

Article

How Land Concessions Affect Places Elsewhere: Telecoupling, Political Ecology, and Large-Scale Plantations in Southern Laos and Northeastern Cambodia

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Abstract: Over the last decade considerable research has been conducted on the development and the impacts of large-scale economic land concessions for plantations in Laos and Cambodia. These studies have variously illustrated that concessions frequently result in serious negative impacts on local people and the environment, often leading to dramatic transformations of landscapes and livelihoods. As important as this research has been, these studies have largely focused on the immediate impacts of the “enclosure” process associated with gaining access to land by investors. In this study we take a different approach, investigating the implications of large-scale land concessions in southern Laos and northeastern Cambodia with regard to places outside of actual concession areas, both within the countries where the concessions are located and beyond. These links have been referred to as “teleconnections” or “telecoupling”, and adopting a “telecoupling” approach allows us to focus on particular relations between land-use change in one location and land-use change elsewhere, either nearby or distant, as the result of large-scale plantation development, both during the early plantation development period, and later when plantations are productive. It also provides opportunities to engage with Land Change Science (LCS) through Political Ecology (PE).

Keywords: Laos; Cambodia; Vietnam; teleconnections; telecoupling; transnational; economic land concessions; land grabbing; political ecology

1. Introduction

Since the mid-2000s there has been a boom in rubber plantations in Southeast Asia [1], and there has also been a corresponding increase in research regarding the expansion of rubber in the region. Some researchers have investigated small-holder rubber development in northern Laos, about which they have been generally positive [2–7]. The same has been true for research on small-scale rubber development in southwestern China [3,8], and between China and Laos [9]. However, researchers studying large-scale economic land concessions for plantations in Laos and Cambodia have variously illustrated that these concessions frequently result in serious negative impacts on local people and the environment, often leading to dramatic transformations of landscapes and livelihoods [10–22]. As important as this research has been, studies of land concessions have largely focused on the immediate impacts of the “enclosure” process associated with gaining access to land by investors. In this study, however, we take a different approach, investigating the implications of large-scale land concessions in southern Laos and northeastern Cambodia with regard to spaces outside of actual concession areas, both within the countries where the concessions are located and beyond. These links have been referred to within the Land Change Science (LCS) community as “teleconnections” or “telecoupling” (see [23–30]) and adopting a “telecoupling” approach may be useful for considering the wider implications of large-scale land concessions, both during the early plantation development period, and later when plantations are productive. Here we intend to engage with this idea in LCS through the lens of Political Ecology (PE), which we believe can help provide a less structured and more productive way of thinking about telecoupling than has been proposed so far.

An exploration of how investments made in one place affect land-use in another, and how that land-use change may drive land-use changes at other sites has, we believe, considerable potential. For example, a site in Laos where Vietnamese investors have been given a large-scale land concession by the central Lao government to invest in a boom crop could be studied in terms of both the political economic reasons for why the Lao government may do this, as well as government programs and subsidies in Vietnam that may assist Vietnamese companies in their investments. One could use it to think about the flows of capital by companies between base areas and other spaces of operations, or it could be applied to think about the flows of knowledge and technologies between spaces. The concept can be used productively in many different ways. We, however, have chosen to use the idea of telecoupling to explicitly focus our attention on coupled shifts in land-use changes. In other words, how does change in land-use in one place affect change in land-use elsewhere?

In this study we seek to identify people who used to farm land that has currently been converted to plantation agriculture and document how they used the land before the transition to the boom crop as well as how their land-use practices have changed since the transition. We will explore if these people became hired labor on their old land? If they opened up new land or intensified land-use elsewhere? Or did they move to the city to work in a factory? If workers on the plantation came from elsewhere we will

explore how land-use changed in the place from whence they came? In particular, we provide results of field research conducted in southern Laos and northeastern Cambodia in June and July 2014, but also informed by earlier work conducted in these places. In Laos, we investigated rubber plantation development by Vietnamese companies at three different locations, one each in Bachieng District, Champasak Province; Thateng District, Xekong Province; and Phou Vong District, Attapeu Province. In northeastern Cambodia, we investigated rubber plantations in Sesan District, Stung Treng Province, and Veun Say District, Ratanakiri Province (see Figure 1).

