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Land use, forest preservation and biodiversity in Asia

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Abstract

Continuous increase in one side of human populations and on the other side on the number of extinct and endangered species in Asia requires appropriate land use and forest preservation. Forests provide a number of benefits such as regulation of global climate and ecosystems, provision of raw materials and wild foods for local communities, watershed protection for a region, national income from ecotourism, carbon sequestration, being a landscape and habitat of rare species. This introduction provides summary for land use, forest preservation and biodiversity policy in Asia.

JEL Codes: Q10; Q23; Q56.

Keywords: Asia; Land use; Ecosystem Service; Biodiversity.

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Introduction

At a global level, societies look for appropriate ways to preserve biodiversity as its role to the functioning of ecosystems, regulation mainly to climate control and its existence value. On the other hand, indigenous groups value biodiversity for its contribution in their day-to-day livelihoods while national governments consider biodiversity as a national resource. The continuous increase in one side of human populations and on the other side on the number of extinct and endangered species in Asia requires appropriate land use and forest preservation (Managi and Kuriyama, 2016.). Forests provide a number of benefits such as regulation of global climate and ecosystems, provision of raw materials and wild foods for local communities, watershed protection for a region, national income from ecotourism, carbon sequestration, being a landscape and habitat of rare species. This implies that forests conservation is quite important. Similarly pressures on agricultural land from other land uses have increased significantly as social expectations of rural areas have changed.

Contributions of our special issue are selected through a refereeing process consistent with the standard reviewing process of Journal of Forest Economics, to ensure that only original contributions of the highest quality are included. The applied theoretical and analytical contributions are expected to provide guidance to policy-makers and government officials in designing new policy scenarios for various issues concerning Asian countries like among others treats to biodiversity, trends in conservation, link of conservation and tourism, biodiversity and business, land use competition, impacts of intensification, sustainable agriculture, sustainability policies, aquatic biodiversity and food supplies (Managi, 2016). We believe the empirical

contributions provide new evidence to support and inform current policy debates and benefit policy-makers and researchers in Asia but also worldwide (see Kumar and Managi (2009) for India).

Uniqueness in Asia/Pacific is increasing in forest area mainly driven by China and Japan while other Asia/Pacific regions decrease. Figure 1 shows the slight increase in East Asia and Pacific forest area per land area. This is significant contrast to the decreasing trend of Latin America and Caribbean and Sub-Saharan African regions. This highlights the importance of increasing value to ecosystem service and biodiversity. Discussion of this divergence in values needs to be taken account when we analyze heterogeneity of the regions. In the same time, overall value of natural capital, which is economic value of nature in economics, has been decreasing over decades. Figure 2 shows this decreasing trend where Urban Institute and United Nations Environment Programme (UNEP) (2017) provide Inclusive Wealth Report 2017 (IWR2017), which is the successor of Inclusive Wealth Report 2012 and 2014 (see UNESCO/UNU-IHDP and UNEP. 2014). Natural capital per capita experienced a decline of about 34.7 percent from 1992 levels.

Natural capital tends to decrease as it is composed from both renewable and non-renewable resource stock values (Halkos et al. 2017a). Typically, non-renewable resource such as oil, coal and minerals stock are decreasing over time. Therefore, the share of renewable resource in natural capital increases. The increasing trend of timber and non-timber share in natural capital is shown in Figure 3. Australia, New Zealand, Indonesia, and China among others contribute to the large share of forest induced natural capital (Figure 4, 5). This makes country specific analysis in Asia/Pacific to be more important.

This special issue provides country specific analysis on wide range of topics. The special issue covers wide ranges of countries in Asia. Tropical deforestation remains a global challenge with negative consequences for environmental sustainability and forest-dependent human communities. The decentralization of forest management in a number of developing countries, for example Vietnam and China, has allowed greater rural household participation in tree planting activities. China is attempting to implement the dual goals of economic development and ecological security. Xie et al. shows the forest land area increased but a large amount of high quality forest land was replaced by poor-quality forest land. This is because forest land areas that present rich soil organic matter content are more easily converted to other land types.

Dinh et al. suggest these factors be considered in reforestation in Vietnam. Their results show that tree planting is financially more profitable than leaving land abandoned. However, the decision and intensity of tree planting by rural households are affected by various factors. These include representing household characteristics, farm endowment, bio-physical factors, social-institutional support, and the perception of farmers about forestland expropriation risk.

