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42. Flex commodities and intertwining world-ecologies: Indonesian palm waste as an environmental fix in the New Zealand dairy industry / Gellert, Paul K.; D'Onofrio, Sarah. Political Geography42. ISSN: 0962-6298 (2024) v.108 Issue. p.103038. 108

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Abstract: Palm kernel expeller (PKE), a by-product of the palm oil production process in Indonesia, has evolved into a billion-dollar export 'flex' commodity to feed cows in intensified dairy production in New Zealand. As the PKE trade grew in New Zealand, the dairy industry became a transnational behemoth and a leading global exporter. Through our examination of PKE, an understudied commodity, we reveal the ways that ecological degradation to local, regional, and world-ecologies are exacerbated and intertwined. This paper argues that neoliberalisation of regulatory and trade policy, both within and between the two countries, laid the groundwork for the growth of the ecologically destructive palm oil operations of Indonesia as well as the intensified dairy operations in New Zealand, both of which rely on dispossession of Indigenous lands. Our theorisation builds on the flex commodity literature by analyzing the ways PKE became an 'environmental fix' and part of a transnational waste regime linking two semiperipheral regions. This environmental fix for the dairy industry temporarily limits the negative impacts of climate change induced drought. The world-ecology(ies) of such 'fixes' is becoming increasingly urgent and increasingly tenuous in the face of climate change.

Keyword: Indonesia; Climate change; Palm oil; Dairy; Environmental fix; Flex commodities; Neoliberalism; New Zealand; Waste regime

43. Oil palm and gendered time use: A mixed-methods case study from West Kalimantan, Indonesia / Rowland, Dominic; Zanello, Giacomo; Waliyo, Edy; Ickowitz, Amy. Forest Policy and Economics43. ISSN: 1389-9341 (2022) v.137 Issue. p.102682. 137

Url: <https://www.sciencedirect.com/science/article/pii/S1389934121002884>

DOI: 10.1016/j.forpol.2021.102682

Abstract: Measuring the social impact of oil palm requires the use of multiple metrics which capture different dimensions of well-being. To date, most studies have examined welfare outcomes at the household level, relying on a relatively narrow range of indicators. There is a need for a more diverse range of metrics to measure the social impacts of oil palm as well as more explicit accounting for study context and gendered effects. Here we demonstrate the utility of specialised time use methods used in combination with qualitative research to understand intra-household labour dynamics associated with oil palm adoption. We use a mixed-methods approach to investigate the role of smallholder oil palm plasma schemes on men and women's time use in Kapuas Hulu District, West Kalimantan. Time allocation is an important determinant of well-being as well as maternal and child nutrition and an indicator of women's empowerment and gender equality. We integrate the results from a fractional multinomial logistic regression of data from 603 individuals with qualitative findings on the subjective experience of time allocation, as well as, the causes, consequences and coping strategies to manage trade-offs in time allocation. We find that relative to non-oil-palm adopting swidden farmers, participation in oil palm plasma schemes is associated with more time spent in productive labour for

both men and women, driven by off-farm labour on oil palm plantations. For women, increased time comes at the cost of reduced time spent in rest, leisure and sleep. Increased time spent in off-farm labour drives households to adapt agricultural production methods, changing cash crop production as well as accelerating swidden transitions. These changes alter gender dynamics and responsibilities within the household. Our results suggest that changes in time allocation may have significant consequences for women's well-being and gender equity. Women in the oil palm site experienced greater stress over time scarcity and employed coping strategies more frequently. Our findings indicate that time allocation could be used as an indicator of the effects of oil palm expansion and adoption on well-being and that potential effects of time scarcity on well-being, gender equity, and maternal and child nutrition should be considered by policy makers when making land use decisions.

Keyword: Indonesia; Palm oil; Forests; Gender; Swidden; Time use

44. The oil palm replanting imperative: Are smallholder farmers willing to participate? / Siregar, Atiqah Amanda; Halimatussadiyah, Alin; Moeis, Faizal Rahmanto; Anky, Wildan Al Kautsar; Nainggolan, Doan. *Forest Policy and Economics* 44. ISSN: 1389-9341 (2024) v.169 Issue. p.103362. 169

Url: <https://www.sciencedirect.com/science/article/pii/S1389934124002168>

DOI: 10.1016/j.forpol.2024.103362

Abstract: Smallholder oil palm farmers have been pivotal in Indonesia's Crude Palm Oil (CPO) production for decades. However, their plantations' productivity lag behind private and government estates. Moreover, these farmers often resort to unsustainable practices. Replanting presents a viable solution to enhance sustainability by bolstering yields and mitigating harmful practices. The Indonesian government, through the Palm Oil Fund Management Agency (BPDPKS), offers subsidies to incentivize farmers to implement replanting. However, replanting program uptake remains low. This study aims to investigate factors underlying the smallholders' propensity to engage in replanting by examining (1) their intention (stated preference) to replant their oil palm plantation with the financing scheme from BPDPKS, and (2) their actual replanting implementation (revealed preference). Combining survey data with in-depth interviews, the research identifies three key factors influencing their decision: a lack of funds and financing access, difficulties in obtaining land ownership certificate and business registration certificates, and challenges to implement good agricultural practices. Encouraging smallholders to participate in the replanting program is crucial for curbing further land expansion, as this expansion poses a significant risk of encroaching on forests and protected areas. Findings from the analysis of both intention and actual implementation provide valuable insights into smallholders' perspectives on replanting, underlining the need for comprehensive policy development and implementation. This will secure full engagement of smallholder farmers in replanting program, which offers a critical path to prevent further loss of nature, particularly forested area, due to land expansion for oil palm plantations.

Keyword: Palm oil; Sustainability; Preferences; Replanting; Smallholder farmers; Survey

45. A political-economy model to reduce fire and improve livelihoods in Indonesia's lowlands / Purnomo, Herry; Kusumadewi, Sonya D.; Ilham, Qori P.; Puspitaloka, Dyah; Hayati, Durrah; Sanjaya,

Made; Okarda, Beni; Dewi, Sonya; Dermawan, Ahmad; Brady, Michael A.. Forest Policy and Economics 45. ISSN: 1389-9341 (2021) v.130 Issue. p.102533. 130

Url: <https://www.sciencedirect.com/science/article/pii/S1389934121001398>

DOI: 10.1016/j.forpol.2021.102533

Abstract: Deforestation and land degradation have been occurring across the globe, particularly in developing countries. Over the past 30 years, Indonesia's lowlands have experienced rapid degradation, deforestation and fires. Interventions aimed to achieve sustainable lowlands have been made through the introduction and adoption of commodities that provide sufficient livelihoods and reduce fires. However, these interventions have not guaranteed success as the contribution of the governance and political economy towards sustainability is poorly understood. This study aims to determine how governance and political-economic factors affect sustainability of lowland agriculture. We used structural equation modeling (SEM) to understand the effect of political economy factors (structure, institution and actor) on sustainability and community livelihoods in Indonesian lowlands. Data were collected through interviews with selected respondents. We found Structure, Institution, and Actor explain 31% (0.31) of the variation in the Sustainability and Livelihoods model. The remaining effects were explained by non-political economic factors. Using actor-centered power (ACP) and social network analysis (SNA) approaches, we also identified and assessed different actors' power and their networks. The central government and private companies are the most powerful actors, while farmers are the least powerful actors. The findings demonstrate that considering governance and political-economic factors in designing and implementing commodity interventions for policy makers is a must. Devolving power to farmers is crucial in achieving power balance among various actors, which leads to better political economy condition that affects sustainability of lowlands.

Keyword: Actor; Community; Environment; Institution; Mangrove; Peatland; Structural equation modeling

46. Analysis of the agricultural innovation system in Indonesia: A case study of the beef sector in Nusa Tenggara Barat / Valerio, Erika; Hilmiati, Nurul; Prior, Julian; Dahlanuddin, Dahlan. Agricultural Systems 46. ISSN: 0308-521X (2022) v.203 Issue. p.103529. 203

Url: <https://www.sciencedirect.com/science/article/pii/S0308521X22001652>

DOI: 10.1016/j.agsy.2022.103529

Abstract: CONTEXT The demand for beef in Indonesia has increased over the last decade; however, national production barely meets half of the domestic demand. This gap creates an opportunity for beef smallholder farmers to improve their livelihoods by increasing their participation in the domestic market. Innovation is central to supporting smallholder farmers to benefit from this increase in beef demand in Indonesia. OBJECTIVE This paper aims to analyse the barriers to the innovation system in the Indonesian beef sector in the province of Nusa Tenggara Barat (NTB) to identify opportunities to increase smallholder beef productivity. METHODS In the analysis, we applied the agricultural innovation system (AIS) framework to identify constraints for boosting beef production in the province. We used qualitative data (in-depth interviews and focus group discussions) collected in NTB and data from a literature review. RESULTS AND CONCLUSIONS The results showed significant constraints across all AIS functions that ultimately translated to poor innovation in the beef sector in

NTB. The results showed that the beef innovation system is constrained by multiple factors, including the lack of farmers' professionalisation, lack of agricultural R&D investments, underdeveloped beef value chain, and lack of incentives for PPPs. SIGNIFICANCE These findings inform policy in NTB and increase smallholder beef productivity. Additionally, the findings point to constraints that are likely common in beef production in many developing countries, and that could be considered when developing policy in other areas in Indonesia.

