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# Sustainability of Old Semarang to World Heritage: Challenges in Coastal Area

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**Abstract.** Historical cities can be an important part of economic, social, cultural, and environmental improvements, an important aspect of the city's heritage sustainability. To that end, the Semarang City Government has revitalized the old city located near the north coast of Java, which gives many challenges in achieving world heritage status. This paper aims to examine the sustainability of Semarang Old City management's towards world heritage in the issue of management challenges in coastal areas. The method used was qualitative by interviewing sources and was supported by a meta-analysis of various studies. The results show that there is much evidence of a physical decline in the old city area. This occurs because of the reclamation process, land subsidence, rising seawater, and people who are not aware of supporting a good drainage system. The hope is that there is good sustainability management of heritage areas to support cultural, social, and economic activities.

**Keywords:** Sustainability, management, the old city, coastal area

## 1. Introduction

On a global scale, many historic urban areas of the past were in decline, so that it becomes an important part of Sustainable Development Goals (SDGs) issue to safeguard the world's cultural and natural heritage. Governments in various parts of the world are trying to rebuild regions, known as urban regeneration or revitalization. Urban regeneration is an attempt to reverse this decline by improving the physical structure, and more importantly, the economic conditions of the region. In the regeneration program, government funds an effort to attract private and other investment to build an area [1-3]. Several industrial and commercial areas in the past have experienced both physical and economic decline. However, these places often have a fascinating urban cultural heritage [4, 5].

One of the areas was the old city of Semarang, which once was the industrial and trade center of the bustling city of Semarang in the 18th century [6]. By the end of Dutch colonialism in the mid-19th century, some residents and building owners in this area began to stop their activities. The old city's area had experienced a stagnant condition. Even the quality of its environment tended to decline in the 1980s to 1990s. Let alone at night, even during the day, this area was like a dead city area, with the domination



of warehousing and building activities that were left empty and unused [7]. Seeing the conditions that occurred in the old city some efforts were made to preserve the existence and improve the physical, social, and economic conditions of the area. One of the steps to revive the Old City area was developing to revitalize it. Revitalization was one way that could restore ancient regions, buildings, streets, and environments by implementing new functions in their original architectural arrangements to increase economic, social, tourism, and cultural activities. In general, revitalization means returning to the area by incorporating new modern functions or activities [8, 9].

Since tidying up in the late 1990s, the old city of Semarang, referred to as Little Netherland, was slowly but surely starting to get attention from the public and the government [10]. Government support for cultural heritage areas was very significant, starting with Act Number 5 of 1992 concerning Cultural Heritage Objects. Then it was refined by Act Number 11 of 2010 regarding Cultural Heritage. Province Regulation Number 10 of 2013 concerning the Preservation and Management of Cultural Heritage in Central Java Province [11]. Hence, the Semarang Board of Planning (*Bappeda*) held a grand design project for the Old City in 2011.

The mayor of Semarang has played a significant role in revitalizing the Old City, especially starting on November 8, 2012. The mayor signed the Urban Heritage pledge commitment at the Ministry of Public Works and Public Housing. The first challenge was coping with floods and tides in a heritage area in 2013. Second, in 2016 the mayor reformed the Old Town Area Management Agency (BPK2L) by inaugurating new management. Judging by its function, BPK2L assisting the Government in carrying out its top-down development pattern. BPK2L was also a liaison between the government and all building owners to discuss the best plans for developing the heritage area. The other challenge that was no less complicated was sterilizing the Old City from street vendors, cockfighting gambling, and prostitution [12].

Determination of the Old City as a City Ranking Cultural Heritage Area through Decree No.640/395 of 2018 concerning the Establishment of the Status of the Cultural Heritage of the Old City of Semarang. Furthermore, the heritage area has been designated a Provincial Rank Cultural Heritage area through the Central Java Governor Decree No. 432/143 of 2019. By hoping that the achievement of the provincial ranking can be upgraded to the national level so it may propose to UNESCO to obtaining the status of a World Heritage [6]. Yulianti's research results show that the Old City of Semarang already has the conditions set by UNESCO, especially in terms of its historical experience as a center of international economic activity between Java and the world market, especially the Netherlands [13]. The assessment team considers the importance of the historic urban landscape as a world heritage. Managing historic urban centers and preserving the historic core are emerging challenges for sustainable urban planning. The historical city was an essential part of the contemporary city's economic, social, environmental, and physical assets. It also played a strategic role in its development. One of the most fundamental approaches to developing central textures, especially in historical and cultural cities, includes all aspects of sustainability such as economic, social, cultural, and environmental aspects [14].

