

Socio-economic causes of recent environmental changes in Cidanau watershed, West Java, Indonesia

-Effects of Economic crises of Southeast Asia in 1997-1998 on regional environment-

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1. Introduction

1.1 Backgrounds, Objectives and method

Water resource development is necessary for Cilegon industrial area in West Java, Indonesia. Industrial companies in Cilegon need good quality, stable and enough amount of water. But, the water quality of Cidanau River has been getting worse, because of the degradation of water resource environment, which has been induced by the rapid change of land use or land cover and the increment of populations around Cidanau watershed. Especially, the economic crises around Southeast Asia in 1997 to 1998 may have had some effects on socio-economic statuses such as population and land use/land cover, and on the natural environment such as the water quality around this watershed as well as the economy of the country level of Indonesia. In order to keep sustainable water quality as well as water resource quantity for this area, some proper countermeasures for land use or land cover management should be applied to this area.

It is necessary to understand the mechanism of environmental degradation and land use change, in order to find out important aspects to be focused on countermeasures of land use management and for the preservation of soil erosion from watershed. So, this paper aims to clear some causes and a mechanism of environmental degradations induced by land use change using some census data in

desa (village) level and to disclose the evidences of the rapid change of land use or land cover induced by economic crises in 1997 to 1998 based on intensive field investigations and interviews. Then, this paper aims to clear some important factors of environmental policies for land use management in this area.

1.3 Hypothesis on the mechanism of land use change in the study watershed

An outline of the hypothesis on the mechanism of land use change in Cidanau can be addressed as showed in the flowchart of Fig. 1. This flowchart was modeled based on the cause and effect model between population change and environmental change in overcrowded areas. Following this hypothesis, relevant socio-economic data were collected as much as possible by field investigations and direct hearings to the villagers in this area.

2. Results of field investigations in *desa* level and discussions

Field investigation about the abovementioned factors was conducted in December of 2001. Seven *desa*s; Rancasanggal, Bugel, Citasuk, Cisaat, Ujung Tebu, Cisitu, and Cikedung were determined as study *desa*s from the view point of accessibility to villages. Results of field investigation including literature survey and field hearing were summarized as follows.

1) A rapid population increment in census of *desa* was found between 1997 and 1998, of which increment rate was beyond natural increment rate in average in

Indonesia. They were supposed to be due to new births and transmigration(or refugees) in this area.

2) A remarkable large land use change was not recorded in the census, but a lot of newly cultivated lands were found in the area. They were mainly in mixed gardens or forest gardens.

3) The degradation of water quality of Cidanau river was recorded on the official report; the rapid increment of soil suspensions in this river was recognized between before the economic crisis in 1997 and the after the crisis.

4) Illegal farming was found in some places such as protected area near Rawa Danau and public forest by villagers and refugees from other places after economic crisis.

3. Discussions and conclusions

It can be apparently said that the economic crisis effected on the socio-economic situations and environmental situations in this watershed from this investigation. The natural environment has been degrading due to illegal cultivation in the protected area and the preserved area, and also uncontrolled cultivation without protective measures against soil erosion. Moreover, there are poor monitoring and watching systems of land use or land cover change by illegal cultivation in this area. From this point of view, the countermeasures of soil erosion should be mainly focused on management of private lands. The promotion of some of protection measures for soil erosion on farm in the private farmlands, especially in sloped area is one of effective and practical countermeasures to reduce soil erosion.

Consequently, this paper was concluded as follows.

Firstly, published information and estimate driving forces for land use change was studied. Second, important factors that are related to these driving forces as following the hypothesis shown in Fig.1 were listed out, then field

investigations about listed factors and direct interviews to village chives and villagers in several times were conducted.

Third, the results of field investigations for land use change were concluded.

Finally, the mechanism of land use change and the socio-economic backgrounds in Cidanau watershed in *desa* level was discussed and some important factors of environmental policies for land use management in this area were cleared.

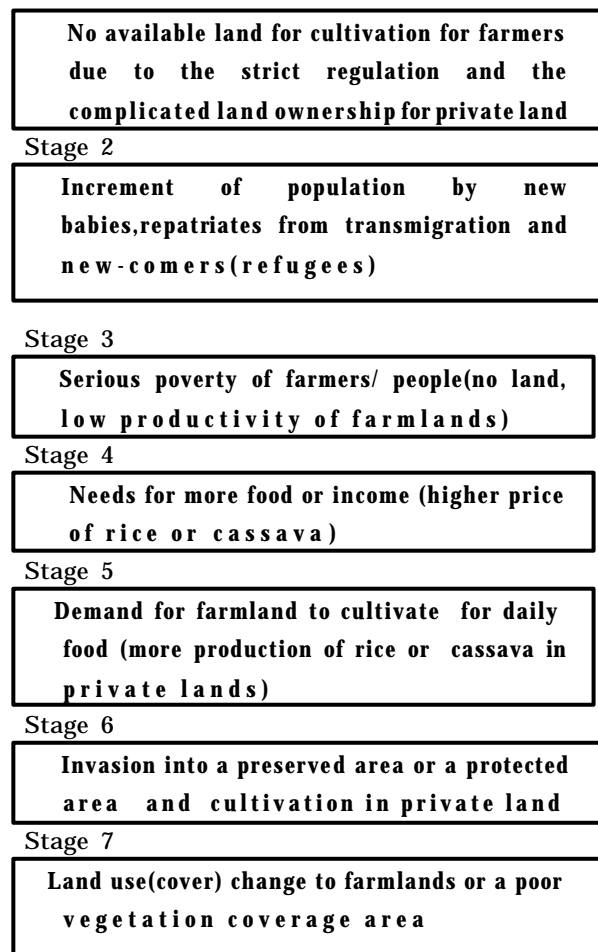


Fig.1 Mechanism of land use change in Cidanau

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