Keyword: Smallholder farmers; Agricultural innovation system; Beef production; Innovation; Policy

47. Climate policy integration in the land use sector: Mitigation, adaptation and sustainable development linkages / Di Gregorio, Monica; Nurrochmat, Dodik Ridho; Paavola, Jouni; Sari, Intan Maya; Fatorelli, Leandra; Pramova, Emilia; Locatelli, Bruno; Brockhaus, Maria; Kusumadewi, Sonya Dyah. *Environmental Science & Policy* 47. ISSN: 1462-9011 (2017) v.67 Issue. p.35-43. 67

Url: <https://www.sciencedirect.com/science/article/pii/S1462901116305883>

DOI: 10.1016/j.envsci.2016.11.004

Abstract: This article re-conceptualizes Climate Policy Integration (CPI) in the land use sector to highlight the need to assess the level of integration of mitigation and adaptation objectives and policies to minimize trade-offs and to exploit synergies. It suggests that effective CPI in the land use sector requires i) internal climate policy coherence between mitigation and adaptation objectives and policies; ii) external climate policy coherence between climate change and development objectives; iii) vertical policy integration to mainstream climate change into sectoral policies and; iv) horizontal policy integration by overarching governance structures for cross-sectoral coordination. This framework is used to examine CPI in the land use sector of Indonesia. The findings indicate that adaptation actors and policies are the main advocates of internal policy coherence. External policy coherence between mitigation and development planning is called for, but remains to be operationalized. Bureaucratic politics has in turn undermined vertical and horizontal policy integration. Under these circumstances it is unlikely that the Indonesian bureaucracy can deliver strong coordinated action addressing climate change in the land use sector, unless sectoral ministries internalize a strong mandate on internal and external climate policy coherence and find ways to coordinate policy action effectively.

Keyword: Indonesia; Agriculture; Adaptation; Climate policy integration; Forest; Mitigation

48. Diverging conservation priorities across New Guinea: Conflicts and opportunities / Parsch, Christoph; Denelle, Pierre; Bless, Aplena; Kreft, Holger. *Global Ecology and Conservation* 48. ISSN: 2351-9894 (2025) v.60 Issue. p.e03549. 60

Url: <https://www.sciencedirect.com/science/article/pii/S2351989425001507>

DOI: 10.1016/j.gecco.2025.e03549

Abstract: Conservation planning identifies spatial priorities to guide the allocation of limited resources for safeguarding biodiversity. While New Guinea is widely recognized for its unique ecosystems and

endemic biodiversity, the island remains underrepresented in global conservation research. As New Guinea's forests face imminent threats from deforestation, a unique window of opportunity has emerged to inform large-scale conservation policies and aspirations for the world's largest tropical island. In light of these developments, we identified spatial conservation priorities for New Guinea and adjacent islands across eight biodiversity surrogates, assessed their congruence, and outlined conflicts with projected deforestation. We used the following biodiversity surrogates: species composition of terrestrial vertebrates, threatened, endemic, and gap species, species at risk from projected deforestation, functional and evolutionary distinctiveness, and ecoregions. Our results reveal that conservation priorities among them are largely incongruent, demonstrating that focusing on a single surrogate may omit essential conservation priorities for others. This incongruence reflects the complex distribution of New Guinea's highly range-restricted biota. Achieving adequate representation of all vertebrate species within protected areas would require designating at least two-thirds of New Guinea for conservation. Therefore, short-term conservation efforts should focus on identified irreplaceable priorities at risk from deforestation. Proactive planning should aim to retain large continuous forest landscapes, balancing benefits for both people and nature. A better understanding of the region's biogeography, alongside studies on global change scenarios and their impact on species distributions and priorities, would greatly benefit biodiversity conservation in New Guinea. For an Indonesian Abstract, see supporting information.

Keyword: Indonesia; Deforestation; Biodiversity; Conservation planning; Conservation priorities; Land-Use Change; Papua New Guinea

49. Oil palm boom and land-use dynamics in Indonesia: The role of policies and socioeconomic factors / Gatto, Marcel; Wollni, Meike; Qaim, Martin. *Land Use Policy* 49. ISSN: 0264-8377 (2015) v.46 Issue. p.292-303. 46

Url: <https://www.sciencedirect.com/science/article/pii/S0264837715000733>

DOI: 10.1016/j.landusepol.2015.03.001

Abstract: We investigate land-use dynamics in Jambi, Sumatra, one of the hotspots of Indonesia's recent oil palm boom. Data from a structured village survey are used to analyze the role of socioeconomic and policy factors. Oil palm is partly grown on large plantations, but smallholders are also involved to a significant extent. We find that, in spite of considerable oil palm expansion, rubber remains the dominant crop. Most of the oil palm growth takes place on previous fallow and rubber land. Oil palm has not been a major driver of deforestation. Much of the forest in Jambi was cleared more than 20 years ago, and rubber was an established cash crop long before the oil palm boom started. However, oil palm growth occurs in locations with ongoing logging activities, so indirect effects on deforestation are possible. The Indonesian government's transmigration program of the 1980s and 1990s was instrumental for the start and spread of oil palm in Jambi. Some autochthonous villages have adopted oil palm. But oil palm adoption in autochthonous villages started later and happens at a slower pace than in the villages of the transmigrants from Java.

Keyword: Indonesia; Deforestation; Oil palm; Land-use change; Government policy; Socioeconomic factors

50. Determinants of rice production in Bantaeng Regency, Indonesia: In search of innovative sustainable farm management practices / Salam, Muslim; Auliyah, Nurul; Saadah; Tenriawaru, A. Nixia; Diansari, Pipi; Rahmadanih; Muslim, Ahmad Imam; Bakheet Ali, Hamed Noralla; Ridwan, Muhammad. *Heliyon* 50. ISSN: 2405-8440 (2024) v.10 Issue. 23p.e40634. 10

Url: <https://www.sciencedirect.com/science/article/pii/S2405844024166650>

DOI: 10.1016/j.heliyon.2024.e40634

Abstract: Over the past five years, rice production in Bantaeng Regency has averaged 5.2 tons per hectare, considerably below Bantaeng Regency's 2020 goal of 10.0 tons. Low rice yield internationally and domestically has prompted many studies to assess the effect of farmer and farm characteristics, and input factors on rice production. These include education, agricultural income, farmer cooperatives, production inputs, and financing. In response to this issue, the present study examined determinants of rice production in Bantaeng Regency, Indonesia. A representative sample of 185 rice farmers was randomly selected for structured interviews. The data analysis was carried out by employing the Binary Logistics Regression Analysis (BLRA). We used the BLRA to regress thirteen independent variables (land area, seed application, urea fertilizer, NPK fertilizer, insecticides, herbicides, farm labor, education length, education level, farmer age, experience in farming, landowner status, and farming distance) to examine their effects on rice production. As a result, all independent variables simultaneously had a statistically significant effect on rice yield. Then, the partial testing of thirteen variables revealed that five variables—urea fertilizer, NPK fertilizer, pesticide, labor, and farmer age—had a positive and significant impact on rice production. In contrast, the seed application variable has a statistically negative effect on rice yield, while the other variables do not. Based on the results of this study, we recommend five innovative rice farm management strategies to enhance rice production in the future. Firstly, the farmer should expand their cropped area and increase the use of urea fertilizer, insecticides, and herbicides, labor and seed reduction is expected to boost rice yield immediately. Secondly, governments must ensure farmers' access to urea and NPK fertilizers, pesticides, and certified seeds in the future. Thirdly, policymakers must regulate the high costs and limited availability of chemical fertilizers and pesticides, including insecticides and herbicides. The policymaker would guarantee farmers adequate access to these resources. Fourthly, the farmers should use certified seeds with great output potential and apply the right amount. Fifthly, the rural labor replacement policy regulates rural wages and pay to handle the expected farm labor shortage.

Keyword: Rice farming; Binary logistic regression; Resource allocation; Rice production; Sustainable farming

51. The emerging power of peasant farmers in the tenurial conflicts over the uses of state forestland in Central Java, Indonesia / Maryudi, Ahmad; Citraningtyas, Erlita R.; Purwanto, Ris H.; Sadono, Ronggo; Suryanto, Priyono; Riyanto, Slamet; Siswoko, Bowo D.. *Forest Policy and Economics* 51. ISSN: 1389-9341 (2016) v.67 Issue. p.70-75. 67

Url: <https://www.sciencedirect.com/science/article/pii/S1389934115300484>

DOI: 10.1016/j.forpol.2015.09.005

Abstract: There has been an increasing occurrence of spontaneous and organized movements and struggles demanding access to state forestland in Indonesia over the past few years. A sizeable body of literature has explained the driving factors of the land movement but most of them focus on processes at the national level, principally on the changing socio-political landscapes, and the overlapping land use policy and regulations. In contrast, this paper attempts to find explanation of the dynamics of the land movement, and tries to explain the emerging power of peasant farmers at the field. The research was conducted in the forest of the state company of Perhutani Sub-Forest District (BKPH) Kalibodri, Forest District (KPH) Kendal, Central Java, where nearly two-fifths of the forestland is illegally occupied by peasant farmers for agricultural cropping. This paper borrows actor-centred power (ACP) of Krott et al. (2014), which offers an analytical approach to understand the empirical power resources of actors in social-political relationships. It finds the prolonged occupation of the state forestland is due to the combination of the weakened power of the state apparatus and the more consolidated power of peasant farmers. The state apparatus is weakened by its diminishing coercive power. It is also unable to provide concrete incentives that would otherwise alter the behavior of the peasant farmers. At the same time, the peasant farmers accumulate support from a wider society, from local to national level. Even international actors also play a part so that significantly affect how the state company deals with the peasant farmers.