In the direction of becoming a world heritage city, environmental issues and area degradation are very important, because bad conditions can damage historical buildings' property. It will create certain hazards, such as severe material damage to ornamental structures or features, serious deterioration of architecture, and urban areas. Currently, the central government, through the ministry of public works and public housing, has been building the old city area. Development focuses on drainage systems, underground utility networks, roads and pedestrians, and street furniture. The construction of drainage can reduce the impact of flooding in this area. There is a change for the better in the old city but still, there are various challenges due to its location in a coastal area. There are three other areas: Kauman Kampong, Malay Kampong, and Chinatown Kampong besides the Old City area. These four locations are designated as National Cultural Heritage Areas, according to the decree of the minister of education and culture on August 12, 2020. Therefore, this paper will explain the challenges and concepts of sustainable management of Old Semarang, located in a coastal area, to achieve world heritage status.

## 2. Method

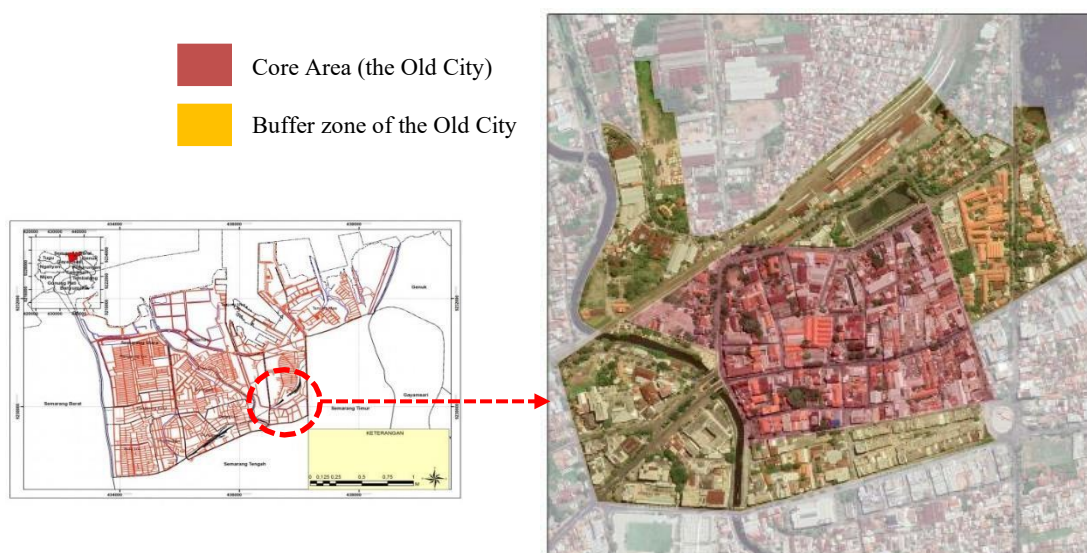
The method used was qualitative by interviewing several relevant sources and observing [15]. This method was initially collected descriptively, covers the Old City of Semarang's condition related to management, community support to the local drainage system. Researchers compared various research results in the city of Semarang that affect physical changes in coastal areas, especially impacting the old city area [14]. The next process is to analyze research data related to physical changes, especially on coastal areas issues. Then an overview of the lower part of the building's condition due to physical changes. The last one is the concept of managing Old Semarang in an effort towards World Heritage. This paper describes the pattern of sustainable management activities towards world heritage in coastal areas. The description is derived from the results of observations, reviewing documents, and related literature.

## 3. Result and Discussion

### 3.1. Process of the old city of Semarang development to the tentative list of World Heritage

By the mandate of the Law on Cultural Heritage, the Semarang City Government strives to address the old city's conservation problems continuously. For this reason, all components of the government and society were working hard to maintain this old city. All stakeholders were not only limited to knowing their physical condition. But, they have to understand the principles of conservation. The Semarang City Cultural Heritage Expert Team (TACB) has completed its study, and the mayor designated the Old City of Semarang as a Cultural Heritage Area.

