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<https://doi.org/10.1051/e3sconf/202020207029> The influence of waters environment on the existence of Martapura port in Banjarmasin, South Kalimantan Endang Susilowati* HASH(0x7fc1e593ea18) examines the influence of waters environment on the existence of Martapura port in Banjarmasin, South Kalimantan. Martapura port is a port located on the banks of Martapura River, Banjarmasin. This port has been an essential trade center since the 17th century during the heyday of Banjar sultanate. The strategic port location along the riverbank that divides Banjarmasin makes Martapura port crowded and visited by sailors and traders from various islands and other regions in Indonesia, even from other countries. Through historical research methods consisting of heuristics, source criticism, interpretation, and historiography, this article reveals how the waters environment influenced the existence of Martapura port until finally the port had to be moved to a new location. The results emphasize that the narrowing Martapura river due to the development of economic centers and residential settlements in the form of floating houses on both sides of the river and also sedimentation in the estuary, caused disruption of the shipping lanes to the port and the silting of the turning basins. As a result, the waterway became narrow and large ships were no longer able to move into the port. Therefore, in 1961, the construction of a new port on the banks of Barito river began and since 1965 Martapura port has only been used for the activities of small wooden ships and sailboats.

Keywords: Martapura port; Banjarmasin; Martapura river; Barito river; waters environment; sedimentation; floating houses.

1 Introduction

Martapura port, also known as Banjarmasin port, is one of the most essential ports in South Kalimantan. This port is located in Banjarmasin, on the western side of Martapura river. Since the 16th century, Banjarmasin under Banjar Sultanate has become an important center of pepper trade on the coast of southern Kalimantan for the international market [1]. From traditional sources, it was known that various forest products and mining products * Corresponding author :

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<https://doi.org/10.1051/e3sconf/202020207029> from South Kalimantan such as pepper, wood, rattan, resin, wax, eucalyptus, reptile skin, diamonds, and gold had been traded in interisland and international trade networks [2]. Until the mid-20th century, in these trade commodities, except for pepper no longer in production, it was added to the handicraft products of the inland residents transported to the trade center in Banjarmasin via river transportation and subsequently brought to various regions or other countries by merchant ships through Martapura port. Banjarmasin is known as a river city due to a number of rivers flowing in this port city. The largest river is Barito river which has many distributaries and tributaries. At the end of the 19th century, more than 45 rivers emptied into Barito river and no less than 148 villages were built along the left and right sides of this river and its distributaries [3]. Martapura River is one of the distributaries of Barito river which flows through Banjarmasin. Along with the city development and the economic activities of its inhabitants, residential settlements and economic centers such as markets and shops have been developed on both sides of Martapura watershed [4]. It was indeed inseparable from the existence of Martapura port as a center for the transportation of goods and passengers. There was clearly a positive correlation between port development and growth of economic centers and human settlements. However, because the port location was in the watershed and protruded into the city, the growth of settlements on both sides of the river brought unfavorable consequences for the waters environment around the port. Since the Dutch colonial era, the poor waters environment around the port had become a problem

disrupting the smoothness of port shipping lanes. The continued sedimentation in Barito river as the port entrance and the increasingly narrowing port shipping lanes prompted the Dutch colonial government to begin conducting research to explore port shipping lanes and new port locations. In 1847, a research team was formed by the government to examine the possibility of shipping for large ships in Barito watershed to upstream [5]. It also investigated several locations that made it possible to move ports. Nonetheless, until 1915, the plan to move the port could not be realized since it was hampered by the high cost [6]. In 1955, another research was conducted and three prospective new port locations were obtained, namely Laut Island, Kotabaru, and Batulicin. Nevertheless, in the end, the new port location was set on the banks of Barito river, that was not too far from the downtown. The new port began the construction in 1961 and was completed in 1965 [7]. Since then, the function and existence of Martapura port had increasingly declined, until finally it was only used for the activities of wooden vessels with dead weights under 500 tons and inter-island sailboats. Based on the background that has been explained, this article discusses two main things, namely the waters environment around Martapura port and the influence of the deteriorating waters environment on the existence of the port.

2 Method The historical method used in this article; the process of critically examination and analyzing past records and relics [8]. The historical method consists of four stages. The first stage is heuristic or source collection, both primary and secondary sources. Primary sources obtained through archival studies at National Archives of the Republic of Indonesia, Jakarta, and Lambung Mangkurat Museum Banjarbaru, South Kalimantan; while secondary sources obtained through library research on literature or scientific papers that relevant to the problem being discussed. The second stage is source criticism consisting of external criticism to obtain source authenticity and internal criticism to obtain source credibility. The third stage is interpretation of historical facts. At this stage, the collected data are analyzed and concluded. The fourth stage is historiography or historical writing; an attempt to imaginatively reconstruct past events based on historical facts [9].