Keyword: Occupation; Peasant farmers; Power; State forestland; Tenurial conflicts

52. Climate-smart peatland management and the potential for synergies between food security and climate change objectives in Indonesia / Lupascu, Massimo; Taillardat, Pierre; Sasmito, Sigit D.; Agus, F.; Mudiyarso, Daniel; Ramchunder, Sorain J.; Tata, Hesti L.; Taylor, David. *Global Environmental Change* 52. ISSN: 0959-3780 (2023) v.82 Issue. p.102731. 82

Url: <https://www.sciencedirect.com/science/article/pii/S0959378023000973>

DOI: 10.1016/j.gloenvcha.2023.102731

Abstract: Tropical peatlands lie at a nexus of competing sustainable development demands of enhancing food security, mitigating climate change, improving resilience and supporting rural livelihoods. Meeting United Nations Sustainable Development Goals (SDGs) requires balancing these various demands. Progress in meeting SDGs has been slow in low to middle income countries because of difficulties in identifying and quantifying the trade offs associated with natural resource exploitation, including on extensive areas of tropical peatlands. Here, by using secondary data from the literature, Indonesian and international agencies, we examine how land-use allocation in Indonesia has developed over the last three decades by investigating trends of key food and woody crops (oil palm and rubber) and evaluate the role that peatland provinces have played in food security and climate forcing. Overall, food crop production has been marginal in peatland provinces compared to monoculture woody crops, with the latter associated with increased carbon emissions from land use, land-use change, and forestry (LULUCF) over the last thirty years. Our analysis shows that synergies between responses to looming food security and climate change crises can also promote less damaging forms of tropical peatland management. For instance, the conversion of degraded shallow peatlands to agroecological practices (e.g., paludiculture) can be promoted. However, we stress that peatland conservation and restoration must remain the top priority. Impediments due to lack of a common definition for peatland and planning/management units, the use of multiple sectoral

maps by different government agencies and uncoordinated sectoral policy targets can, however, hinder the implementation of less damaging peatland management.

Keyword: Sustainable Development Goals; Land Use Change; Nationally Determined Contributions; Paludiculture; Tropical Peatland

53. Transmigration programs and migrant positions in rural community knowledge networks / Pratiwi, Ayu; Matous, Petr; Martinus, Kirsten. *Journal of Rural Studies* 53. ISSN: 0743-0167 (2022) v.95 Issue. p.391-401. 95

Url: <https://www.sciencedirect.com/science/article/pii/S0743016722002169>

DOI: 10.1016/j.jrurstud.2022.09.019

Abstract: Controversial transmigration programs have moved millions of people from the cores of domestic economies to national geographical peripheries to ostensibly facilitate a more equitable resource distribution. However, it is not well understood how transmigrants become accepted and how they position themselves within the local networks of migrant-receiving rural communities. We examine how ethnicity and migratory experience affect informal knowledge-sharing networks in 16 coffee and cocoa farmer groups in Lampung, Indonesia. Drawing on these social networks and key socio-economic characteristics of 315 farming group members, we examine core-periphery network structures and centrality distributions within these farming groups. We show that individuals from the majority ethnomigration group who are the descendants of Javanese migrants tend to form the core of the local farmers' knowledge networks, apparently benefiting both from strong cultural links to the central regions of the country in Java as well as strong embeddedness in local communities. Our findings also call attention to possible marginalization of original members of peripheral rural communities in central government-sponsored transmigration and export-oriented agricultural extension programs.

Keyword: Indonesia; Agriculture; knowledge flows; Social networks; Transmigration

54. Creating an appropriate tenure foundation for REDD+: The record to date and prospects for the future / Sunderlin, William D.; de Sassi, Claudio; Sills, Erin O.; Duchelle, Amy E.; Larson, Anne M.; Resosudarmo, Ida Aju Pradnja; Awono, Abdon; Kweka, Demetrius Leo; Huynh, Thu Ba. *World Development* 54. ISSN: 0305-750X (2018) v.106 Issue. p.376-392. 106

Url: <https://www.sciencedirect.com/science/article/pii/S0305750X18300202>

DOI: 10.1016/j.worlddev.2018.01.010

Abstract: Summary Attention to tenure is a fundamental step in preparation for REDD+ implementation. Unclear and conflicting tenure has been the main challenge faced by the proponents of subnational REDD+ initiatives, and accordingly, they have expended much effort to remedy the problem. This article assesses how well REDD+ has performed in laying an appropriate tenure foundation. Field research was carried out in two phases (2010–2012 and 2013–2014) in five countries (Brazil, Peru, Cameroon, Tanzania, Indonesia) at 21 subnational initiatives, 141 villages (half targeted

for REDD+ interventions), and 3,754 households. Three questions are posed: 1) What was the effect of REDD+ on perceived tenure insecurity of village residents?; 2) What are the main reasons for change in the level of tenure insecurity and security from Phase 1 to Phase 2 perceived by village residents in control and intervention villages?; and 3) How do intervention village residents evaluate the impact of tenure-related interventions on community well-being? Among the notable findings are that: 1) tenure insecurity decreases slightly across the whole sample of villages, but we only find that REDD+ significantly reduces tenure insecurity in Cameroon, while actually increasing insecurity of smallholder agricultural land tenure in Brazil at the household level; 2) among the main reported reasons for increasing tenure insecurity (where it occurs) are problems with outside companies, lack of title, and competition from neighboring villagers; and 3) views on the effect of REDD+ tenure-related interventions on community well-being lean towards the positive, including for interventions that restrain access to forest. Thus, while there is little evidence that REDD+ interventions have worsened smallholder tenure insecurity (as feared by critics), there is also little evidence that the proponents' efforts to address tenure insecurity have produced results. Work on tenure remains an urgent priority for safeguarding local livelihoods as well as for reducing deforestation. This will require increased attention to participatory engagement, improved reward systems, tenure policy reform, integration of national and local efforts, and "business-as-usual" interests.

Keyword: Climate change; Deforestation; Forest; REDD+; Tenure; Tropical developing countries

55. Transnational labour migration and livelihoods in rural Asia: Tracing patterns of agrarian and forest change / Sunam, Ramesh; Barney, Keith; McCarthy, John F.. *Geoforum*55. ISSN: 0016-7185 (2021) v.118 Issue. p.1-13. 118

Url: <https://www.sciencedirect.com/science/article/pii/S0016718520302724>

DOI: 10.1016/j.geoforum.2020.11.004

Abstract: While scholars and policy makers have increasingly focused on transnational labour migration (TLM) in Asia, few comparative studies have analysed how TLM shapes poverty, livelihoods, vulnerability, and agrarian-forest change across different rural contexts. Based on focused comparative fieldwork and a critical review of the secondary literature, this paper identifies the salient patterns of TLM-led change affecting rural livelihoods and agrarian-forest landscapes in three migrant-sending Asian countries: Nepal, Indonesia and Laos. Depending on how social relations, including those based on gender and ethnicity, and how specific geographic places are integrated into migration pathways, TLM can result in patterns of changes involving agricultural deactivation and de-agrarianisation, as well as incipient re-agrarianisation. We also find that where remittances are integrated with diversified livelihood portfolios, and where state policies play a supportive role, transnational labour migration may improve household livelihoods. In the absence of these factors, the transformative potential of TLM can be overestimated, and TLM may end up reproducing underlying structural drivers of rural poverty and vulnerability. We, therefore, challenge the simplistic narrative that TLM provides an easy solution to the limitations of rural development in agrarian Asia. We suggest policy innovations that ameliorate critical issues of migrant vulnerability and precarity, and that support the mobilisation of labour remittances for agricultural development and livelihood diversification.

Keyword: Agrarian change; Labour migration; Precarity; Remittances, livelihoods, rural poverty; Vulnerability, Asia

56. History of forest loss and degradation in Indonesia / Tsujino, Riyou; Yumoto, Takakazu; Kitamura, Shumpei; Djamaluddin, Ibrahim; Darnaedi, Dedy. Land Use Policy56. ISSN: 0264-8377 (2016) v.57 Issue. p.335-347. 57

Url: <https://www.sciencedirect.com/science/article/pii/S0264837716305348>

DOI: 10.1016/j.landusepol.2016.05.034

Abstract: To clarify the causes and history of forest loss in Indonesia from 1950 to 2015, we compiled and analyzed national-level statistics and literature relating to forest cover change. In 1950, nearly 159.0Mha (87.0%) of the total land area (182.7 million hectares or Mha) in Indonesia was estimated to be covered by forest. Between 1950 and 1997, 59.0Mha of forest was deforested, while 7.1Mha of arable land, 10.2Mha of permanent crop, and 41.7Mha of □other□ land category were increased. Between 1997 and 2015, 5.6Mha of arable land and 11.3Mha of land for permanent crop were increased, while 9.0Mha of forest and 7.9Mha of the □other□ category decreased. Prior to 1970, no trend of severe forest loss was apparent. Between 1970 and the mid-1990s, export-oriented log production and global demand were the primary pressures underlying deforestation. Cultivation of rice and other crops was also found to be associated with a growing population and transmigration policy. Moreover, deregulation of foreign investment in the 1980s appears to have led to expansion of an export-oriented industry, including commercial crop and log production. Between the mid-1990s and 2015, imbalance between global demand and production of Indonesian timber and oil palm led to illegal or non-sustainable timber harvest and expansion of permanent agricultural areas. Since 2011, regulation of forestry practices coupled with a tree planting movement have been promoted, resulting in the amelioration of deforestation rates.

