Cultural Aspects and the Sustainability of the Tasikmadu Sugar Factory as an Industrial Living Heritage in Java

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Abstract. Adipati Mangkunegara IV founded the Tasikmadu Sugar Factory in the Karanganyar region, Central Java, in 1871 and is still active today. The Tasikmadu sugar factory is an essential industrial heritage in Java because it is the first modern sugar factory in the Javanese kingdom that still survives its function. The existence of a sugar factory in the Javanese kingdom initiated the interaction between Javanese agrarian feudal culture and modern capitalism culture at that time. This paper aims to identify what cultural elements are present in Praja Mangkunegaran's sugar factory environment. The cultural interactions in the sugar factory environment are then viewed from the system setting which consists of aspects of actors, activities, and places through a qualitative descriptive historical approach. The findings from the aspect of actors indicate central figures who are culturally very influential on the sugar factory production system. The activity aspect findings show that there are ritual activities in the production process that are culturally important because they are considered to determine the success of all activities in the sugar factory. The aspects of actors and activities are in line with findings from the aspect of the place, which show that rational considerations in factory buildings’ structure are related to the sacred-profane conception that is believe by the Javanese people. These cultural aspects play a role in supporting the sustainability of the Praja Mangkunegaran sugar factory.

Keywords: cultural aspects, sugar factories, Praja Mangkunegaran, sustainability, industrial heritage.
I. Introduction

The percentage of industrial heritage as the subject of world heritage practice is still very small. UNESCO’s heritage list shows that industrial heritage has not been represented significantly throughout this 20th century (Falser & Yang, 2001). In Indonesia, only one has been included in the UNESCO list of industrial heritage, namely the former Sawah Lunto mine (Asoka, et al, 2016).

One of the industrial heritage in Java is a sugar factory. The sugar factory's legacy is a witness to the glory of the sugar industry in Java in the 1800s. The hundreds of sugar factories that were built at that time made Java the second-largest sugar supplier in the world after Cuba (FAO, 1997; Purwadi, 2014). The sugar factory became an industrial building that was built massively throughout Java. The sugar industry’s dominance indicates the significant influence and role of the existence of the sugar industry on urban development in the Javanese kingdom (Wasino, 2008; Padmo, 2007). The sugar factory building’s architecture has various unique architectural elements with specific characters (Inagurasi, 2010; Wijaya, 2002).

Sugar factories as an industrial heritage have an important value as a source of knowledge in industrial building architecture from the past. Therefore, efforts are needed to explore, understand, and manage sugar factories’ potential as industrial heritage in various scales and dimensions. Based on the identification of the sugar factories that existed in Java (Nugroho. P.S, 2020), this paper aims to explore the cultural aspects that exist in sugar factories and how those play a role in maintaining its operations. The study was taking the case of the Tasikmadu Sugar Factory, the only sugar factory belongs to Praja Mangkunegaran that has been operating since its establishment in 1871 until now.
Figure 2. Distribution of sugar factories from the colonial Period in Java
Source: Nugroho, PS (2020)

Figure 3. Sugar factory from the colonial era in Java which is still active
Source: Nugroho, PS (2020)
2. Material & Method

Data on the distribution of sugar factories as industrial heritage in Java was used as the basis for selecting Praja Mangkunegaran's Tasikmadu Sugar Factory as a case study. Identification of cultural aspects that support the Tasikmadu sugar factory's sustainability in Mangkunegaran Praja was carried out by tracing primary and secondary data sources with a qualitative descriptive historical approach. Maps, photos, and descriptive data are used to see cultural phenomena in the Tasikmadu sugar factory environment. Data are grouped into three categories: Human aspect, activities aspect, and places aspect. Each of these aspects is examined to find what cultural aspects play a role in the Tasikmadu sugar factory's sustainability.

Of the hundreds of sugar factories from the colonial era, there are sugar factories founded and managed by the Javanese kingdom. There are at least three sugar factories owned by Praja Mangkunegaran. The only sugar factory belonging to Praja Mangkunegaran operating is the Tasikmadu sugar factory in Karanganyar, Central Java. This factory was founded in 1871 by Adipati Mangkunegara IV. Previously, in 1861 Mangkunegara IV had established the Colomadu Sugar Factory. The Tasikmadu Sugar Factory was built using Colomadu's profits for ten years.

![Figure 4. Location and Photos of the Tasikmadu Sugar Factory](Source: Cribb (2007) and Kit.lv)
3. Findings & Discussion
The cultural aspects of the Praja Mangkunegaran sugar factory environment are categorized into three aspects, as follows:

3.1. The Actors
Regarding the actors' aspect, there is a specific relationship among the actors of the activities that greatly determine the Mangkunegaran sugar factory production's sustainability. The main actors in the Tasikmadu sugar factory setting system are the king and his royal relatives, the factory administrator with all his employees, the leaders of the sugarcane plantation village with all of their farming people, and local traders Dutch conglomerates as the liaison with sugar consumers.

As the main actor in the sugar factory’s managerial activities, the king was assisted by his royal relatives. The king holds absolute authority, which binds and liaises all actors associated with sugar factory activities. Mangkunegara IV initiated a breakthrough in the control of apanage land by changing it to a salary system. The salary system is an innovation as an indigenous capitalist.

The king had good relations with Dutch officials and Chinese merchants in Surakarta and Semarang, even with world leaders.