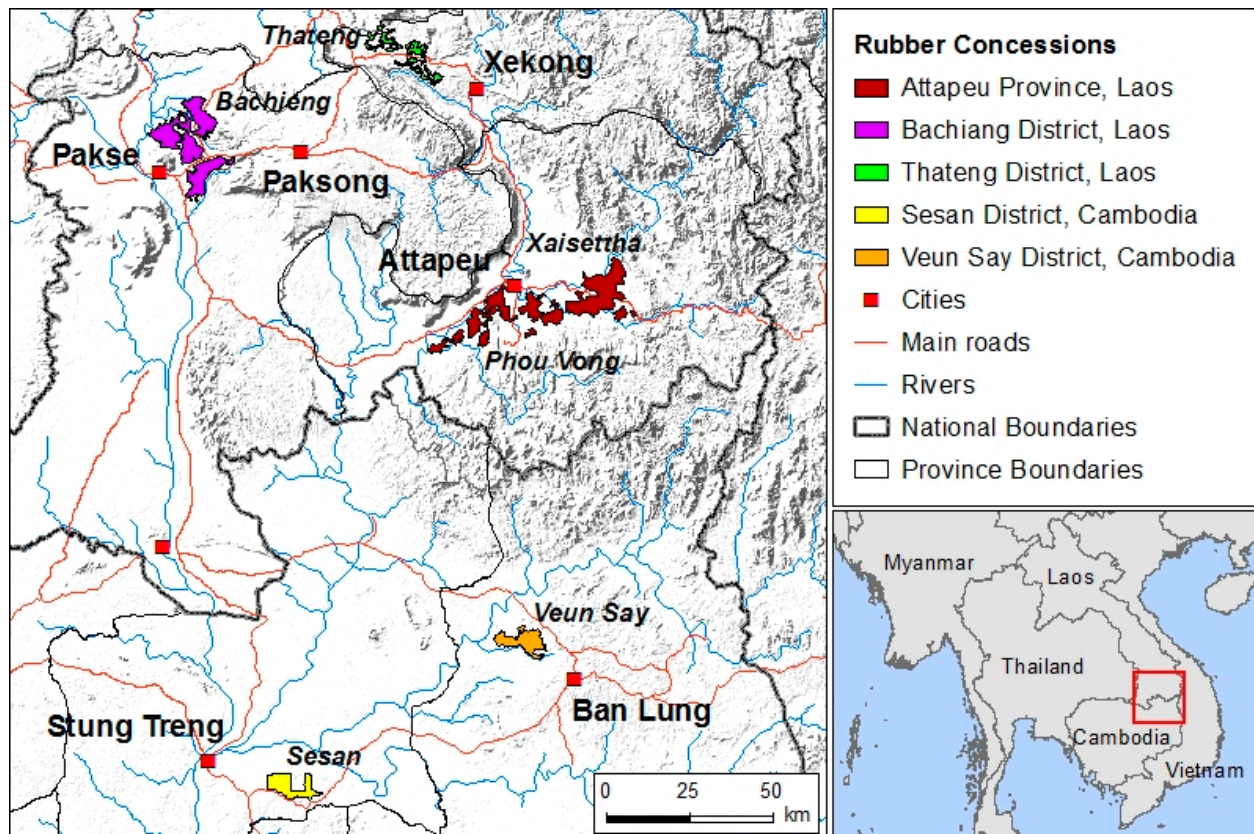


Figure 1. Rubber plantations in southern Laos and northeastern Cambodia investigated for this study.

We begin by reviewing the concepts of teleconnections and telecoupling in the LCS literature and suggest ways that the idea could be strengthened through applying PE, which has a long history of looking at distal impacts of development projects on other places. This is followed by a description of our research methods. We then present three case studies to illustrate the types of telecoupling we encountered. We end with a few suggestions on how future research might expand our understanding of how a PE-informed version of telecoupling can assist us in thinking about large-scale land concessions and their effects on land use and livelihoods, both in the direct vicinity of the concessions but also well beyond.

1.1. Teleconnections and Telecoupling

Globalization has increased the worldwide interconnectedness of places and people through markets, information and capital flows, human migration, and social and political institutions. As a consequence,

land-use practices are increasingly being shaped by global forces in ways that require a reexamination of the theories about the drivers and consequences of land-use and land-cover change. Local impacts and influences must also be taken into account. The original idea of teleconnections emerged in the climate literature, and referred specifically to mesoscale atmospheric processes that have climate implication in different geographical areas [23]. In other words, teleconnections referred to environmental interactions, whereas socio-economic connections were often simply referred to as “globalization”. Telecoupling is a similar idea, but unlike teleconnections, it is conceived as being more complex, since it considers both socio-economic and environmental flows. Indicative of this, Eakin *et al.* [23] consider telecoupling to refer to two or more independently interacting, or coupled, socio-ecological systems. This increased complexity has resulted in telecoupling, rather than teleconnections, becoming the preferred term to refer to these phenomena by academics [23,26]. As with Eakin *et al.* [23], we prefer to use the term telecoupling over teleconnections.