Keyword: Indonesia; Deforestation; Environmental history; Forest degradation; Socio-economic factor

57. Land allocation to meet sectoral goals in Indonesia—An analysis of policy coherence / Harahap, Fumi; Silveira, Semida; Khatiwada, Dilip. Land Use Policy57. ISSN: 0264-8377 (2017) v.61 Issue. p.451-465. 61

Url: <https://www.sciencedirect.com/science/article/pii/S0264837716302873>

DOI: 10.1016/j.landusepol.2016.11.033

Abstract: Land is a scarce resource affecting the implementation of many sectoral policies. In Indonesia, the expansion of palm oil plantations has led to non-sustainable land use practices in past years, particularly deforestation. More recently, the government has set ambitious targets for the adoption of biodiesel which will require expansion of oil palm plantations, thus putting further pressure on land. Meanwhile, the need to guarantee food supply, forest conservation and climate change mitigation also imply challenges when it comes to land allocation and use. This paper examines

the role that land plays in the implementation of sectoral policies in Indonesia, exploring the availability of land to satisfy the multiple goals defined in national policies. We explore land competition resulting from allocations made in official policy documents starting with biofuel policy. The analysis of policy goals and coherence when it comes to land allocation is made in relation to agriculture, climate and forestry policies. We conclude that adjustments need to be made in the policies to avoid overlappings and misinterpretations when it comes to land allocation. The area made available for meeting each sectoral policy goal when taking into account cross sectoral interactions is: 14.2 Mha for agriculture, 43 Mha for climate mitigation measures, 9.2 Mha for forestry, and 20.9 Mha for biofuels. A more uniform land classification and development of a common reference database will increase transparency on land allocation and use, and help to monitor land use change, ultimately supporting the achievement of multiple national goals.

Keyword: Indonesia; Biodiesel; Agriculture; Climate; Forestry; Land allocation; Policy coherence

58. Content analysis of social and economic issues in Indonesia during the COVID-19 pandemic / Gandasari, Dyah; Dwidienawati, Diena. *Heliyon* 58. ISSN: 2405-8440 (2020) v.6 Issue. 11p.e05599. 6

Url: <https://www.sciencedirect.com/science/article/pii/S2405844020324427>

DOI: 10.1016/j.heliyon.2020.e05599

Abstract: The study of mass communication is based on the assumption that the media plays a significant role in spreading messages about various aspects of life to the public. The frequency of published news is an indicator of the various levels of a problem. The more attention paid by a newspaper to the community, the more valuable it is in reporting problems. Currently, news related to the COVID-19 outbreak is most popular. The media has been reporting not only on health but also on social and economic issues during the pandemic. The questions of this research are (1) what social issues were reported in the online news media during the early days of the COVID-19 pandemic, and (2) what economic issues were reported in the online news media during the same period. This study aims to identify the content of news when conveying COVID-19 pandemic information based on the frequency of appearance and news content based on social and economic issues in online news. This is a descriptive quantitative study using a content analysis approach to obtain primary data from 6,376 online news articles published by Antara News from 28 February to 8 April 2020. The NVivo 12 tool was used to analyse the data by dividing the types of COVID-19 issues related to social and economic issues in the news (in the form of text, images, videos and graphics) as an analysis unit. The results showed that Antara News used text, photos, videos and graphics 1,847 times for social issues and 2,701 times for economic issues related to COVID-19. The social issues involved 20 themes. Some of the important ones included regulations, social funds and charities, the humanities, the availability of infrastructure facilities, education, instruction and appeal, and culture and religion. Meanwhile, the economic issues involved 52 themes. Some of the important ones included exchange rates; transportation; the oil, natural gas and electricity industries; social funds and charities; regulation and policy; agriculture; and the tourism industry. The topics are related to social distancing, social restrictions, social actions, culture, other problems associated with the social sector (a decline in community purchasing power, consumption and dismissal) and the real and massive impact on economic growth. COVID-19 is not only a global health crisis but also a major labour market and economic crisis that has had a significant impact on society. In conclusion, a broader study is recommended using several publication periods and online media.

Keyword: Economic impact; Exchange rate; Regulation; Social impact; Social science

59. Land Property Rights, Agricultural Intensification, and Deforestation in Indonesia / Kubitza, Christoph; Krishna, Vijesh V.; Urban, Kira; Alamsyah, Zulkifli; Qaim, Martin. *Ecological Economics* 59. ISSN: 0921-8009 (2018) v.147 Issue. p.312-321. 147

Url: <https://www.sciencedirect.com/science/article/pii/S0921800917307991>

DOI: 10.1016/j.ecolecon.2018.01.021

Abstract: The expansion of agricultural land remains one of the main drivers of deforestation in tropical regions. Stronger land property rights could possibly enable farmers to increase input intensity and productivity on the already cultivated land, thus reducing incentives to expand their farms by deforesting additional land. This hypothesis is tested with data from a panel survey of farm households in Sumatra. The survey data are combined with satellite imageries to account for spatial patterns, such as historical forest locations. Results show that plots for which farmers hold formal land titles are cultivated more intensively and are more productive than untitled plots. However, due to land policy restrictions, farmers located at the historic forest margins often do not hold formal titles. Without land titles, these farmers are less able to intensify and more likely to expand into the surrounding forest land to increase agricultural output. Indeed, forest closeness and past deforestation activities by households are found to be positively associated with current farm size. In addition to improving farmer's access to land titles for non-forest land, better recognition of customary land rights and more effective protection of forest land without recognized claims could be useful policy responses.

Keyword: Deforestation; Smallholders; Land-use change; Land titles; Land-sparing agricultural intensification; Rubber

60. Dynamics Pattern Analysis of Paddy Fields in Indonesia for Developing a Near Real-time Monitoring System Using MODIS Satellite Images / Setiawan, Yudi; Liyantono; Fatikhunnada, Alvin; Permatasari, Prita Ayu; Aulia, Muhammad Rizky. *Procedia Environmental Sciences* 60. ISSN: 1878-0296 (2016) v.33 Issue. p.108-116. 33

Url: <https://www.sciencedirect.com/science/article/pii/S1878029616002279>

DOI: 10.1016/j.proenv.2016.03.062

Abstract: Accurate and up-to-date information of paddy fields over wide areas is essential to support sustainable agricultural and a food security program. It is an urgent need to develop near-real time paddy field monitoring, which can be used by policy maker for handling the food problems directly. This study explored the use of multi temporal MODIS EVI 16-day composite data, which provided the seasonal dynamics for the paddy field patterns from 2000 to 2014. We characterized seasonal vegetation dynamics from MODIS satellite datasets in order to analyze the dynamics change in paddy field. The results indicate that the methodology employed in this research distinguished many specific uses in paddy fields as means of their cropping intensity. Moreover, the seasons were the most important factor affected the dynamics change in the agricultural system. Indeed, characterizing the long-term vegetation dynamics provides information about the characteristic and trends in paddy field

area, either caused by natural factors or human activities, also to be a guidance of water resources management due to improving its effectiveness.

Keyword: MODIS EVI; paddy field; seasonal dynamics change

61. Replanting and yield increase strategies for alleviating the potential decline in palm oil production in Indonesia / Zhao, Jing; Elmore, Andrew J.; Lee, Janice Ser Huay; Numata, Izaya; Zhang, Xin; Cochrane, Mark A.. *Agricultural Systems*61. ISSN: 0308-521X (2023) v.210 Issue. p.103714. 210

Url: <https://www.sciencedirect.com/science/article/pii/S0308521X23001191>

DOI: 10.1016/j.agsy.2023.103714

Abstract: CONTEXT Maintaining stable and high levels of palm oil production within the current oil palm extent is a potential strategy to relieve deforestation pressure. Recent exponential growth of oil palm plantation area has led to significant carbon emissions and biodiversity loss. However, halting palm oil expansion may have adverse effects on palm oil production and the impact on the palm oil industry has not been well studied. OBJECTIVES We developed quantitative methods to assess the potential decline of regional oil palm productivity given the landscape-level age-distribution structure on existing oil palm plantation land and evaluated strategies to alleviate this potential decline. These could provide guidance to multiple stakeholders, including mill owners, plantations, farmers, and regional governments, interested in improving and stabilizing palm oil yield. METHODS We developed a model of palm oil production for Riau, Indonesia, where two decades of extensive industrial and smallholder oil palm expansion has occurred. Using established age-related rates of production, we investigated how palm oil productivity in current plantation areas would change over time if existing oil palm trees were cut and replanted at 25 years. We also designed scenarios based on replanting rates and yield improvements (better management practices or adopting more productive cultivars) to show the different impacts of replanting strategies. For each scenario, the production level was projected to 2075. RESULTS AND CONCLUSIONS We found that the production of fresh fruit bunches from oil palm could fluctuate around 45 million metric tons if all current oil palm was replanted at 25 years with no further planted-area expansion. Replanting 4% annually, with or without yield improvements, would achieve the most stable landscape-level production. With yield improvements, the regional production could be increased to higher levels under any replanting rate. However, improving yields alone would be insufficient to prevent declining productivity trends in current plantation areas. Combining replanting with yield improvements could more quickly overcome potential declines in regional production. The age structure of oil palms in Riau is spatially heterogeneous across different districts, mills and concessions, posing increased challenges for replanting efforts to stabilize landscape-level yields. SIGNIFICANCE Our study provides important information about the policy implications from different replanting and yield increase strategies on landscape-level palm oil production. Our findings demonstrate the need for collaborations among multiple stakeholders to maintain steady high levels of palm oil production in Riau, however varying stakeholder interests present major challenges for enabling and facilitating collaborations.

