

DEAL (Disease Emergence and Economic Evaluation of Altered Landscape) in Indonesia

Background Study

Emergence of numerous infectious diseases are strongly influenced by environmental factors such as climate or land use change (Patz et al, 2008; McFarlane, 2013). These land use changes is rapidly converting forests into land include deforestation, agricultural encroachment, coastal zone degradation, wetland modification, mining, the concentration or expansion of urban environments, and other activities. Forest degradation accounts for between 10 to 15 percent of greenhouse gas emissions, and contributes to biodiversity loss and climate change (Werf et al, 2009; Donato et al, 2011).

Several human health-relevant land use change recognized today, and noteworthy. Deforestation, with subsequent changes in land use, has coincided with an upsurge of infectious disease. Another effects of land use change on human health involves deforestation and noninfectious disease, for example the contamination of rivers (Patz et al, 2004). Land use conversions accelerate the pace and diversity of human and animal contact, enabling pathogens to spill over from animal populations, a first spark in the chain of events that ignite global pandemics. Therefore need a key strategy in reducing the dual threats from diseases of pandemic potential and climate change is a robust evidence base that accurately captures the value of ecosystems.

In collaboration with University of Minnesota (UMN), Indonesia One Health University Network (INDOHUN), and Ecohealth Alliance (EHA) will analyze ecosystem's value and how it affects disease emergence in Indonesia as a country with the fifth highest deforestation in the world. This study will gather data from three main study sites, namely Riau, East Kalimantan, and West Papua.

Specific objectives

1. To describe correlations between land use changes and health impact with an emphasis on zoonotic and vector borne diseases.
2. To develop a model to estimate the health economic cost as an impact of land use conversions with a focus on deforestation and One Health
3. To Inform policy through communication of products to stakeholders for policy recommendations and guidelines for community and local engagement
4. Capacity building in local universities