Recently, the concept of land telecoupling has gained some traction in LCS, reflecting efforts to better understand cause-and-effect linkages between distant and apparently unconnected places, and socio-economic and land-use dynamics. For example, if planting a bioenergy crop replaces a food crop in one place, the supply of the food crop decreases. This triggers the market price for the food crop to increase, and more land in other places is allocated to that crop, further triggering a cascade of crop by crop substitutions the environmental and social impacts of which are not predictable. Because the governance of the linked systems is independent, the critical outcomes revealed in the telecoupling process tend to be indirect, emergent, and of a second or third order, such that they are difficult to anticipate or measure [23].

Lambin and Meyfroidt [29] provide another useful framing for understanding connections across spaces. They identified four types of socioeconomic conditions that can drive changes in land-use practices. These include: (1) displacement or leakage effects that occur when a particular type of land use is displaced from one place to another due to migration of activities from one location to a different one, e.g., a logging ban in Vietnam causes logging to be displaced to Laos; (2) rebound (or take back) effects that occur when new technologies reduce the cost of consuming a good and hence the amount of this good consumed increases, thus offsetting the positive impacts of the new technology, e.g., agriculture intensification can lead to more land being devoted to agriculture because farmers are attracted by the economic opportunities created by intensification; (3) cascade effects that occur when a change of one element of a system drives a chain of events leading to many other changes in the system, e.g., when a bioenergy crop replaces a food crop the availability of the food crop decreases and its price increases, thus causing land that was allocated to growing other crops to be reallocated to that food crop; and (4) remittance effects that relate to the impact of money migrant workers send home on land use in the place from where they originated, e.g., remittances can favor investments in mechanization and agricultural intensification. We suggest that documenting the four types of effects Lambin and Meyfroidt [29] describe, as well as the telecoupling effects described by Eakin *et al.* [23], requires methods similar to George Marcus’s [31] idea of following the people (multi-sited ethnography). Marcus proposed multi-sited ethnography as a way to examine global processes and the increasing interconnectedness of all people through the process of globalization. According to Marcus, multi-sited ethnography is concerned with the movement of ideas, people, and commodities. In telecoupling we are

concerned with following changes in land-use, both locally and elsewhere, due to globalization processes combined with local influences.

LCS attempts to understand processes from an Earth-systems level and seeks to explain the *drivers* of land-use change through positivist constructions such as IPAT (impact, population, affluence and technology) [29]. PE scholars have criticized the broad-scale conclusions of human-environment relations utilizing LCS methods for their opacity in explaining specificity, as well as limitations in articulating diverse decision-making processes.

PE has a long history of examining land-use changes as a result of distant political economic connections (see [32–37]). Many researchers have looked at connections deriving from commodity chains or global production networks (see [38–40]). Others have examined the effect of remittances on land use [41,42]. In the context of the Philippines, for example, McKay [43,44] has written of “remittance landscapes”, highlighting the way in which the effects of migration can be seen inscribed in the fields of the Ifugao: “*Bean gardens can be read as remittance landscapes—they both anticipate remittances and produce the capital needed to go overseas—and are thus tied to the translocal nature of apparently local places*” ([43], p. 306). Work in Cambodia has also shown how migration interlocks with farming, reshaping the latter in the process, leading to both a feminization and a geriatrification of farming [45].

In comparison to LCS, PE research tends to put more emphasis on the politics, socio-economic determinants and impacts of local and regional land-use dynamics [46,47]. It generally does so through a grounded approach, contextualizing from the local up to the global scale, land-use and forest-cover changes, and interrelations with political-economic dynamics. With this bottom-up critical perspective, PE can provide valuable insights on the heterogeneity and complexity underlying land-use dynamics in various parts of the world [48]. More recently, PE researchers have started developing network approaches (e.g., [49,50]) that seek to illuminate connections between local and transnational social-ecological change. Lesterlin *et al.* [51] concluded that much deforestation in Laos is a manifestation of transnational actor-networks linking capital accumulation and reforestation in Vietnam and China with large-scale land grabbing and targeted investments in Laos. Barney [52] has also sought to draw connections between a PE of global investment in industrial tree plantations and rural out-migration across the border between Laos and Thailand.

