

Kanda Pumsin 2013: Application of Elevation, Soil Order, Irrigation and Soil Moisture Regime for Management and Planning Agricultural Land Resource in Upper Northeastern of Thailand.
Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Associate Professor Paiboon Prabuddham, Ph.D. 163 pages.

In order to obtain sustainable development in Upper Northeastern (U.N.E.) of Thailand in the future, GIS computer program was introduced to evaluate Agricultural Potential Land Class (APLC) (1 – 6) based on Elevation, Soil Order, Irrigation System and Soil Moisture Regime weight criteria of 5 : 4 : 3 : 2, then classify the 6 APLC to be Very good, Good, Moderate, Poor, Very poor and Forest only respectively. Recent land utilization to be Paddy field (P), Other agricultural area (OA), Urban area (U), Forest land (F), Water body (W) and Miscellaneous (M) was also studied and evaluate based on the affection landuse planning. The affection landuse and implementation for sustainable development was the key of the U.N.E. future landuse propose. The summarized results are : (a) The total area 52.105×10^6 rais of the U.N.E. was distributed into 0.10, 1.16, 33.75, 35.51, 5.93 and 23.55 percent for the APLC 1-6 respectively; (b) The P, OA, U, F, W and M lands used are 42.04, 25.32, 4.64, 19.27, 3.52 and 5.21 percent respectively and (c) The possible sustainable development of this U.N.E. in the future will be possible if 7 landusage zones from the APLC into Subsistence Farming 1 (SF1), Subsistence Farming 2 (SF2), Urban and Industrial (U&I), Biomass Plant (BP), Economic Forest (EF), Natural Conserve (NC) and Water body (W) proposed are 38.99, 23.53, 4.55, 3.60, 2.38, 23.52 and 3.45 percent respectively. If agricultural land reformation in the SF1 and SF2 at 20 rais/family; 30% of the urban land for residential area of the US. standard at $400 \text{ m}^2/\text{family}$; and (d) a family has 6 person (3 generations) are possible, then the SF1 and SF2 will absorb 1.005×10^6 and 0.624×10^6 families or the total of about 9.774×10^6 farmers, while 2.832×10^6 families or about 16.992×10^6 persons are in urban and industrial service occupations. Industrial engaged in tourism, bio energy and wood and wood products are recommended for the urban citizens. Then all at the U.N.E. population (about 10.8×10^6) can return to their hometown having appropriated land ownership and joblessness each. More over the reserved forest in the NC 12.266×10^6 rais and buffered commercial forest of BF 1.854×10^6 rais and EF 1.237×10^6 rais or the total of 15.393×10^6 rais will about 29.54 percent of the U.N.E. will also be obtained.

Student's signature

Thesis Advisor's signature