

## **CHAPTER V**

### **CONCLUSION AND RECOMMENDATION**

#### **5.1 Conclusion**

This research related with the area estimation and distribution of industrial growth using a combination of GeOBIA method and manual interpretation of high resolution image data (Sentinel-2A) from 2015 to 2020 and the assessment of industrial zones in spatial plan based on the results of the industrial growth prediction model in 2030 using Cellular Automata Markov (CA-Markov). The combined method was adopted in this study because the accuracy of industrial class produced by GeOBIA Method is lower than the accuracy of the industrial class produced by a combination of the GeOBIA Method and manual interpretation. The industrial growth model in 2015-2020 shows an increase in industrial areas of 294.16 ha in the Semarang Metropolitan Coast within a period of 5 years. In 2020, the largest increase of industrial growth was found in the Wijayakusuma Industrial Estate, Terboyol Industrial Park and Industrial Areas in Sayung. The growth of industrial built up area in Semarang Metropolitan Coast also had an influence on the increase of non-industrial built up area of 151.32 ha within a period of 5 years. In addition, there was a decrease in the area of agricultural land and vacant land by 918.48 hectares and vegetation class by 97.64 hectares.

The prediction results show industrial built up area of 1,908.90 ha in 2030 with kappa index of 0.821. In 2030, it is predicted that 71.66% of the total industries will be accommodated in spatial plan and it is predicted that there will be 28.34% of industries that are not accommodated in 2011-2031 spatial plan. The highest area of industrial growth in 2030 is predicted will be occurred in the western and eastern part of the Semarang Metropolitan Coast at Wijayakusuma Industrial Estates with an area increase of 96.81 hectares and Terboyol Industrial Park with an area increase of 63.97 hectares. Industrial areas that not suitable with spatial plan increased 177.85 ha (16.13%) in 2015 to 293.54 ha (21.02%) in 2020. This indicates that the spatial plan is not yet optimal for controlling the industrial growth in Semarang Metropolitan Coast at 2015-2020. This research using the classification results of GeOBIA and manual interpretation and prediction using CA-Markov has succeeded in estimating the extent and distribution of industrial growth in Semarang Metropolitan Coast to assess the industrial zones in spatial plan.

## 5.2 Recommendation

Industrial areas that not suitable with spatial plan increased from 177.85 ha (16.13%) in 2015 to 293.54 ha (21.02%) in 2020 and predicted will be increased into 540.91 ha (28.34%) in 2030. The industrial location that not suitable with spatial plan should be followed up with increasing the effort to control the spatial use. In 2030 predicted there will be a deficit in the availability of industrial land supply in Wijayakusuma Industrial Estate of 48.07 hectares and Terboyo Industrial Park of 46.09 hectares, intensification of industrial land is need to be adopted as the strategy to control the industrial growth in those area. Efficient use of industrial land is one strategy to reduce the impact of expansive and uncontrolled growth that impacting the coastal land use change.

Recommendation that related to the methods is the combination of GeOBIA Method and manual interpretation could be used for the further study, especially for the research with smaller scale and more detailed thematic classification because the weakness of this combined method is human limited ability to interpret in the broader scale. In addition, the weakness of this study is the prediction model that only uses driving variables that affect the growth of industrial locations includings distance to the arterial road network and land prices, it is recommended for further studies related with the industrial growth prediction scenarios to consider industrial location criteria from the policy to be included as spatial variables in the scenario of industrial growth prediction model.