2
 HASH(0x7fc1e5940c48)HASH(0x7fc1e5941050)/202020207029 From the map in Figure 1, it can be seen that at the beginning of the 20th century, the shipping lanes from the estuary of Martapura river to the port in Banjarmasin had to go through winding and long waterway. To reach Martapura port, it took about 3 hours of voyage from the coast, that was 2 hours of voyage on Barito river of which the width was between 800-900 meters with a depth of about 9-10 meters, and 1 hour of voyage on Martapura river which had a depth of 4-5 meters with a width between 85-95 meters [13]. Judging from the shipping lanes, Martapura port was a tidal port where the smoothness of shipping lanes into and out of the port was very dependent on the arrival of the tide. This was due to the existence of a delta formed from siltation, both from rivers flowing into Barito river or from the sea carried by the current at high tide [14]. Hence, at low tide, large ships could not enter or exit Barito river. After successfully passing Barito estuary, ships could navigate Barito river without difficulty, even though then they would have to move into the narrow and winding Martapura waterway to get to the port. Fig. 2. Barito estuary in Java Sea which is an entrance to Martapura port (Processed from <http://www.bmarchives.org/items/show/100202735>)

3.2 Waters Environmental Conditions around Martapura Port

3.2.1 City development

Since 1860, Dutch had abolished Banjar sultanate so that some family members of Banjar sultanate had to step away to the inland and continued the resistance from their territories in the inland. Banjar Sultanate was conquered by Dutch in 1863, after fierce resistance from Banjar sultans since 1859. The resistance of Banjar sultanate family only really stopped in 1906 after the last sultan, Sultan Muhammad Seman, died in 1905 [15, 16]. Dutch strengthened its position in Banjarmasin and rebuilt the port

located on Martapura river in 1900. Along with the strengthening of Dutch political and economic power in South Kalimantan, Banjarmasin began to develop. The center of European 4
HASH(0x7fc1e59412f0)HASH(0x7fc1e5945f98)/202020207029 Fig. 4. Bustle at Martapura port with steamships anchored at the beginning of the 20th century (Collection of Tropenmuseum, Amsterdam) Fig. 5. Market on Martapura riverbanks (Collection of Prentenkabinet Universiteit Leiden) 6
HASH(0x7fc1e5946208)HASH(0x7fc1e5946520)/202020207029 Fig. 7. Waters environment around Martapura port formed by the meeting of Barito, Martapura, and Kuin rivers (Processed from H. Sjamsuddin, Pegustian dan Tumenggung) Barito River which empties into Java Sea is the entrance to Martapura port. In the 20th century, the width of the waterway varied from 300 to 900 meters and the width of the estuary was about 2 kilometers, with an average depth of 7-8 meters [19]. The more it got to the upstream, the narrower Barito river flowed. Along Barito river flows, there were several small islands, including Kembang, so it looked like that Barito river was split in two. Barito river flows did not always flow in the same direction within 24 hours. When the sea water rose and moved into Barito estuary, the river water level rose and flew upstream, on the contrary when the sea water receded, the river water level dropped and the water flew downstream [20]. When the water level of Barito river rose, ships could move into the estuary and sailed to the port. In contrast, when the water receded, the ships could not pass Barito estuary since the water level was in the lowest condition. Entering the mid-20th century, wood processing factory buildings began to develop on Barito riverbanks along the side Banjarmasin. 8
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Meanwhile, Kuin River is one of the rivers that connects the inland areas with Banjarmasin. Many economic activities of inland residents were carried out on this river. In the morning, in Kuin river, there were transactions of various kinds of agricultural products and goods needed by the residents along the river flows. The floating market activities began from dawn until sunrise. Fig. 10. Economic activities of residents in Martapura river (Collection of Tropenmuseum, Amsterdam) Fig. 11. Floating shops in Kuin riverbanks (Collection of Tropenmuseum, Amsterdam) In addition to being centers of economic activities, Martapura river and Kuin river were also the location of residential settlements, both local residents and migrants. Banjar tribe used to build lanting houses (floating houses) on the riverbanks, an established culture that has been passed down through Banjar community. From Valentijn's travel logs, it is known that since the 17th century, houses with bamboo or wooden walls built on water has been found on the riverbanks in Banjarmasin [21]. In the 1960s, on the two Martapura riverbanks 10
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guaranteed to be smooth because the existing river networks facilitate the mobility of goods and people. River civilization has become an inseparable part of the population of Banjarmasin and South Kalimantan in general. Various aspects of people's lives, whether economic, social or cultural aspects, cannot be separated from rivers or river networks. When the settlement centers are still around the estuaries and tributaries, their daily activities relatively do not disturb the shipping lanes to or from the port. Nevertheless, along with the population growth and development of settlements along Martapura riverbanks and other rivers in the port environment, the smoothness of shipping lanes into or out of the port has been disrupted. Source: Collection of Tropenmuseum, Amsterdam. Fig. 14. Steamships and wooden ships anchored along Martapura port in the 20th century. The disadvantages of Banjarmasin port are caused by two factors, namely natural factors and human factors (related to the culture of settlement and the daily activities of residents in the waters environment surrounding the port). The disadvantages caused by natural factors are mainly related to siltation at Barito estuary, due to high sedimentation and

formation of deltas at Barito estuary. The silt at Barito estuary over a long period of time has formed a delta at the entrance to Barito waterway to Martapura port. At low tide, Barito estuary cannot be navigated because the water depth is less than two meters [22]. Consequently, ships that will enter or exit the port must wait for the tide. At that time, the depth of the water in Barito estuary reached 4-5 meters, making it safe to navigate. To avoid the ship being trapped and stranded at Barito estuary, the port managers made a tidal schedule that must be obeyed by the ships' masters who would pass Barito estuary. The silting of estuaries and turning basins is a problem faced continuously by Martapura port. A number of tributaries that flow into Barito and Martapura rivers cause siltation in the port waters environment as if it is not handled yet. The efforts to remove the silt with a very high cost continue to be done regularly, but it will not be able to eliminate this weakness point of the port. Meanwhile, community cultural factors also become a problem for the smoothness of activities of Martapura port. The daily activities of residents who live along Martapura riverbanks around the port and downtown and their lanting houses which always move are 12

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