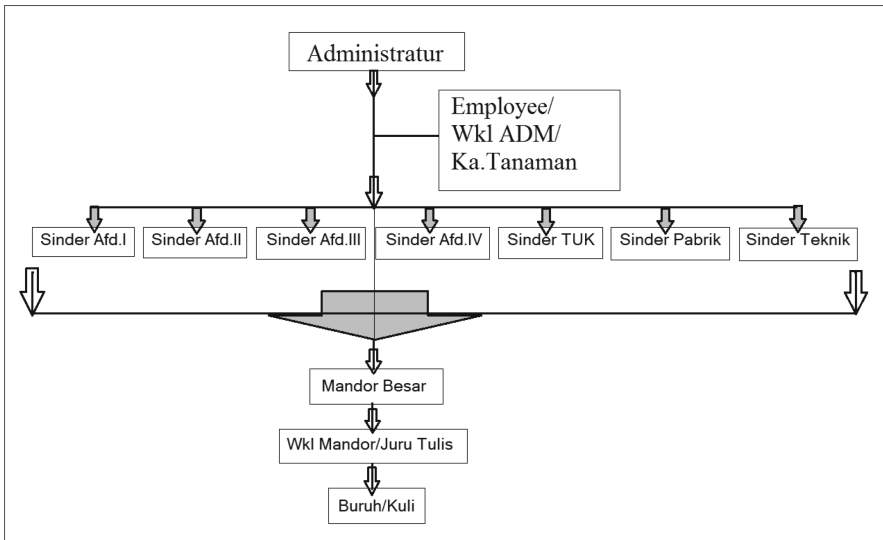


Fig. 12. Organizational Structure Diagram of the Cipetir Plantation Company in 1983 Based on the Old Cipetir Plantation Map (Image processed by Lia Nuralia, 2021)

Indies (*Nederlandsch-Indie*) constitutional law regulations (*Indische Staatsregeling*), as follows.¹

1. Europeans and their equivalents are at the top strata, consisting of a Dutch people and their descendants; b) Other European nations (Portuguese, French, English); and c) People who are not European and have entered the European group;
2. The *Foreign Easterners* constitute the middle layer, consisting of Chinese, Arabs, Indians, Pakistanis, and other Asians;
3. The *Bumiputra* group is the lower/lower layer, namely indigenous people or native Indonesians.

The social stratification is the general layering of the Dutch East Indies population. In the plantation structure, the layers are divided into two extreme poles, namely the upper layer and the lower layer. The top layer belongs to white Europeans, while the lower layer is occupied by *natives* or people of color [7].

¹ *Indische Staatsregeling* (IS) is a basic regulation (a kind of constitution) during the Dutch East Indies Government as a substitute for *Regulation Regering*. This change occurred on July 23, 1925 based on the 1925 *Staatsblad* No. 415, which came into effect on January 1, 1926. The most important regulation in this *Indische Staatsregeling* (IS) is Article 163 IS which divides the population in the Dutch East Indies into three population groups, namely: Residents of the European group, Residents of the Eastern Foreign group and residents of the indigenous group. (bumiputra). Article 131 IS, which determines the law that applies to each population group as stipulated in Article 163 IS (*Indische Staatsregeling, Colonial Constitution 1925, Ph. Kleintjes, Staatsinstellingen van Nederlandsch-indie. Amsterdam de Bussy, 1933*). Article 131 paragraph (2) jo Article 163 *Wet op de Staatsinrichting van Ned-Indië*, S. 1855 – 2[21].

5 Conclusion

The traces of *tangible* and *intangible* cultures are located in the Factory Area and the Administrator's House Area. *Tangible* cultural traces are of various types and are found in a changed state, some intact and some damaged and missing from the surface. The traces left behind are remnants that are difficult to describe. Three old buildings in the Factory Area appear intact and are still functioning, but have undergone changes and damage, namely the departmental office, the mechanical factory and the chemical factory. Then there is one building that is not intact, badly damaged, and no longer functioning, which is a former laboratory. Other traces of industrial culture are damaged, lost and no longer used, in the form of structures, remaining foundations and remaining land. Furthermore, the traces of industrial culture in the Administrator's House Area that are left behind are only the remains of the foundation, former land, and new buildings (the new Suhunan Tujuh). Meanwhile, the area of gutta percha plantations has greatly decreased, most of which have changed functions to become new settlement lands, oil palm commodity plantations, and land that is cooperated with the private sector.

Traces of the plantation industry's culture that are still intact are located in the valley with the flowing water of the Ciletuh River, which seems to divide the site into two parts. Geomorphologically, the location of the plantation is located in the hilly area to the ridges of the volcanic slopes. This situation shows the morphology of valleys and hills which eroded quite intensively, with an altitude of 350–600 m above sea level. The geomorphological characters are hills with a west-east direction and a fairly rough relief, characterized by moderate to steep hills and slopes. Then architecturally it did not show the style that was in trend at that time but gave birth to the unique style of the Gutta Percha plantation industrial building.

The traces of industrial culture of intangible culture are procedures for processing gutta percha leaves that do not change pre-existing standards. The process of procuring gutta leaf material in the garden and processing it in the factory has two main stages, namely mechanical and chemical. Then the economic system that is applied is also a dual economic system, namely the modern economy and the traditional economy. Furthermore, the social system is reflected in the plantation structure, namely the existence of a hierarchical division of labor and social status.

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