Subsequently, the government submitted this work to the Governor of Central Java for review by the TACB of Central Java Province. Some time ago, the National TACB had studied the Old City of Semarang, brought to UNESCO. From the results of this study, the historical and cultural values of the area are essential. The National TACB recommends Old Semarang, but there are four other locations: Malay Kampong, Kauman Kampong, Chinatown Kampong, and Oudestad [16]. One of these areas is Oudestat, which is the Europeschebuurt or the residence of Europeans. This site is a former fortified area built by the VOC in 1741. This site was built for integrated transportation infrastructure, including roads and railways, and a port. This area is known as Semarang's old town, which has already made a building and environmental plan. As shown in Figure 1. In this picture, there is a map of the sub-district and a map of the old city area. On the map of the old city area, there is a core heritage area and a buffer zone. The buffer zone functions to strengthen and protect the core area.



**Figure 1.** Map of the Old City in North Semarang Sub-District.

Source: [17]

### 3.2. Challenges to problems in coastal areas

Old Semarang includes 5 urban villages, namely Bandarharjo, Tanjung Mas, Rejomulyo, Kemijen, and Puwodinatan, located in three sub-districts. The result of field observations is Ouedestad (the Old City) as the main and most extensive area out of the other three areas. The old city of Semarang is in the North Semarang sub-District, very close to the north coast of Java. In the past, the old city area was a port city. In this regard, there have been many studies on the physical changes of Semarang City due to its location in the coastal area, particularly in North Semarang District. Some of these studies are then used to analyze the physical changes in the heritage area. Therefore, at this time there are many challenges faced as a heritage area in the coastal area as follows:

**3.2.1. Sea-level rise.** In the previous researches, sea level tends to increase from year to year due to global warming. It was a phenomenon of increasing the earth's average temperature and causing sea-level rise, which threatens the sustainability of coastal areas around the world. Semarang has a coastal area in the northern part, which is affected by sea-level rise. The sea-level rise in Semarang reaches 7.36 mm/year. According to the ITB Research Team (1990), sea-level rise in Semarang reached 9.27 mm/year [18]. Besides, high tide was a real threat to the city of Semarang. With the backflow of the tidal sea level to the land area, which is located lower than the high tide, it was impossible to avoid closing the estuary for a second time without a building that functions as a barrier. Other research related to the prediction of tidal flooding shows that there is an area of about 201.58 ha in the urban village of Bandarharjo that has a heritage area. [19].