New economic trading mechanism is often tested the feasibility and potential using laboratory experiments in developed countries. However, the evidence in developing countries or in forestry or farmers is limited. Timilsina and Kotani study on trading mechanism for farmers using laboratory experiments in Nepal. The results suggest that farmers with limited education understand a uniform price auction rules, revealing their forestland valuations and that the marketable permits system is effective

implying future potential of increasing their revenue without damaging the system, in the long run insuring their sustainability in business.

The biodiversity is often discussed but its measurement with economic consequence is limited. The existence of its relationship can show the policy for better forest or agricultural management. Karunaratna et al. study the different indicators of agricultural biodiversity (crop diversity, livestock diversity and agro-diversity) in Sri Lanka and suggest that maintaining more diverse farming systems is crucial to reducing farm inefficiency and thereby improving the welfare of rural households.

Furthermore, inaction of appropriate policy often causes damage to the environment. Measurement of its damage is therefore needed to start policy suggestion. Athukorala et al. provide evidence of an increasingly pressing need for agricultural land use policies to take into consideration externalities in the form of social environmental costs. Commonly, the negative externalities are not taken into account in economic accounting in government. They show the size of the negative effect on social welfare is large in country.

Lastly, many different subsidy or policy is implemented for support ecosystem in Japan. But it is still limited in the sense the policy can be implemented to the case there are significant benefit doing that.

First, the ecosystem services were highly valued in the order of biodiversity conservation, water and soil regulation, timber provision, and climate change mitigation (Halkos and Tsilika 2017b). Imamura et al. suggest that people expect abandoned coppice forests to be protected from Oak Wilt and to become rich in biodiversity providing high value when it is realized the implications from ecosystem changes. Fujino et al. evaluate

the biodiversity conservation policy in Japan. They show that respondents clearly exhibit heterogeneous preferences regarding the biodiversity conservation policy. Further understanding on heterogeneous value in the society and economic mechanism would be helpful in suggesting policy for ecosystem and biodiversity (see Managi, 2012, 2015; Wilson 2010; Perrings and Halkos 2012; Halkos 2011, 2013; Halkos and Jones 2012; Halkos and Matsiori 2017)

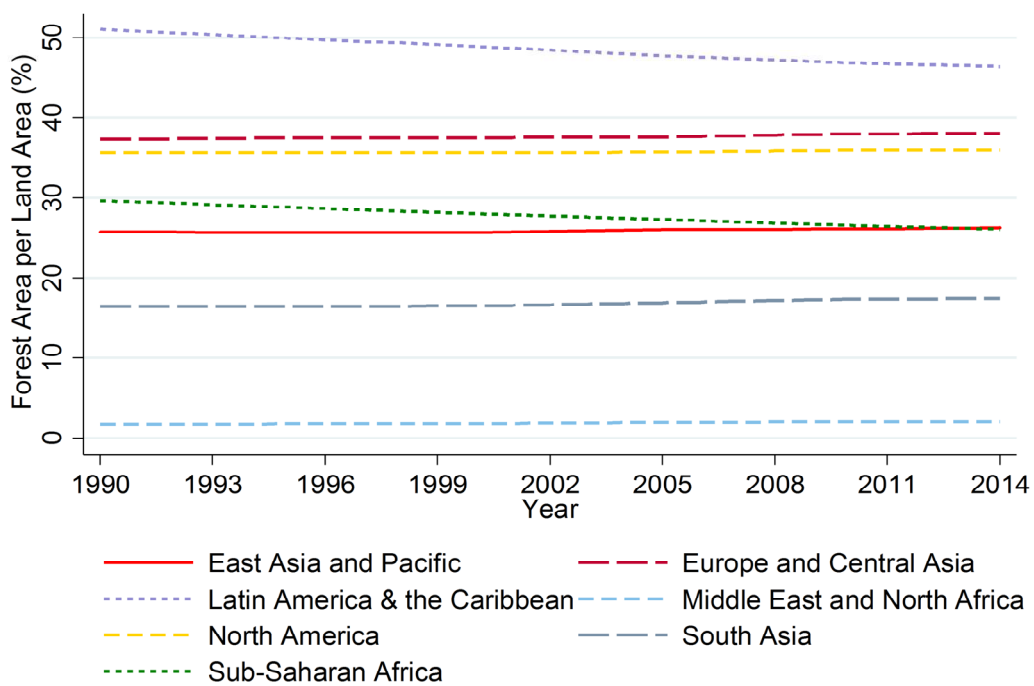


Figure 1: Annual trend of forest area per land in seven regions (1990-2014)
Source: Urban Institute and UNEP (2017)

