1. INTRODUCTION

1.1. Background

Characteristics of land in economic sense are defined as the entire material universe outside of people themselves and the products of people. It includes all natural resources, materials, airwaves, as well as the ground. All air, soil, minerals and water is included in the definition of land. Everything that is freely supplied by nature, and not made by man, is categorized as land [Gwartney, 1999].

Land holds a unique and pivotal position in social, political, environmental and economic theory. Land supports all life and stands at the center of human culture and institutions. All people, at all times, must make use of land. Land has no cost of production. It is nature's gift to mankind, which enables life to continue and prosper.

Land's uniqueness stems from its fixed supply and immobility. Land cannot be manufactured or reproduced. Land is required directly or indirectly in the production of all goods and services. Land is our most basic resource and the source of all wealth.

Regarding to the uniqueness, the land needs to be managed to get more value added. The land is natural resources that may be developed a potential resource for human prosperity.

There are several authorities dealing with land issues. National Land Agency (BPN) is responsible for land management and registration concerning urban and agricultural land according to article 2 of Basic Agrarian Law (BAL), Act Number 5/1960. In President Regulation Number 36/2005 and 65/2006 both...
are on regard with land acquisition for public use, BPN is currently authorized to conduct land valuation in connection with land acquisition. Prior to the enforcement of these regulations, BPN is active in work connected with expropriation in this regard. In general, the expropriation values are higher than taxation value (in Indonesia it is known as NJOP, an abbreviation of Nilai Jual Obyek Pajak) and reported prices. These values may also be higher than the market values.

The Directorate of Land and Building Tax, Directorate General of Taxation (in Indonesia it is known as PBB, an abbreviation of Pajak Bumi dan Bangunan) has developed valuation method to determine taxes. The NJOP for land decided by PBB are much lower than market values. In average these values are around 40% of the market values [INLA, 2003]. The reason why NJOP is much lower than market values is because of political reasons. Presumably, this condition may be because majority of our people are low income people, which therefore it gives rise to low tax-paying capabilities. It should be noted that NJOP must be equal to market value, so that this value can be applied to all purposes including land acquisition. If such circumstance occurs, where NJOP is at the same value with market’s, it assumed that the government will obtain larger revenue. Alas, the fact that NJOP is lower than market value has become a loophole which is misconducted by number of Notary/PPAT (in Indonesia it is known as PPAT, an abbreviation of Pejabat Pembuat Akta Tanah). Thus, sellers and buyers also report their transaction values merely as the sum of NJOP in order to avoid more taxes and other induced fees. This fact in return cannot increase NJOP towards market values.
With regard to determine NJOP, PBB has collected transaction values from previous year to assign land value zone. These zone are visualized in Zona Nilai Tanah Map (ZNT map), which is nearly similar to a sketch map. This map is produced through delineation of such zone manually, performed by the expert who subsequently provides NJOP for the following year.

Valuation by BPN in general is not yet applied, however there is a prototype produces by Indonesian Land Assessment Project (INLA Project). This method uses the analyzing market data and developing the valuation models. Valuation model consist of value maps with value zones and tables or formulas for valuation of each property.

In Accordance to President Regulation No. 10/2006, there has been formed a new directorate related to the land valuation mandate by BPN. The directorate of Land Potency Survey has responsible for surveying, valuating, and managing the land potencies; there are the physical potencies and the economical values of land.

On the basis of the above mentioned facts, this research is intended to develop the determination of land value zones by applying new approach which results automatic land value zone map. It is then expected that this research provides a lot of benefits not only for BPN and PBB but also for other interested parties. This may be best pictured by the following cases:

a. Prospective buyers need area to build houses; they seek for available potential land zone, but it is very difficult to realize this need due to infrastructures and legal aspect constraints;
b. Developers expand land for houses or apartment to increase functions of land by means of providing comprehensive facilities to improve such area, and also to get the benefit of such ownership.

c. Agro-businesses expand existing farm field to increase their production.

d. Industrial sector plans to develop commercial or industrial zone, and are willing to invest their financial capability to these potential location and reserves for the future.

e. Resources management peoples control land resources to obtain the optimal benefit and for sustainable use.

1.2. Scope of Research

Based on the backgrounds mentioned above, this research develops a method to determine land value zone that formerly has been initiated by INLA Project in another approach. By applying this method, the expected result is to produce automatic land value zone map, as well as to compare to the method applied by PBB.

The case study of this research is in Desa Nagrak, Kecamatan Gunungputri, Kabupaten Bogor, because digital map data from BPN and PBB are already available. In addition, this location possesses transaction value data collected by PBB. Land value zones created in this research is based on road classification, and level of land value zone is assigned by values for the fulfillment land assessment requirements.
1.3. The Objectives of Research

The objective of this research is to develop a prototype of land value zones automation in variety land use area using GIS Technology. The values of land zone are determined by type of road and its transaction value.