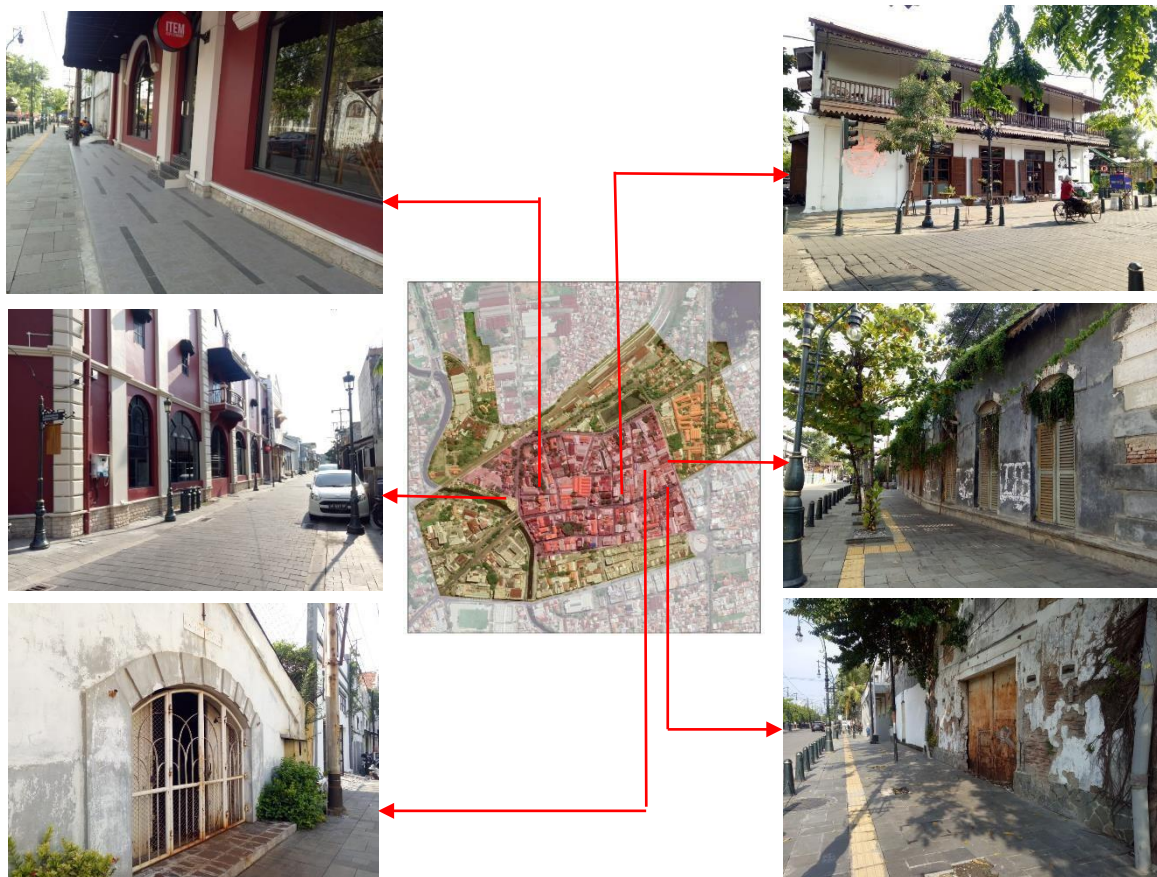
**3.2.2. Land subsidence.** Land subsidence occurs due to the burden of land use on the coast and excessive groundwater extraction. Semarang's activity had a varying rate of 0-13 cm/year with an increasing trend towards the northeast. Areas with a high land subsidence rate of 9-13 cm/year were in a coastal area [20]. Land subsidence in Semarang in the last years has caused the coastal area of Semarang to frequently experience tidal flooding during high tide as a result of the rising sea level, which inundates areas lower than sea level during the highest tide. Recent research with different methods shows that was not much different. The value of the rate of land subsidence at nine observation points spread across the city of Semarang in 2018-2019 ranges from 1,795 - 7,796 cm per year. The highest value was in the port of Tanjung Mas, which is a coastal area [21]. Land subsidence did occur in Semarang. The city should have improved its anticipation. Various parties have widely reported the land subsidence that has occurred. The impact has been evident in the daily lives of residents, especially those who live in areas under the river. As a crippling disaster, the movement was not visible, but the consequences were real. Therefore, all parties can be complacent; even the stakeholders have not acted optimally. Furthermore, the problem of land subsidence occurred in part due to excessive groundwater extraction. As the land subsidence process was still ongoing, most of the Semarang drainage system was located below the high tide.

**3.2.3. Sedimentation.** One of the factors causing flooding and tidal flooding in Semarang is a decrease in the drainage capacity of the West Flood Canal due to a large number of sediment deposits. From the field observations, currently, at the downstream outlet, there was a sand deposition from the sea, which progress was quite noticeable. This accumulation of deposits will potentially close the flap valve outlet (pump house) and the gatehouse sedimentation rate of the West Flood Canal River was 0.04-35.46 tons/day, while the Silandak River is 0.02-55.81 tons/day [22]. The government should have done dredging along the river. If there is an urgent need to handle flooding, limited dredging can only be done in the area around the exhaust pipe. In overcoming this sedimentation problem, the government applies all existing river flows, both large and small rivers.

**3.2.4. Land-use change.** The phenomenon of tidal flooding in Semarang's coastal area was also caused by space use changes in the coastal area. These land changes generally occur due to the following events: Changes in land use in coastal areas: ponds, swamps, and rice fields that used to accommodate tides have naturally turned into residential land, industrial estates, and other services by filling ponds, wetland and

rice fields so that the waves no longer adapt and flooding the other low areas. The land in North Semarang District is approximately 790.5 hectares, there is no pond, and from about 585 hectares of the total land in the West Semarang sub-District, there were only 126.5 hectares of pond land [23]. The critical cause of land subsidence was the massive increase in built-up areas in coastal areas and groundwater exploitation, particularly in North Semarang. As the results of research on land changes that occurred in 2004 and 2013. The items used to consider the presence of hazards, levels of vulnerability, and risks. The results showed that several factors, including land use, were the cause of land subsidence in the study area. The percentage of land change was 49.99% for the change of empty land into the land to be built and the warehouse industry. The main factors causing land subsidence based were the reduction in groundwater level with a percentage of 61% and land change with a percentage of 19% [24].