![Diagram of actors in the Mangkunegaran Sugar Factory Setting System](source: analysis, 2020)

**Figure 5.** Relationship between components of actors in the Mangkunegaran Sugar Factory Setting System

The king and his relatives who held authority in the Mangkunegaran Praja became central figures in managerial activities and became the knot of relations between other actors. In production activities,
the King has a special relationship with village officials. The king appointed *bekel/demang* as the village-level production leader who regulated the tenants.

In the sugar factory's processing activities, the king appointed employees who were mostly European citizens and represented the factory leadership to an *administrator*. In distribution activities, the King cooperated with the Dutch private sector to distribute sugar by train.

### 3.2. The Activities

Related to sugar factory activities, there are four main activities: management, production, processing and distribution activities. Management activities regulate the entire sugarcane production, processing and sugar distribution. Management activities were centered on the Mangkunegaran king, both technically and politically. The king as the factory owner became the determinant of policies assisted by administrative employee who were usually European.

Production activities are sugarcane cultivation activities that include preparation for planting (seeding), planting and maintenance, cultivation (harvesting), and sugarcane transportation from the plantation to the sugar factory. The processing activity is converting sugarcane juice (sap) into sugar crystals by weighing, milling, refining, evaporating, cooking / crystallizing and packaging in the sugar factory emplacement. Distribution activities include all storage processes, transporting sugar from factories to big merchant collectors in port cities, to be sent to the destination countries.

Of the entire series of activities, one activity is considered important and very much determines the success of production and processing activities at the Mangkunegaran sugar factory, namely the *grebeg giling* event. This cultural activity takes the form of a salvation ritual (*selamatan*) and a procession of *Manten Tebu* at the start of the milling season accompanied by the *Cembengan* night market. In addition to the mandatory *grebeg giling* activities, there are also activities to inspect the king to factories and agricultural areas and *seba* (*pisowanan* to the king) as a form of coordination and control.

![Figure 6. GrebegGiling activities in Tasikmadu Sugar Factory](source: compiled from kitlv.nl and various sources (2017))
3.3. The Places

Regarding the place aspect, the buildings' arrangement and shape in the sugar factory area are generally arranged based on rational considerations of the sugarcane processing process. The structure of the buildings within the Sugar Factory emplacement shows a hierarchical pattern seen in the building's spatial zoning and architectural formations.

As the leader and the highest authority in the sugar factory, the administrator occupies the Mbesaran house in the central zone of the factory area. The appearance of Mbesaran house that is more prominent than all types of houses in the factory complex can be seen from its larger size / area, the building floor's elevation, and the richer details of its architectural elements. Mbesaran house consists of a terrace that surrounds the main house, living room, bedroom, sitting room, dining room, pavilion and room for service functions (kitchen, garage, maid's room, driver, gardener) which is separate from the main building. Colonial-style building with a row of European-style round poles, the size of the doors, windows and high ceilings with buwenlight decorated with Cakra ornaments (arrangement of arrows). The color of the building is called pare anom, which is a combination of green and yellow. There is a Gazebo with a cast iron structure from Belgium as a limited meeting place between the King and the Sugar Factory leadership. Raja Mangkunegaran never had a meeting in the office, and preferred the gazebo as a place of coordination. Apart from the gazebo, there is a special place in the mbesar house which is reserved only for kings. Until now, one senthong (room) on the right side of the Mbesaran house has never been opened, and is used to store the heirlooms and ageman relics of Mangkunegara IV.

Surrounding the central zone, there is a residential zone for the leadership staff (administrative workers) who are generally European. This zone is in the environment of the emplacement wall. Residential buildings for the leadership staff are in the form of a single or coupled building with an indish building style. Even though the size and detail of the ornaments are not as big and as high as a large house, the leadership staff's house has relatively the same type and function of space.

The next zone is a residential zone for employee staff (technical workers) who directly handle factory operations. This zone is outside the emplacement wall with a smaller building size and simpler building style. The space arrangement consists of a terrace, a living room and a bedroom with integrated service rooms. The type of house for employee staff is more for meeting basic housing needs. Actually, the lowest hierarchy is in the occupancy of seasonal employees (daily contract employees during the milling season) who only rely on labor (tenogo coolies), who usually also work as planters, cutting and transporting sugar cane. Seasonal employees are not provided with shelter facilities, they are mostly commuters who come from villages around the factory area.
Figure 7. Hierarchical pattern on the structure and shape of the buildings at the Tasikmadu sugar factory

Source: analysis, 2020

Especially for the emplacement area, although the factory layout is planned in a hierarchical pattern with rational considerations for sugarcane processing, in the Tasikmadu sugar factory there is a special place that culturally determines the sugar factory production activities. There is punden as an important location that is the starting point for rituals in both the sugarcane plantation village and punden in the factory.

4. Conclusion

The aspects of actors indicate the King of Mangkunegaran as central figures who are culturally very influential on the sugar factory production system.

The activity aspect show that there are grebeggiling as ritual activities in the production process that are culturally important because they are considered to determine the success of all activities in the sugar factory.

The aspects of actors and activities are in line with findings from the aspect of place, which show that rational considerations in the structure of factory buildings are related to the sacred-profane conception that is believed by the Javanese people.

These cultural aspects play a role in supporting the sustainability of the PrajaMangkunegaran sugar factory as a living heritage.
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