

IDENTIFICATION AND DELINEATION OF CRITICAL LANDS

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ABSTRACT

In 1972 at a meeting of the Club of Rome it was concluded that "If the present growth trends in world population, industrialisation, pollution, food production, and resources depletion continues unchanged, the limits of growth on this planet will be reached some time within the next 100 years."

Now we are eighteen years closer to the gloomy but possible prediction. However, since 1972 we have been in a possession of a revolutionary tool used in inventorisation, monitoring and planning of earth's resources - remote sensing satellite. These tools, whether the LANDSAT or SPOT series, have been instrumental in improved efficiency of resources management world wide. One of the applications of the satellite remote sensing technology is in identification and delineation of critical lands.

Among the negative impacts of industrial and agricultural development on natural environment is creation of so called critical lands. The critical land can be defined as an area with reasonably similar reoccurring critical limitations of the physical, social or economic resources which result in degradation damage or misuse of the environment. The damage can be either reversible or irreversible. Critical lands are generally associated with subsistence or below subsistence farming, very high land reclamation or maintenance costs and inputs, degraded land and water resources, and in developing countries with local income below poverty line.

The identification and delineation of critical lands is one of the principal objectives of land use planning on national, regional and local levels of many countries. This is especially the case in developing countries, where the typically, primary production-farming, forestry, fishing, mining-account for more than a third of their GNP. However, critical lands are also found in developed countries and include, among others, wilted forests due to acid rain, eroded or saline soils due to overuse of land and degraded watersheds as a result of surface water pollution by industry and agriculture.

Kali Konto Project in Indonesia has developed a methodology of identification of critical lands by using specific parameters in establishing of phenomena causing critical conditions. The phenomena causing critical conditions usually affect soil, terrain, geologic, vegetation, hydrologic, climatic or socio-economic conditions.

These conditions generally result in changes of status and characteristics of vegetation, land use, soil, drainage pattern, degree of dissection, or moisture regime and this in turn alters the spectral properties of the affected areas. Subsequently, satellite imagery can be used in recognition and monitoring of such locations associated with critical conditions. The critical land are used in identification of priority development areas in national and regional land use development planning.