From various explanations of the research results, management challenges arise in heritage areas. Various development adjustment processes, especially so as not to be exposed to floods, tides, and inundation. Road elevation is the main alternative, which impacts the appearance of the building, especially the lower part of the building, as shown in Figure 2.



**Figure 2.** Various corners of the old city area show street elevations and impact the lower part of heritage buildings.

*Source: observation, 2020*

The government has revitalized many elevating roads and pedestrians to prevent inundation and tidal flooding, with a drainage pumping system under the road. Meanwhile, the building owner or manager chooses an alternative not to be exposed to flood, tidal, or inundation in the picture above. Some raise the floor, some block water from entering with the risk that the house floor is lower than the road. Most of the buildings above are sacrificing the lower view to be used as a road or sidewalk.

**3.2.5. Less sanitation.** The rapid development of Semarang's city from year to year also impacts tidal flooding that never ends. Although, for the Old City, it has decreased a lot at this time. However, there is still a lack of awareness of residents in managing waste, which results in a bad environment, including in the old city area. As shown in Figure 3. Many people do not realize the importance of local drainage channels, as is the case in Figure 4. The drainage system that is supposed to be for runoff is still used to dispose of dirty water.



**Figure 3.** Trashes in the local drainage of the Old City.

*Source: observation, 2020*

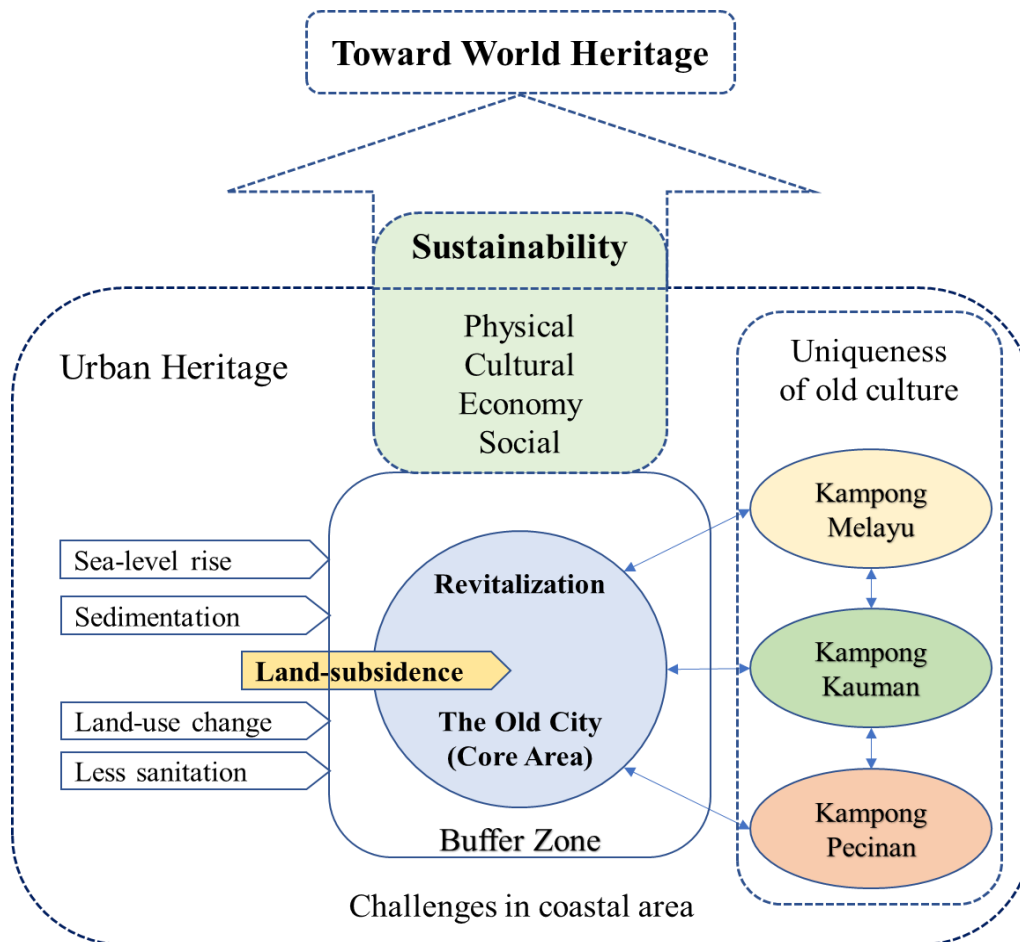


**Figure 4.** The sewer problem drains into the old city drainage system.

### 3.3. Sustainability management concept

The problems with Semarang's old city couldn't be separated from the geographical location, changes in its inhabitants' physical conditions, and behavior. It should be noted that currently, the city of Semarang is trying to get a World Heritage City. In studying the Old City of Semarang, the most important aspects of management are planning, delineation, and OUV (outstanding universal values). There are many criteria established by Unesco concerning the OUV. To nominate and designate the Old City of Semarang as a World Heritage City by UNESCO, the city needs