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## The disparity of watershed development between northern and southern region of Java Island

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### Abstract

The disparity in Java Island can be observed from the difference of development between northern and southern watershed, particularly in the west part of Java. The northern region (NR) is represented by Cisadane and Ciliwung Watershed, while the southern region (SR) is Cimandiri and Cibuni Watershed. Those four watersheds are burst out from the same mountain which can be assumed the biophysical and geology conditions are similar, thus the driving force predominantly comes from human intervention. The disparities are coming from human force such as population, urbanization, migration, accessibility and others socio-economic factors. Although the watershed length and topographic condition are also force the disparities. This research aims to figure out the driving force of disparities between NR and SR, and arrange some recommendations to mitigate and adapt the environmental issues. The annual rate of land use and cover change (LUCC) shows that the forest reduction in the NR is twice than the SR and the agriculture land lost in the NR is three times than the SR. It means the NR is rapidly changed to built-up area, while the SR is slowly changed, but the SR gradually follows the NR condition. In addition, the average growth rate of population and the annual GDP in the NR are reached five times than the SR.

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**Keywords:** land evaluation; landscape services; remote sensing; scenic beauty estimation (SBE); triple bottom line benefit

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### 1. Introduction

The disparity in Java Island can be observed from the difference of development between northern and southern watershed, particularly in the west part of Java. The northern region (NR) is represented by Cisadane and Ciliwung

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Watershed, while the southern region (SR) is Cimandiri and Cibuni Watershed. As one of developing country in term of GDRP, Indonesia has potential economic growth surrounded by beautiful landscape which also has diverse ecosystem services [1, 2, 3]. The economic potencies can be found from mountainous area along the watershed landscape. These landscapes provided services to preserve and conserve the ecosystem while also provide resources for economic activities. These natural resources potencies tend to be ignored since the over used carrying capacity is often found in this area. The impacts decrease the agriculture production [4], disasters [5], flood and drought [6], sedimentation and decreasing water quality [7] and others negative impact for the landscape itself [8].

The aims of this research are to evaluate the disparity between the northern and the southern region of west part of Java Island, and to describe the recent condition of disparity of watershed as ecological boundary.

## 2. Methods

### 2.1. Study location

This research used LANDSAT satellite data set image, demographic, economic and tourism activities data. The study site is located at four watersheds, west part of Java Island, Indonesia (Fig. 1). Four watersheds were selected, Cisadane and Ciliwung Watershed represents the northern region (NR), while Cimandiri and Cibuni Watershed represents the southern region (SR). The NR included big cities such as, Jakarta, Depok, Bogor, Bandung and Bekasi.

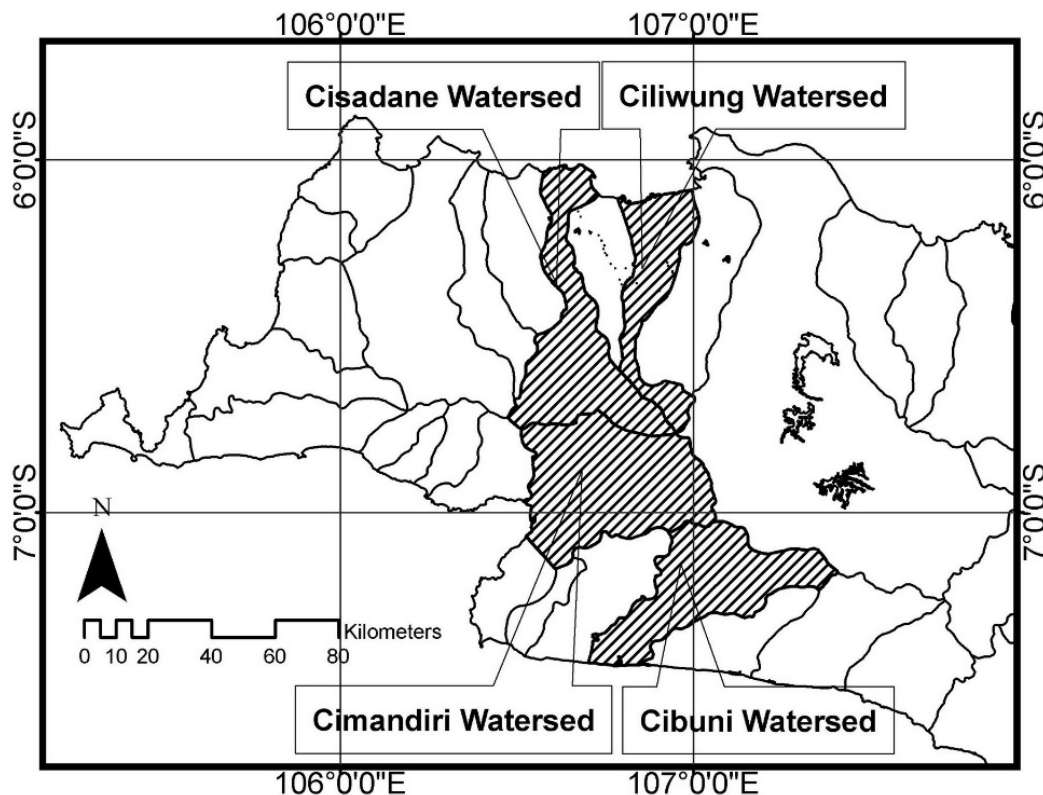


Fig. 1. Four watersheds as research site are located in west part of Java Island.

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