Keyword: Palm oil; Spatial heterogeneity; Age structure; Landscape-level production; Replanting strategies; Sustainable intensification

62. Estimating in-use wood-based materials carbon stocks in Indonesia: Towards a contribution to the national climate mitigation effort / Aryapratama, Rio; Pauliuk, Stefan. *Resources, Conservation and Recycling*62. ISSN: 0921-3449 (2019) v.149 Issue. p.301-311. 149

Url: <https://www.sciencedirect.com/science/article/pii/S092134491930271X>

DOI: 10.1016/j.resconrec.2019.06.010

Abstract: The carbon sequestered in harvested wood products (HWP) can contribute to climate change mitigation. As a fast-growing country with abundant forest resources, Indonesia potentially has vast HWP carbon stocks that need to be accurately assessed as a first step towards understanding the extent of their potential contribution in climate change mitigation. In this study, a dynamic materials stock and flow analysis for carbon in wood-based products in Indonesia was conducted, covering six end-use sectors. In general, only around 30.3% of the harvested wood (carbon mass) was converted into end-use materials in 2014, indicating a significantly low harvested wood conversion rate in Indonesia. There was a significant increase of wood-based products' carbon stocks in Indonesia from 1961 to 2016. There were 72 (-17/+15) Mt-C of wood stocks in Indonesian society in 2016, or equivalent to 0.28 t-C/capita. Buildings (42%) and infrastructure (31%) were the largest contributors to in-use carbon stocks. The product lifetime uncertainty had a significant influence on the estimate of total society's wood-based carbon stock. Indonesia's in-use stock of wood-based products in 2008 was below its stock level of steel (1.2 times smaller) and cement (5.3 times smaller). Both wood-steel and wood-cement stock ratios showed declining trends, indicating a shifting trend to non-renewable materials use over the past decades. This is the first study that accounts for the in-use wood-based carbon stocks in a developing country. Its results can facilitate further quantitative environmental assessments of non-renewable materials substitution and could help framing materials use policies for climate change mitigation.

Keyword: Carbon sequestration; Climate change mitigation; Dynamic stock modeling; In-use carbon stocks; Material flow analysis; Wood-based materials

63. Revisiting the role of secondary towns: How different types of urban growth relate to poverty in Indonesia / Gibson, John; Jiang, Yi; Susantono, Bambang. *World Development*63. ISSN: 0305-750X (2023) v.169 Issue. p.106281. 169

Url: <https://www.sciencedirect.com/science/article/pii/S0305750X23000992>

DOI: 10.1016/j.worlddev.2023.106281

Abstract: There is increasing interest in assessing whether big city growth has effects that differ from the effects of secondary town growth, especially in terms of impacts on poverty. It can be difficult to study these issues with typical sub-national economic data because urban growth often occurs outside the administrative boundaries of cities. An emerging literature therefore uses remote sensing to measure patterns of urban growth without being restricted by limitations of data for administrative areas. We add to this literature by combining poverty estimates from annual socio-economic surveys fielded from 2011 to 2019 with remote sensing data on night-time lights for 41 big cities and for secondary towns in 497 Indonesian districts. We measure growth on the extensive (lit area) and intensive (brightness within lit area) margins, and distinguish between growth of big cities and of

secondary towns and our spatial econometric models allow global and local spillovers. The extensive margin growth of secondary towns is associated with lower rates of poverty but no similar association holds for big city growth. These patterns corroborate earlier findings from India. Potential productivity advantages of big cities and concerns about agricultural land loss to expanding towns may imply that urban growth patterns that favour big cities are warranted, while on the other hand these new results suggest, from a poverty reduction point of view, that policies to favour secondary towns may be warranted. Policymakers in countries like Indonesia therefore face difficult trade-offs when developing their urbanization strategies.

Keyword: Indonesia; Poverty; Big cities; Night-time lights; Secondary towns

64. Responses to climate change: Perceptions and adaptation among small-scale farmers in Indonesia / Andrista, Safira; Utami, Nadia Putri; Hukom, Venticia; Nielsen, Max; Nielsen, Rasmus. *Journal of Environmental Management* 64. ISSN: 0301-4797 (2025) v.377 Issue. p.124593. 377

Url: <https://www.sciencedirect.com/science/article/pii/S0301479725005699>

DOI: 10.1016/j.jenvman.2025.124593

Abstract: Climate change poses challenges to the global agricultural systems. The threat is more significant for small-scale farmers who constitute 40% of global and 29% of Indonesian farmers, playing a pivotal role in rural economies. Understanding how small-scale farmers adapt to climate change is crucial for developing targeted policy interventions because there is no “one size fits all” policy. This paper explores perceptions and driving forces of adaptation responses to climate change among small-scale farmers in Indonesia, while putting emphasis on the role of perceptions and socioeconomic factors at a local level. Employing both qualitative and quantitative research methods, the study analyzed perceptions and adaptation strategies among farmers in six districts representing Indonesia's varied climate patterns: Mentawai, West Tanjung Jabung, West Kotawaringin, Buton, Sikka, and Fakfak. The qualitative method involved in-depth interviews with 125 farmers to understand how climate variability, socioeconomic conditions, knowledge levels, technological resources, and institutional capabilities influence adaptation strategies such as crop diversification, land maintenance, and livelihood diversification. The quantitative method employed logistic regression to identify the driving factors behind these adaptation decisions. The findings reveal significant variations in climate change perceptions across different climatic regions, highlighting the considerable influence of gender, access to government support, and access to information on climate change adaptation strategies. Gender positively influences land management practices, where males are more likely to perform land maintenance activities compared to females. Government support and information access positively affect crop diversification, land management practices, and livelihood diversification. These insights suggest important policy implications for enhancing climate change adaptation strategies within communities which include region-specific climate adaptation plans, climate education programs, enhancing climate information accuracy and accessibility, gender-sensitive climate adaptation policies, and support for livelihood diversification.

Keyword: Indonesia; Climate change; Adaptation; Small-scale farmers

65. Vanilla production in the world and Mexico: Market value and technology / Barragán-Ocaña, Alejandro; Silva-Borjas, Paz; Cecilio-Ayala, Erick. Social Sciences & Humanities Open65. ISSN: 2590-2911 (2024) v.10 Issue. p.101076. 10

Url: <https://www.sciencedirect.com/science/article/pii/S2590291124002730>

DOI: 10.1016/j.ssaho.2024.101076

Abstract: Vanilla and vanillin are essential commodities for the food, pharmaceuticals, cosmetics, and tobacco industries. However, the global production of natural vanillin is insufficient to meet its demand and has been replaced by synthetic or biotechnological substitutes. Consequently, the opportunity to promote this sector is being missed, and the introduction of natural products with higher added value into the market is not encouraged. Therefore, this study sought, first, to conduct a study about the production and value of vanilla cultivation in Mexico and the world, and second, to examine the technology sectors that have developed around the production and processing of vanilla and vanillin. The methodological development includes: a) an export behavior study and a three-year forecast; b) a factor analysis to build a crop production index; c) the identification of conglomerates to define groups according to their behavior; and d) patent and network analyses to show the main technological sectors, countries, and applicants of technologies relevant to our object of study. Results show that vanilla production is dominated by countries such as Madagascar and Indonesia; although Mexico presents positive results in terms of yield, its participation is limited, in spite of having the appellation of origin for this crop. Data on Mexico indicate that technological development is being carried out by foreign companies and is oriented toward the industrial use of vanillin, disregarding agricultural development. The literature and results point to a lack of a public policy in México to promote this sector and insufficient scientific and technological development to achieve sustainable production. Training and market plans for the benefit of small producers should also be facilitated to boost their participation in the international arena.

Keyword: Appellation of origin; Market; Mexico; technology; Vanilla

66. Does international climate finance contribute to the adoption of zero deforestation policies? Insights from Brazil and Indonesia / von Lüpke, Heiner; Mármárosi, Bence; Aebischer, Charlotte; Trushin, Egor; Bolaños, Martha; Webb, Thomas; Nascimento, Eros; Suroso, Djoko; Breviglieri, Gustavo. Forest Policy and Economics66. ISSN: 1389-9341 (2025) v.174 Issue. p.103480. 174

Url: <https://www.sciencedirect.com/science/article/pii/S1389934125000590>

DOI: 10.1016/j.forpol.2025.103480

Abstract: International climate finance (ICF) is a critical mechanism for reducing deforestation and supporting global climate cooperation, yet its effectiveness is often questioned on account of scale and implementation challenges. This paper addresses the question whether ICF, implemented through Official Development Assistance (ODA), is catalysing policy adoption in the land use, land use change, and forestry (LULUCF) sectors of Brazil and Indonesia and henceforth contributes to global climate cooperation. We deploy a novel analytical framework, which assesses the role of ICF in transnational policy processes, and analyse how international and domestic factors influence its effectiveness in supporting LULUCF policy adoption. We find that ICF actors are caught in a dilemma between stated objectives of policy reform and ambitious transformational change while at the same

time have their legitimacy questioned as participants in domestic policy processes. Ultimately, political access to decision making spheres on policy adoption for climate and land use are denied to them. In Brazil, competing coalitions debate the implementation of the national forest law, while in Indonesia, ICF is confined to technocratic policy spheres, leaving critical decisions to the political economy sphere. Our findings suggest that for ICF to be effective in catalysing policy adoption and global cooperation, it must address legitimacy concerns through political dialogue and shift from ODA approaches towards equitable cooperation, which involves donors' policy efforts as well. To be politically attractive, better alignment of ICF with national development objectives is also crucial, which could take the form of just transition for climate and land use.