to hold one or more As in the article for extraordinary universal values (OUV) issues [25], including groups of buildings, either connected or detached. has extraordinary architectural value, both from the point of view of art, sains, and historical values. Therefore, the existence of the Old City in the coastal landscape requires an integrated coastal zone planning concept for this heritage area. The best practice that has implemented this is in the case of Ostend Belgium, where coastal cultural heritage is to be included in spatial planning as a resource through the application of integrative complexity theory and lessons learned from experiences in managing other coastal resources [26].

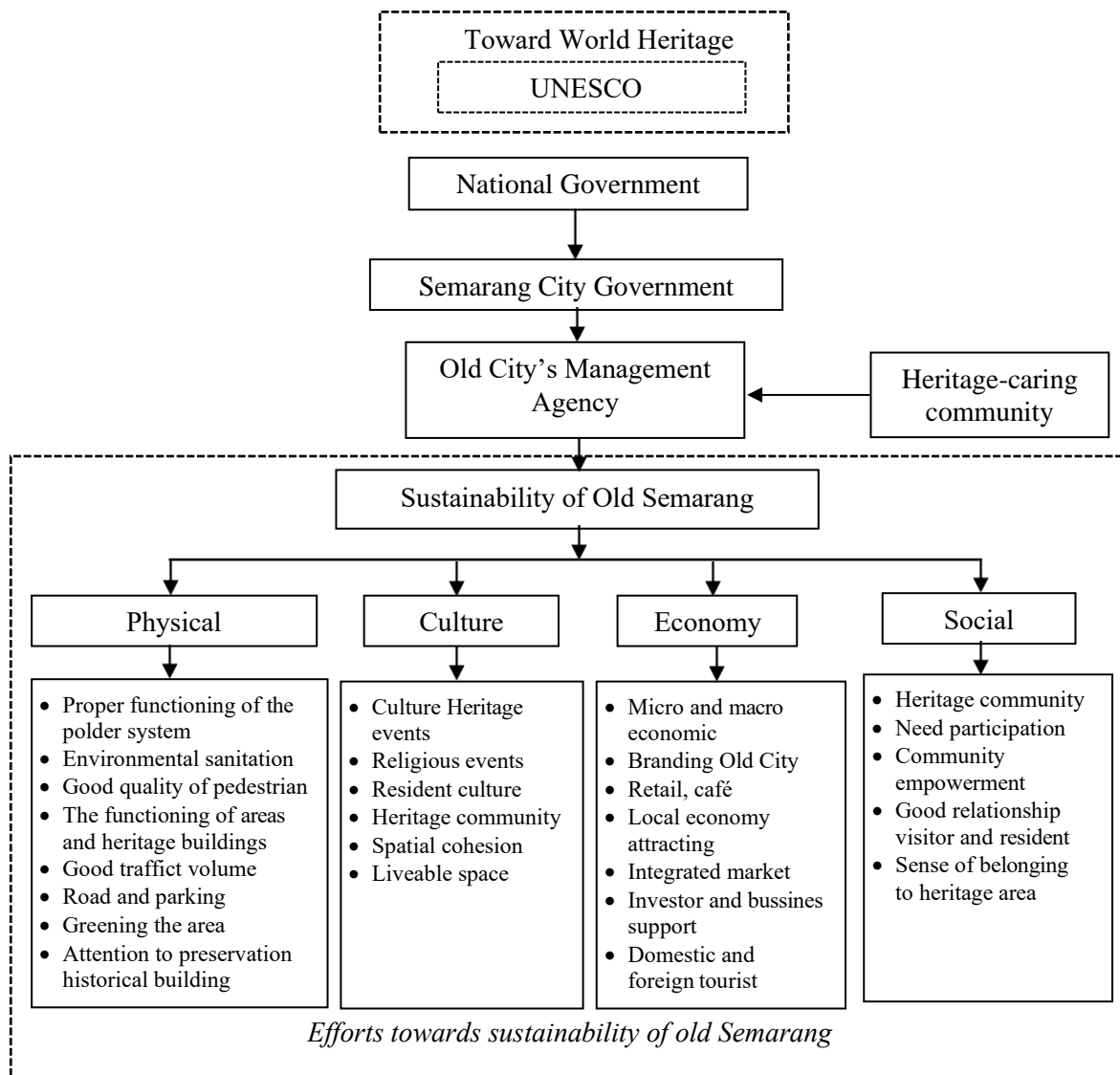
Based on the above discussion, the next issue is the need to re-emphasize the management of cultural heritage area development. Currently, the city government is very good at revitalizing the area. But on the other hand, experts need to remind themselves of the challenges of managing this cultural heritage area. Moreover, the status of the Old Semarang City Cultural Heritage as a National Rank Cultural Heritage Area has been determined by the Minister of Education and Culture. In this determination, the Old City (Oudestad) is a part of the Old Semarang, apart from Kampong Kauman, Kampong Melayu, and Kampong Pecinan. The results of studies by experts by stating that the Old Semarang area is more likely to become a tentative world heritage city. To achieve that, the principle of sustainability is very important to be considered. The sustainability principle is related to physical, cultural, economic and social issues [14]. A brief explanation of this statement can be seen in Figure 5. In this picture, there is a core area of the old town that is being revitalized, but on the other hand, there are physical challenges and less behavior from the buffer zone itself. Environmental and physical problems that are still ongoing are a challenge for managing the conservation of the area towards a heritage city. So far, the government has revitalized the old town area. However, with the Minister of Education and Culture's existence on cultural heritage with a national ranking towards world heritage status, more areas need to be prepared. Therefore, the sustainability management of the Old Semarang will become increasingly complex.



