**Introduction**

*Structure*

*Forest cover and forest loss across SEA. Emerging economies based on natural resources.*

Southeast Asia (SEA) is characterised by complex biogeography and extensive tropical forest cover resulting in exceptional biological diversity, yet it has one of the highest rates of deforestation in the world (Hughes, 2017). Deforestation rates in SEA are comparable only with those of Latin America (Estoque et al., 2019), and the resulting habitat loss is arguably more damaging to biodiversity (Sodhi et al., 2010, 2004). The loss of SEA’s forests has potentially severe consequences for climate change (Ceddia et al., 2015), ecosystem-based adaptation (Estoque et al., 2019), local people (Culas, 2007; Frewer and Chan, 2014; Gaughan et al., 2009; Poffenberger, 2006), and biodiversity (Chapman et al., 2018; Hearn et al., 2018). The proximate causes of tropical deforestation vary both by location and by scale, ranging from broader drivers such as population pressure and weak institutions (Geist and Lambin, 2002), to the expansion of cash crops, agriculture, and other food production (Estoque et al., 2019; Imai et al., 2018; Stibig et al., 2014; Wilcove et al., 2013; Zeng et al., 2018) and the associated expansion of roads and infrastructure that facilitate such expansion (Hughes, 2018).

Deforestation is accentuated in low income countries where poverty, debt, and overpopulation are high, and thus so are the demands for economic growth via agriculture and other natural resource-based products (Culas, 2012). Research has shown that this trend is reversed in high income countries where economic activity shifts to become more service-driven, and demand for environmental services increases, resulting in afforestation (Culas, 2012). The change from deforestation (low income) to afforestation (high income) is termed forest transition (Mather, 1992). There is also evidence that remaining forest area is an effective predictor of deforestation rates, with countries undergoing forest transition when remaining forest cover across the country is low (Lambin and Meyfroidt, 2010). Within SEA, countries such as Vietnam have undergone forest transitions and reduced deforestation rates dramatically over the last 20 years (Meyfroidt and Lambin, 2008). Yet often this progress is at the expense of poorer, less developed countries with weaker institutions and policy frameworks such as Cambodia, where activities including logging and forest clearance leak across borders (Meyfroidt and Lambin, 2009).

*Importance and difficulties of* *understanding relationships between economics, socioeconomics, and forests at different scales. Important for developing sustainable forestry policies and for predicting forest loss so as to target interventions. Forest gain can be achieved in both open and closed countries, but deforestation might be accelerated in countries undergoing social transition (Imai et al 2018).*

There are various broad pathways which can result in a land use transition within a country (Lambin and Meyfroidt, 2010). Despite the terminology, these pathways are not linear or deterministic; they are driven by complex endogenous and exogenous drivers and feedback loops between economic, political, social, and environmental factors operating at a variety of scales (Lambin and Meyfroidt, 2010). To facilitate the development of sustainable land use policies that can guide countries towards certain forest transition pathways, and to support targeted interventions that are effective at reducing forest loss, it is important to identify some of the social-economic drivers and predictors of forest cover and loss at different scales. Describing relationships between forest cover and social-economic variables, rather than simply biophysical, is particularly important in developing countries that are undergoing social transition, as these are the conditions under which deforestation is often accelerated (Imai et al., 2018). Successfully isolating the signals of these relationships is however, challenging, due to the complexity of social-ecological systems, the non-linear feedback loops, and the heterogeneity in system dynamics at different scales.

*Approaches to modelling these relationships. Mini literature review. Identify some key papers from Asia that model these relationships. What approach did they take? What are the potential flaws?*

Challenges associated with some of the approaches. Are they identifying and accounting for all the variance at the scale they are working at? Are they missing a lot of variation?

Cambodia – rapid economic and social development post-conflict. Differences between development in different parts of the country - socioeconomics. Discuss ELCs and foreign investment. Pros and cons of ELCs. Importance of identifying drivers / relationships. But what is the best approach?

*Cambodia*

Between 1975 and 1992 Cambodia suffered enormous civil unrest, civil war, and foreign occupation, which resulted in almost complete economic collapse. Yet by 2006 Cambodia’s economy was one of the fastest growing economies in the world and represents a good example of a country’s ability to move from post-conflict status to full integration within a dynamic regional economy (Cambodia’s economic transformation report).

Cambodia’s economy can be described as “economic transformation”. During 1990’s – 85% of population were subsistence agriculture, with small garment sector. Low productivity. After 2001 (Forestry Law and Land Law) shift towards agro-industry. Private sector grew exponentially, mostly due to investments in tourism, manufacturing, and mining. Between 2000 and 2006 economy grew by an average of 8.7%, but this increase was driven primarily by manufacturing, (especially garment manufacturing), construction, services, and tourism. These industries geographically limited to Phnom Penh, Siem Reap, and their surrounds. During this period 55% of population remained in agriculture, with almost all of the growth in the agricultural sector driven by the industrial agricultural sub-sector.

At the start of the century 41.9% of Cambodia’s land area was forested, and by 2012 the total forested area had been reduced by 19.8%, equating to over 1.3 million hectares (Davis et al 2015). Only 25 other countries lost more forest than Cambodia between 2000 – 2012 (Hansen et al 2013).

McSweeney, C., New, M. & Lizcano, G. 2010. UNDP Climate Change Country Profiles: Cambodia. Available: http://country-profiles.geog.ox.ac.uk/ [Accessed 23/06/2020].