Keyword: Indonesia; Brazil; International climate finance; LULUCF; Official development assistance; Policy adoption

67. Resilience of dryland farm households in the mountains and their adaptability to environmental and social challenges / Antriyandarti, Ernoiz; Barokah, Umi; Rahayu, Wiwit; Asami, Atsuyuki; Laia, Dea Hagania; Sari, Lusida Dara; Pranadita, Natasya Erischa; Melati, Nimas Suci Kusuma. *Environmental Challenges* 67. ISSN: 2667-0100 (2024) v.17 Issue. p.101037. 17

Url: <https://www.sciencedirect.com/science/article/pii/S2667010024002038>

DOI: 10.1016/j.envc.2024.101037

Abstract: Addressing welfare challenges and poverty in Indonesia's economic development, particularly in the Girisubo Sub-district within the Gunungkidul District, is hindered by socioeconomic deprivation and environmental vulnerabilities intensified by climate change. This study focuses on assessing household resilience concerning economic hardships induced by climate change in the aforementioned region. This research uses a mixed-method approach with a sequential exploratory strategy; the study initially utilizes a resilience index measurement, followed by a subsequent stage involving multiple linear regression analysis. The resilience of households in the Girisubo karst area, Gunungkidul, is represented as 84 % of the Girisubo community having a medium to high resilience index. The multiple linear regression analysis results indicate that education, land area, infrastructure, asset ownership, market accessibility, and social community assistance are significant determinants influencing the food security status of farm households in Girisubo. Local wisdom for social community aid in *sumbang menyumbang* activities contributes 22 % to household income compared to assistance from the government. The "*sumbang-menyumbang*" tradition is a traditional practice that can be integrated into policy frameworks to address environmental and economic challenges. Future research should focus on the scalability of these adaptive strategies in various regions of Indonesia and similar contexts worldwide. Investigating how community support mechanisms and local wisdom can be effectively replicated or adapted in diverse socio-economic and environmental settings will be crucial. Additionally, variables related to social community aid could be included in evaluating the effectiveness of newly implemented programs, such as free lunch initiatives or other recent assistance programs.

Keyword: Climate-resilient communities; Economic growth challenges; Girisubo sub-district; Mixed methods research; Sumbang-menyumbang tradition

68. How traders influence their neighbours: Modelling social evolutionary processes and peer effects in agricultural trade networks / Kopp, Thomas; Salecker, Jan. *Journal of Economic Dynamics and Control* 68. ISSN: 0165-1889 (2020) v.117 Issue. p.103944. 117

Url: <https://www.sciencedirect.com/science/article/pii/S0165188920301123>

DOI: 10.1016/j.jedc.2020.103944

Abstract: Marketing channel choices in agricultural trade networks affect the networks' overall performance and influence rural livelihoods. This study identifies key determinants of these choices among natural rubber traders in Indonesia to evaluate four policy scenarios and their potential effects on rural incomes. Since traders' marketing decisions are based on past interactions, resulting trade networks are formed in recursive processes and can be understood as complex adaptive systems. Due to inherent endogeneity in these systems, process-based approaches such as agent-based modelling (ABM) can be effective in understanding them. Using a self-gathered primary dataset from Jambi Province, Indonesia, we implement and parameterise an ABM to simulate the formation of the rubber trading network and analyse the effects on rural livelihoods of four hypothetical policy scenarios: improved micro-credit availability, increased access to education, better infrastructure and transportation capacity, and market information availability. The model is calibrated through a genetic algorithm which maximises the similarity between the simulated network and the actual network observed in the data. Results indicate that sellers' decisions on a buyer are primarily determined by debt obligations and past peer-interactions. The most influential sellers have a similar level of formal education as their peers and live in close physical proximity. Results of the policy scenario analysis suggests that policies aimed at reducing sellers' dependence on credit from buyers and increasing education are the most effective policies for improving value chains and reducing poverty in the region under consideration.

Keyword: Indonesia; Rubber; Agent-based modelling; Agricultural trade; Complex adaptive systems; Networks

69. Dividend policy of Indonesian listed firms: The role of families and the state / Duygun, Meryem; Guney, Yilmaz; Moin, Abdul. *Economic Modelling* 69. ISSN: 0264-9993 (2018) v.75 Issue. p.336-354. 75

Url: <https://www.sciencedirect.com/science/article/pii/S0264999317315286>

DOI: 10.1016/j.econmod.2018.07.007

Abstract: We investigate factors influencing the dividend policy of the listed Indonesian firms by focusing on agency costs and ownership structure. Our study finds that firms with higher conflicts of interest among managers and shareholders pay lower dividends. In the context of the conflicts of interest among major and minor shareholders, we find that such conflicts would exert little impact on dividend payments. Further, we find that the family-controlled firms prefer to pay less dividends whereas the corporations with higher state ownership are associated with larger dividend payments. Our findings are in line with the argument that the Indonesian state consider corporate dividends as one of the main sources of revenues other than corporate taxes in their government budget. This issue may have adverse effects on the growth of cash-constrained small and medium-sized enterprises.

Keyword: Indonesia; Agency conflicts; Dividends; Ownership structure

70. Land-use change and livelihoods of non-farm households: The role of income from employment in oil palm and rubber in rural Indonesia / Bou Dib, Jonida; Krishna, Vijesh V.; Alamsyah, Zulkifli; Qaim, Martin. *Land Use Policy* 70. ISSN: 0264-8377 (2018) v.76 Issue. p.828-838. 76

Url: <https://www.sciencedirect.com/science/article/pii/S0264837717311948>

DOI: 10.1016/j.landusepol.2018.03.020

Abstract: Many tropical regions are experiencing massive land-use change that is often characterized by an expansion of oil palm at the expense of forests and more traditional forms of agricultural cropping. While implications of such land-use change for the environment and for local farm households were examined in previous research, possible effects on the livelihoods of non-farm households are not yet well understood. This study analyzes the role of different types of agricultural and non-agricultural employment income for non-farm households in rural Jambi, one of the hotspot regions of Indonesia's recent oil palm boom. Data from a survey show that employment in rubber and oil palm are important livelihood components for non-farm households. Employment in oil palm is more lucrative than employment in rubber, so involvement in the oil palm sector as a laborer is positively associated with total household income. Regression models show that whether or not a household works in oil palm is largely determined by factors related to migration background, ethnicity, and the size of the village area grown with this crop. These results suggest that further expansion of the oil palm area will likely benefit non-farm households through gains in employment income. As non-farm households belong to the poorest segments of the rural population, these benefits should not be ignored when designing policies towards sustainable land use. Possible negative environmental and social externalities of further oil palm expansion are also discussed.

Keyword: Deforestation; Poverty; Income inequality; Rural labor markets; Sharecropping

71. Adoption as adaptation: Household decision making and changing rural livelihoods in Lombok, Indonesia / Williams, Liana J.; van Wensveen, Monica; Dahlanuddin; Grünbühel, Clemens M.; Puspadi, Ketut. *Journal of Rural Studies* 71. ISSN: 0743-0167 (2022) v.89 Issue. p.328-336. 89

Url: <https://www.sciencedirect.com/science/article/pii/S0743016721003673>

DOI: 10.1016/j.jrurstud.2021.12.006

Abstract: In agricultural research for development adoption of new technology tends to be cast in categories: adoption, partial adoption, dis-adoption or non-adoption. While these may serve for pragmatic classification and measures for project success or impact they fail to properly acknowledge the ongoing and independent efforts of farmers (and others) in experimentation and integration of knowledge across a range of sources. This paper explores responses to practices for cattle management introduced during a research project, at project close, and five years after the project has finished. We consider the perceptions and application of new knowledge by farmers, extension staff, and policy makers. By taking a longer-term view, we demonstrate how farming households adapt and integrate knowledge from different sources into their daily practice, influenced by local

institutions and changing cultural expectations, as well as external researchers. We also consider the influence of changing government priorities and incentives in steering farm-management decisions. Results suggest that a focus on measures to build capacity and empower farmers with information to adapt and respond to change, regardless of project activities, is a much more important goal and indicator of impact than measuring adoption.

Keyword: Rural development; Adaptation; Actor oriented perspective; Adoption; Household decision-making; Impact; Research for development

72. Integrating system dynamics to value chain analysis to address price volatility in the Indonesian chilli value chain / Muflikh, Yanti Nuraeni; Smith, Carl; Brown, Colin; Kusrini, Nunung; Kiloes, Adhitya Marendra; Aziz, Ammar Abdul. Food Policy72. ISSN: 0306-9192 (2024) v.128 Issue. p.102713. 128

Url: <https://www.sciencedirect.com/science/article/pii/S0306919224001246>

DOI: 10.1016/j.foodpol.2024.102713

Abstract: The price volatility observed in agricultural value chains presents a significant socio-economic challenge, particularly for smallholder farmers. The issue of price volatility in agricultural value chains is complex due to the dynamic and interconnected nature of these value chains. The objective of this study is to integrate system dynamics with value chain analysis in order to address price volatility in the Indonesian chilli value chain. In order to ensure stakeholder engagement and enhance the robustness of the proposed solutions, a participatory approach will be employed. The utilisation of system dynamics enables the quantitative simulation of the inherent dynamics of the chilli value chain, thereby facilitating both ex-ante and ex-post assessment of policy interventions. A collaborative process with stakeholders was employed to develop, test, and validate a system dynamics model that operates at both provincial and national levels. The findings demonstrate that the model accurately replicates the price volatility observed in the Indonesian chilli market. The key factors contributing to this volatility are seasonal production, disorganised market governance and high postharvest losses. The analysis of policy options indicates that while the importation of chillies can stabilise prices in the short term, it has a negative impact on the income of those involved in the value chain. More sustainable solutions to mitigate price volatility include the implementation of year-round planting and the enhancement of market governance. These strategies present potential avenues for achieving a more stable and equitable chilli market, offering valuable insights for broader agricultural value chain stability.