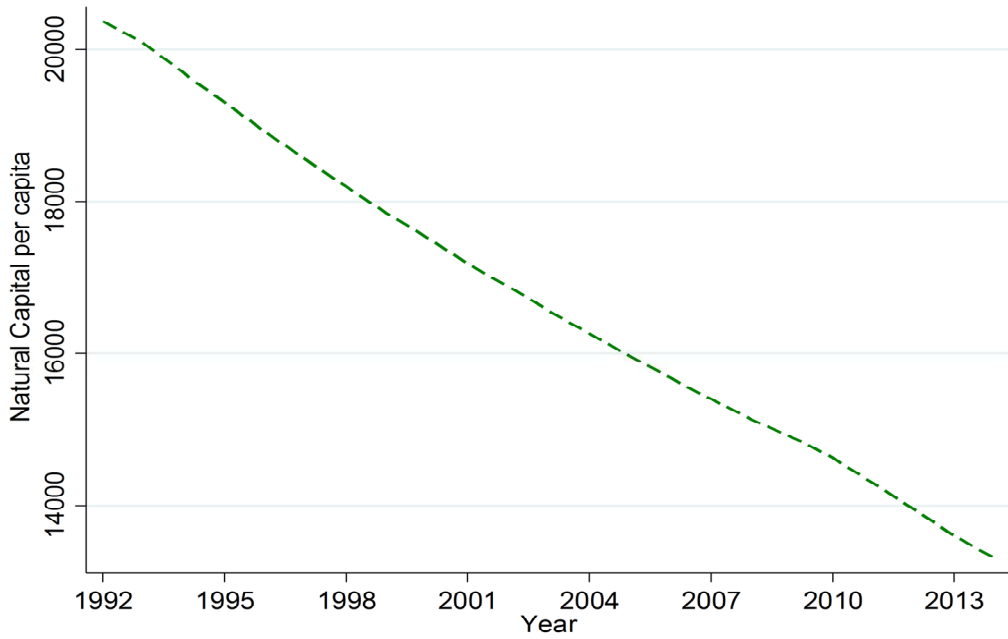


Figure 2: Annual world trends of Natural Capital per capita (US\$) (1992-2014)
Source: Urban Institute and UNEP (2017)

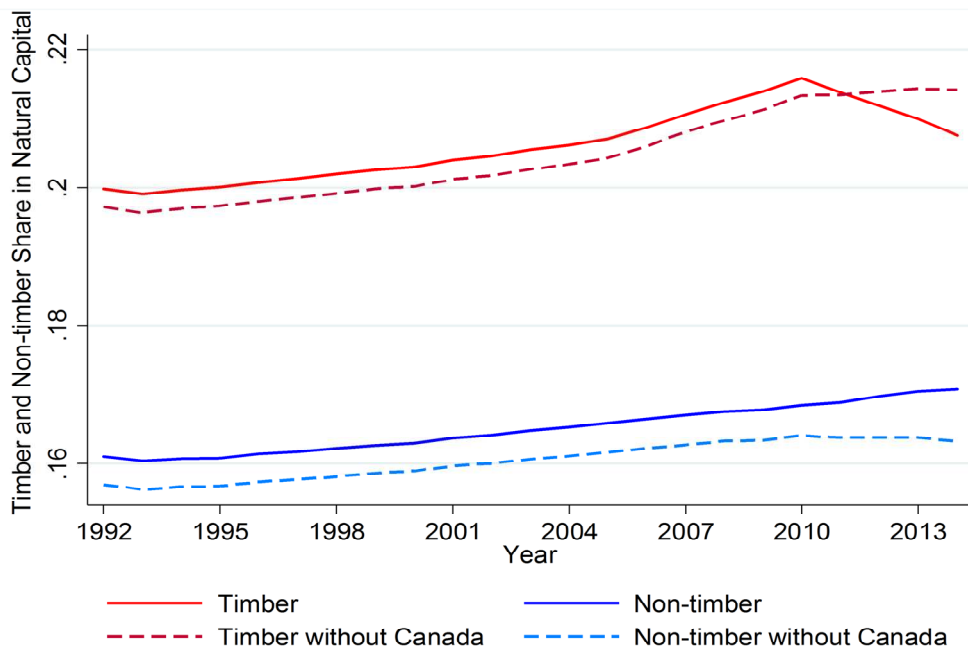


Figure 3: Timber and Non-timber share in Natural Capital (1992-2014)
Source: Urban Institute and UNEP (2017)