**Figure 5.** The relation of the old city challenges toward World Heritage.

There are several important principles related to sustainability management for heritage areas. First is a physical problem on how to maintain and improve the quality of the environment. Then, the building's functioning towards the area and the green or smart concept that must be pursued. Second is culture, some of which need to be addressed: cultural heritage events, religious events, population culture, community heritage, spatial cohesion, and habitable space for better community life. In the direction of world heritage, the existence of a unique culture and community culture is a mainstay because this distinguishes it from other places in the world. The third is economy; this aspect includes micro and macroeconomics, branding of the old town, retail, cafe, local economic attraction, integrated market, support from investors and business, support for domestic and foreign tourists. The continuation of the world heritage area, due to a good economic turnover of tourists [27]. The last or fourth is the social aspect; several things that need attention from this aspect are caring for the heritage community, participation, community empowerment, good relationship visitors and residents, a sense of belonging to the heritage area. This social aspect is essential because they are at the forefront of dealing with area changes in their readiness towards world heritage [28]. Another one is community involvement that cares about heritage. It is undeniable that the success of an area regeneration process is due to community groups' concern in supporting this revitalization. They made many sacrifices, both morally and materially, in participating in developing the area. For more details, it can be seen in Figure 6. It can be seen that the importance of the sustainability aspect is always considered.





**Figure 6.** The sustainability effort of the old city towards World Heritage.

#### 4. Conclusion

Based on the discussion results, the conclusion is that the challenge of managing the heritage area of the old city of Semarang in a coastal area consists of two things, they are physical and non-physical. Physically related are sea-level rise, sedimentation, land-use change, and land subsidence. These aspects affect the landscape and heritage buildings, including their outward appearance. Meanwhile, the non-physical one is bad behavior in supporting the area, especially in protecting the waste and sewerage system. With this condition, to become a world heritage city, it is necessary to pay attention to heritage area management's sustainability. Several things that need to be improved are the anticipation of managing cultural heritage areas that continue to experience environmental damage. Besides, people who care about cultural heritage in the four cultural heritage areas need to be improved so that the path to world heritage becomes clearer.

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