Keyword: Policy interventions; Smallholder farmers; Chilli; Participatory approach; Price volatility; System dynamics

73. Spatial identification of lost-and-found carbon hotspots at Javanese rice systems, Indonesia / Asmara, Degi Harja; Rala, Arnel; Batas, Mary Ann A.; Laborte, Alice; Flor, Rica J.; Khumairoh, Uma; Sembiring, Hasil; Yadav, Sudhir. Agricultural Systems73. ISSN: 0308-521X (2024) v.214 Issue. p.103834. 214

Url: <https://www.sciencedirect.com/science/article/pii/S0308521X23002391>

DOI: 10.1016/j.agry.2023.103834

Abstract: CONTEXT Agricultural landscapes play a crucial role in global carbon sequestration and biodiversity conservation. The presence of trees outside forests has been recognized as a significant carbon pool, but it is crucial to acknowledge that these trees serve purposes beyond being a carbon sink. This study focuses on integrating border trees and home gardens as distinct land use classes in Indonesian Javanese agricultural land to assess their impact on carbon stock potential and biodiversity connections. OBJECTIVE The objective is to classify and quantify the tree composition of these classes, estimate their carbon stock potential, analyze plant species diversity, and identify the ecological connections between home gardens and field borders. METHODS To achieve this, high-resolution multispectral and Synthetic Aperture Radar images were used from four sampling areas covering 100 km² each in Lamongan and Malang districts, East Java, Indonesia, for land cover/land use mapping. The land use function method was used to identify border trees and home gardens as separate land use classes. Carbon stock potential was estimated based on tree cover composition, while plant species diversity was analyzed through field surveys and farmer focus group discussions. RESULTS AND CONCLUSIONS Crops with border trees cover approximately 28% to 48% of the cropland area in the study sites, while home gardens represent about 74% to 85% of the settlement area. This suggests a potential to double tree presence in these sites by adopting border trees and home gardens practices across the entire area. The median tree cover ratio was around 27% for border trees and 33% for home gardens. This stratification approach identified 31% to 50% more carbon stock compared to calculations using standard classes. Furthermore, home gardens and border trees show a positive correlation with species richness, indicating their role as keepers of biodiversity. Therefore, home gardens and border trees could serve as a sustainability indicator for agricultural land in the Javanese farm system. SIGNIFICANCE This research contributes to sustainable agricultural practices and climate change mitigation. The stratification approach of identifying border trees and home gardens offers a cost-effective approach for the better computation of carbon stock and can lead to effective land use policies and conservation measures that promote ecological resilience. The study provides valuable insights for similar agricultural contexts worldwide, guiding efforts toward a more sustainable agricultural future.

Keyword: Border trees; Home gardens; Land use classification; Species richness

74. Quantitative simulation of the water-energy-food (WEF) security nexus in a local planning context in Indonesia / Purwanto, Aries; Sušnik, Janez; Suryadi, F.X.; de Fraiture, Charlotte. Sustainable Production and Consumption74. ISSN: 2352-5509 (2021) v.25 Issue. p.198-216. 25

Url: <https://www.sciencedirect.com/science/article/pii/S2352550920304553>

DOI: 10.1016/j.spc.2020.08.009

Abstract: The process of planning and evaluation for local development, especially in the critical sectors of water, energy and food (WEF) should be conducted using a holistic, integrated approach in an attempt to bring the improvement in water, energy and food security in a region. System dynamics models are one of the tools for simulation and assessment of the system-wide impacts caused by local interventions. This research develops a stock-flow diagram (SFD) of WEF security in a local context to be used in analysing the impacts of implementing three planned policy interventions in Karawang Regency, Indonesia. STELLA Professional software is employed to build the SFD and conduct

simulation of the WEF security nexus, and is based on a previously developed qualitative causal loop model of the same system (the Karawang WEF security (K-WEFS) model). In the quantitative SFD, four scenarios are developed and assessed in this study; (i) population growth changes; (ii) agricultural land conversion rate changes; (iii) changes in the development of artificial ponds and solar energy; and (iv) per-capita resource consumption changes. The results show several interesting findings related to the WEF security nexus, available resources per person (APP) and self-sufficiency levels (SSL) of resources in business as usual conditions and under planned interventions. Potentially unanticipated detrimental indirect impacts of policy interventions are highlighted. This dynamic support tool could be applied in other local regions to improve the evaluation and planning process of water, energy and food sectors in a holistic manner.

Keyword: Indonesia; Karawang; Policy analysis; System dynamics; Evaluation and planning; Nexus modelling; Water-Energy-Food (WEF) security

75. Better land-use allocation outperforms land sparing and land sharing approaches to conservation in Central Kalimantan, Indonesia / Law, Elizabeth A.; Meijaard, Erik; Bryan, Brett A.; Mallawaarachchi, Thilak; Koh, Lian Pin; Wilson, Kerrie A.. *Biological Conservation* 75. ISSN: 0006-3207 (2015) v.186 Issue. p.276-286. 186

Url: <https://www.sciencedirect.com/science/article/pii/S0006320715001081>

DOI: 10.1016/j.biocon.2015.03.004

Abstract: Land sparing and land sharing are contrasting strategies often aimed at improving both agricultural production and biodiversity conservation in multifunctional landscapes. These strategies are embodied in land management policies at local to international scales, commonly in conjunction with other land-use policies. Evaluation of these strategies at a landscape scale, for multiple ecosystem service benefits, and multiple elements of biodiversity has not previously been attempted. We simulated the effects of applying land sharing and land sparing strategies to the agricultural zones designated by four future land-use scenarios (reflecting both current land-use and prospective land-use plans) in the Ex-Mega Rice Project region of Central Kalimantan, Indonesia. We assessed impacts of each strategy on biodiversity, agricultural production, and other ecosystem service benefits at a landscape scale. We examined whether it was possible to achieve predetermined targets that reflect the aspirations and entitlements of diverse stakeholder groups. We found that the prospective land-use plans for the region would deliver considerably more benefit than the current land-use allocations, and while not all targets can be achieved, additional progress could be made with reasonable and realistic levels of land sharing or sparing. We found that species and forest types sensitive to agricultural disturbance could benefit most if land in agricultural zones was spared and prioritised for conservation. Conversely, land sharing strategies favoured the more widespread and common species, particularly if the area of wildlife-friendly agriculture is increased. However, the effectiveness of agricultural-focused land management strategies is inherently limited by the extent of agricultural zones. While agricultural land sparing and sharing strategies can deliver some gains in target achievement for multiple ecosystem services, we find that they have a limited effect over the benefits achieved by implementing better land-use allocation from the outset.

Keyword: Ecosystem services; Biodiversity conservation; Land use planning; Multifunctional landscapes; Scenario analysis; Wildlife friendly farming

76. Facilitating smallholder tree farming in fragmented tropical landscapes: Challenges and potentials for sustainable land management / Rahman, Syed Ajijur; Sunderland, Terry; Roshetko, James M.; Healey, John Robert. *Journal of Environmental Management* 76. ISSN: 0301-4797 (2017) v.198 Issue. p.110-121. 198

Url: <https://www.sciencedirect.com/science/article/pii/S030147971730395X>

DOI: 10.1016/j.jenvman.2017.04.047

Abstract: Under changing land use in tropical Asia, there is evidence of forest product diversification through implementation of tree-based farming by smallholders. This paper assesses in two locations, West Java, Indonesia and eastern Bangladesh, current land use conditions from the perspective of smallholder farmers, the factors that facilitate their adoption of tree farming, and the potential of landscape-scale approaches to foster sustainable land management. Data were collected through rapid rural appraisals, focus group discussions, field observations, semi-structured interviews of farm households and key informant interviews of state agricultural officers. Land at both study sites is typically fragmented due to conversion of forest to agriculture and community settlement. Local land use challenges are associated with pressures of population increase, poverty, deforestation, shortage of forest products, lack of community-scale management, weak tenure, underdeveloped markets, government decision-making with insufficient involvement of local people, and poor extension services. Despite these challenges, smallholder tree farming is found to be successful from farmers' perspectives. However, constraints of local food crop cultivation traditions, insecure land tenure, lack of capital, lack of knowledge, lack of technical assistance, and perceived risk of investing in land due to local conflict (in Bangladesh) limit farmers' willingness to adopt this land use alternative. Overcoming these barriers to adoption will require management at a landscape scale, including elements of both segregation and integration of land uses, supported by competent government policies and local communities having sufficiently high social capital.

Keyword: Livelihood; Community; Land sharing; Land sparing; Land use

77. Redesigning Indonesian forest fiscal policy to support forest conservation / Nurfatriani, Fitri; Darusman, Dudung; Nurrochmat, Dodik Ridho; Yustika, Ahmad Erani; Muttaqin, Muhammad Zahrul. *Forest Policy and Economics* 77. ISSN: 1389-9341 (2015) v.61 Issue. p.39-50. 61

Url: <https://www.sciencedirect.com/science/article/pii/S1389934115300265>

DOI: 10.1016/j.forpol.2015.07.006

Abstract: The formulation of fiscal policy in the forestry sector was designed as a green incentive for local governments to conserve forest area in Indonesia. However, evidence demonstrates an increasing rate of deforestation occurred during the implementation of fiscal policy reforms. Thus, problems persist in the implementation of fiscal policies in the forestry sector. This study evaluates the gap between the rule and the implementation of forest fiscal policy, focusing on regulatory, economic, administrative, and informational instruments. There are four main findings of this study. First, there are several inappropriate and even conflicting regulations concerning local government

authorities and forest conservation; second, the lack of coordination among agencies is one of the most important factors causing sub-optimal collection of “non-tax state revenues” from the forestry sector; third, forest fiscal policies in Indonesia mostly focus on collecting financial benefits from timber rather than preserving ecosystem functions, and; fourth, there is a weak management information system concerning forest fiscal policy. To address the gaps identified in this study, the implementation of green fiscal policy in the forestry sector must provide a comprehensive regulatory framework and improve the capacity of human resources.