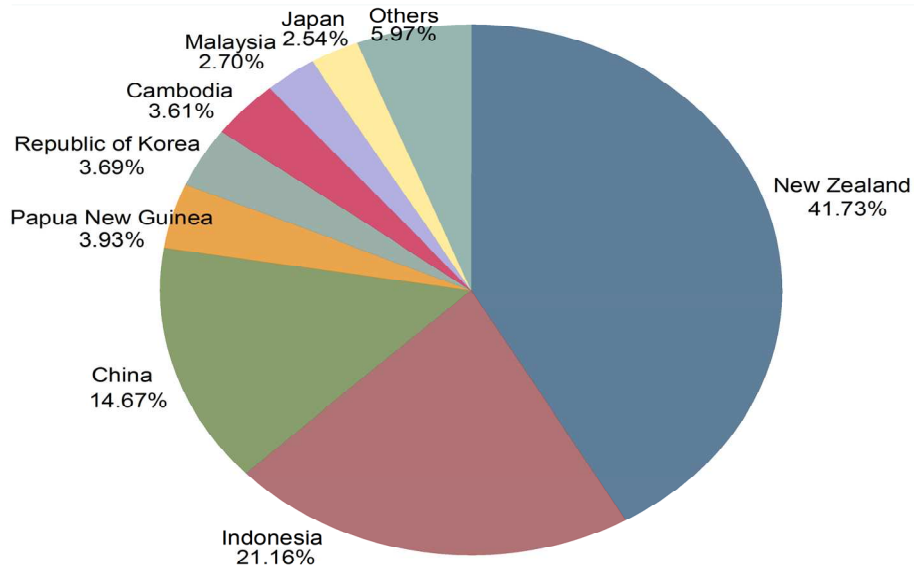


Figure 4: Timber share of East Asia and Pacific countries in 2014
 Note: Australia, Fiji, Myanmar, Singapore are not included due to missing data.
 Source: Urban Institute and UNEP (2017)

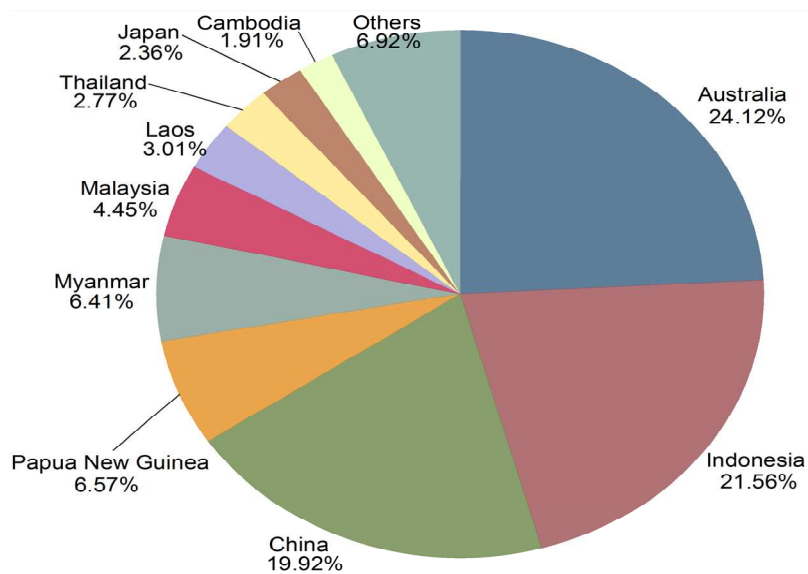


Figure 5: Non-timber share of East Asia and Pacific countries in 2014
 Source: Urban Institute and UNEP (2017)
 Note: Countries in East Asia and Pacific region are following countries; Australia, Cambodia, China, Fiji, Indonesia, Japan, Republic of Korea, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, New Zealand, Papua New Guinea, Philippines, Singapore, Thailand, Viet Nam.

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