

Environmental geology and sustainable land use planning and ecosystem management: An Australian case study

Dhia Al Bakri, University of Sydney, Orange NSW, Australia

The paper discusses a new approach for achieving sustainable development in rural areas. Most of the conventional land use and resource management practices have been ineffective in progressing the goal of sustainability. This argument is based on the notion that such practices focused on the effects rather than the causes. A geologically-based approach would overcome most of the above shortcomings, because it would provide a better understanding of the intrinsic constraints of the ecosystem and the complex interaction in the biophysical processes. This, in turn, will facilitate an environmentally sustainable and economically viable socio-economic development process.

A case study from Australia has demonstrated that lithology, geological history and geomorphic process were the paramount factors in determining the potential of the ecosystem and the constraints of different agricultural land uses. A model was developed to predict the causal relationship and influence of geology on land use, agricultural production systems, management practices, and land degradation problems. It was concluded that sustainable land use planning and protection of the ecosystem are unlikely to succeed unless geological factors and processes were carefully considered.