Keyword: Forest conservation; Fiscal framework; Forest revenue sharing; Gap analysis; Green fiscal policy

78. Does the rise of transnational governance ‘hollow-out’ the state? Discourse analysis of the mandatory Indonesian sustainable palm oil policy / Astari, Annisa Joviani; Lovett, Jon C.. World Development 78. ISSN: 0305-750X (2019) v.117 Issue. p.1-12. 117

Url: <https://www.sciencedirect.com/science/article/pii/S0305750X18304467>

DOI: 10.1016/j.worlddev.2018.12.012

Abstract: Rise of transnational business governance has been used to argue that state control has declined, giving rise to the metaphor of a ‘hollowed-out state’. However, an alternative hypothesis is that, instead of a weakening of the state, a transformation occurs. This study uses interviews and discourse analysis to explore the main factors that trigger initiation of a new government policy following extra-territorial transnational negotiations. The Indonesian palm oil sector, specifically publication of the mandatory certification for Indonesian Sustainable Palm Oil (ISPO) policy, is used as a case study. We also explore aspects of the ISPO and oil palm sector that need focusing in order to improve sustainable palm oil sector governance. Q methodology was used to reveal different discourses on the formation and implementation of ISPO policy. We interviewed 36 stakeholders to gather the qualitative data used for the Q concourse; and engaged 27 stakeholders in the Q sorting process. Five distinct discourses were revealed. Two discourses include state sovereignty and the need to strengthen the local sector as triggering factors for ISPO initiation. The other three discourses highlight scepticism about the ISPO, covering financial aspects and conservation value debates; and contain challenges and suggestions for ISPO implementation. The study concludes that, in the Indonesian palm oil sector at least, ‘the hollow-state’ hypothesis is not wholly correct. Instead, the government is undergoing a transformation and is enhancing national institutional capacity through the ISPO. However, there are some major concerns. To better shape the governance of sustainability in this sector the government needs to focus on aspects of policy implementation related to biodiversity conservation values and benefits for the producers when being certified, as well as improving engagement with stakeholders.

Keyword: Indonesia; Palm oil; Discourses; Hollowed-out state; Q methodology; Sovereignty

79. Prioritization of peatland restoration and conservation interventions in Sumatra, Kalimantan and Papua / Terzano, Dilva; Trezza, Francesca Romana; Rezende, Marcelo; Malatesta, Luca; Lew Siew Yan,

Serena; Parish, Faizal; Moss, Patrick; Bresciani, Fabrizio; Cooke, Roshan; Dargusch, Paul; Attorre, Fabio. *Journal for Nature Conservation*79. ISSN: 1617-1381 (2023) v.73 Issue. p.126388. 73

Url: <https://www.sciencedirect.com/science/article/pii/S1617138123000596>

DOI: 10.1016/j.jnc.2023.126388

Abstract: Peatlands in Indonesia are of global significance for biodiversity conservation and climate regulation, as well as of national and local significance for water management and livelihood support. Despite their importance, in tropics these ecosystems remain among the least investigated and monitored and are increasingly threatened by anthropogenic activities. To support the ongoing formulation, refinement and implementation of peatland restoration and conservation activities in Indonesia, we developed a methodology based on land cover and land productivity analysis, which will help prioritize interventions in Sumatra, Kalimantan and Papua. Results showed that of the analysed peatland area, approximately 45.5% should be conserved, 28.7% should be restored and 16.2% should be subjected to sustainable agricultural practices. Furthermore, the analysis showed that only 15.6% of the peatlands in need of conservation measures are currently protected, resulting in a necessary expansion of protected areas of about 84%. This study is intended as a tool for policy makers to guide future action, emphasising that conservation and restoration efforts in Indonesian peatlands should be increased, and providing spatial guidance for their implementation.

Keyword: Indonesia; Conservation targets; Peatlands; Prioritization; Restoration targets

80. Unraveling land use land cover change, their driving factors, and implication on carbon storage through an integrated modelling approach / Setiawan, Ogi; Rahayu, Anita Apriliani Dwi; Samawandana, Gipi; Tata, Hesti Lestari; Dharmawan, I Wayan Susi; Rachmat, Henti Hendalastuti; Suharti, Sri; Windyoningrum, Ayun; Khotimah, Husnul. *The Egyptian Journal of Remote Sensing and Space Sciences*80. ISSN: 1110-9823 (2024) v.27 Issue. 4p.615-627. 27

Url: <https://www.sciencedirect.com/science/article/pii/S1110982324000589>

DOI: 10.1016/j.ejrs.2024.08.002

Abstract: Land Use Land Cover (LULC) change is a complex phenomenon driven by various natural and anthropogenic factors, significantly impacting carbon storage potential. By applying integrated models of ANN-CA Markov, GeoDetector, and InVEST model, this study aimed to analyze LULC change, their driving factors, and implications on carbon storage in the Forest Management Unit (FMU) of Ampang Plampang in West Nusa Tenggara, Indonesia. Several data sources were utilized in the modelling approach, including DEM (Digital Elevation Model), topographical map, Landsat imageries (2011, 2016, 2021), measured carbon density (above ground, below ground, soil, dead organic), and socio-economic data (number of populations, farmer, and agricultural land). The dryland forest in the study area constitutes the most extensive LULC that has experienced significant declines due to deforestation, predominantly transforming into agricultural land, and these are predicted to continue until 2031 with different magnitudes. The significant driving factors of LULC change were elevation, population pressure on land, and distance from settlement. The LULC change also greatly influenced the decline of carbon storage historically (2011–2016) and in projected LULC (2026–2031). The conversion of forested areas to non-forest LULCs has released carbon emissions of about 1.89 Mt CO₂-eq. The study findings implied that the integration of ANN-CA Markov, GeoDetector, and InVEST

models has been helpful for comprehending complicated interactions among LULC change, driving factors, and carbon dynamics. The results also contribute to the scientific knowledge base for land management decision-making and policy formulation. Effective management of LULC changes through low carbon development is suggested to mitigate the loss of carbon storage capacities, foster sustainable development goals (SDGs), support Nationally Determined Contribution (NDC), and improve ecosystem resilience.

Keyword: Indonesia; ANN-CA Markov; Dryland forest; GeoDetector; InVEST; Sumbawa

81. Indonesia's contribution to global carbon flows: Which sectors are most responsible for the emissions embodied in trade? / Wiloso, Edi Iswanto; Wiloso, Adisa Ramadhan; Setiawan, Arief Ameir Rahman; Jupesta, Joni; Fang, Kai; Heijungs, Reinout; Faturay, Futu. Sustainable Production and Consumption81. ISSN: 2352-5509 (2024) v.48 Issue. p.157-168. 48

Url: <https://www.sciencedirect.com/science/article/pii/S2352550924001349>

DOI: 10.1016/j.spc.2024.05.005

Abstract: Motivated by recent developments in global carbon policies, such as the carbon border adjustment mechanism (CBAM) in Europe and carbon pricing in Indonesia, this paper elaborates on CO₂ emissions embodied in products entering and leaving Indonesia and identifies carbon-intensive sectors responsible for carbon leakage. This was performed by using global multi-regional input-output analysis and consumption-based accounting (CBA) - production-based accounting (PBA) ratio. In 2016, the annual CO₂ emissions embodied in Indonesia's exports and imports were 114 and 95 Mt. CO₂, respectively. Considering final demand only, these values reduce to 32 and 22 Mt. CO₂ or 0.9 and 0.6 % of total CO₂ emissions in global trade, respectively. The electrical and machinery sector makes up the most CO₂ emissions in Indonesian exports. In terms of per USD, metal products and petroleum, chemical and non-metallic mineral products are among the most carbon-intensive sectors, thus likely to be affected by the CBAM policy. Furthermore, Indonesia's emissions under CBA were slightly lower than PBA, indicating that minor carbon leakage occurred in 2016, but this is subject to uncertainty. Assessing the relative CO₂ emissions of various economic sectors is suitable for manufacturing goods whose processes are typically dominated by fossil combustion. However, this is not the case for the agriculture sector as its carbon footprint values are underestimated due to the exclusion of land use, land use change, and forestry emissions. Overall, our findings can serve as a baseline to further explore how a transition towards a low-carbon economy in Indonesia could improve global-trade carbon balances.

Keyword: Carbon footprint; Carbon leakage; Embodied-CO emissions; Export-import; Industrial ecology; Multi-regional input-output analysis

82. RED versus REDD: Biofuel policy versus forest conservation / Dixon, Peter; van Meijl, Hans; Rimmer, Maureen; Shutes, Lindsay; Tabeau, Andrzej. Economic Modelling82. ISSN: 0264-9993 (2016) v.52 Issue. p.366-374. 52

Url: <https://www.sciencedirect.com/science/article/pii/S0264999315002618>

Abstract: We examine the interplay between Renewable Energy Directives (RED) and the United Nations Programme to Reduce Emissions from Deforestation and Forest Degradation (REDD) using a scenario approach with a recursive–dynamic global computable general equilibrium model. A methodological issue addressed in the paper is the specification of the supply of agricultural land in the face of restrictions over its availability, as arises under REDD. By giving magnitudes to the effects of REDD and RED, our simulations provide a defense against environmental skeptics who, in the absence of such estimates, can dismiss these policies as being exorbitantly expensive. Although REDD and RED are in tension with respect to land use, the paper shows that they could be implemented simultaneously without significant global problems for food supply. The paper does however pinpoint some regional problems. Implementation of RED and REDD would cause large increases in food prices in Indonesia and Southern Africa. The methodology used in this paper, if implemented at a more detailed level, could be the basis of working out compensation packages that would be needed to make pervasive RED and REDD policies politically feasible.

Keyword: REDD; Computable general equilibrium; Land use changes; Land-supply function; Renewable Energy Directives

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