In 2008 Turner and Robbins ([53], p. 308) propose that LCS and PE “may work together in productive hybrid ways” to improve our understanding of human-environment interactions and potentially how places of consumption and production are intertwined. In 2013, these same authors [54] commended those who have taken up the call to look for areas of research synergy. They conclude, however, with less than sanguine expectations about the potential for collaborative research, stating: “*(For LCS) ... to test and model, the problem set must be bounded, making exogenous important facets of a full explanation; for the most part, what becomes exogenous in such an approach is often precisely that which captures the attention of political ecologists*” ([54], p. 245). Although this indicates that LCS and PE are significantly different in their respective paradigmatic approaches, it also points to the greater importance of multidisciplinary collaborations to inform each other. Such alliances reinforce the *porous borders* suggested by Turner and Robbins [54], and allows for new discoveries for approaching timely challenges to pressing human-environment relations.

Eakin *et al.* ([23], p. 153) provide the most flexible and multi-faceted conceptualization of telecoupling to date, one that fits better with PE than earlier more rigid versions. They suggest that analysis of telecoupling impacts demands the integration of different epistemological perspectives on space and spatiality—“*one in which Cartesian space is the primary frame and point of departure, and one in which social space and its contingent aspects of agency and power are critical*”. Seto *et al.* [28] have also tried to reduce the divide between PE and LCS. Telecoupling hence has considerable potential as it invites multiple points of entry for analysis; for instance, telecoupling can be thought of in terms of a particular place-based problem and use that problem to define system boundaries and linkages to other systems; alternatively, telecoupling can be understood within a network of actors and their activities associated with a land use and not focused on any particular landscape or parcel. Munroe *et al.* ([40], p. 12), for example, integrated LCS with economic geography in order to better understand the distal impacts of “land grabs”, including considering the impact of “*how remittances from low-wage migrants are changing the production possibilities of landscapes half a world away*”. In El Salvador, Hecht and Saatchi [55] analyzed satellite imagery to test the relative impact of foreign remittances on forest cover between 1992 and 2001. They found for every percentage point increase in remittances, there was a 0.25 increase in the percentage of land with 30% or more tree cover.

Still, so far, frameworks designed to explicitly capture land-use change over long distances have not been used to think about large-scale concessions for plantations, the focus of this study, and thus we believe that applying this theoretical framework has considerable potential to helping us better understand the impacts of concession plantations, not only in Laos and Cambodia, but also regionally and globally. The project on which this paper is based seeks to document connections between both distant and nearby drivers and land uses, and look for evidence of non-path-dependent and non-sequential changes. In this paper we seek to explore the development of specific place-based plantations in southern Laos and northeast Cambodia, to document the impact of these plantations on other landscapes, and to trace how these changes propel further land-use changes in places both nearby to where food production may be displaced and to further afield where remittances earned from working on the plantation may be sent by migrating workers.

1.2. Methods

Both authors participated in the fieldwork conducted in Champasak, Attapeu, and Xekong Provinces in southern Laos in late June and early July 2014. Only the first author conducted fieldwork in Stung Treng and Ratanakiri Provinces in northeast Cambodia in July 2014. We went to the field with the specific intention of examining plantation land concessions in relation to the concepts of telecoupling, so the framing did affect the types of results we obtained. All interviews were conducted by the first author using local languages without the assistance of a translator. In both countries most interviews were conducted using Lao and Brao languages, with some Khmer being used in Cambodia. In Laos, the first author conducted over 20 informal open-ended interviews, some with people he has known for many years. In northeastern Cambodia the first author conducted another 20 interviews, again many with people he has known for a number of years. Indeed, the nature of the different interviews varied significantly, with some being with people the first author knew well while others were with people neither author had previously met. The authors tried to interview people from different age groups, social

statuses, genders, and ethnic groups, but since many of the interviews occurred opportunistically, we do not claim this to be a representational sample of the population. An important part of the fieldwork involved traveling to various large-scale plantations, where we observed the particular circumstances of the plantations, and interviewed villagers and rubber tappers in the vicinities of these concessions. This work builds upon previous studies of land concessions conducted in both countries by the first author [16–18,55,56] and in northeastern Cambodia by the second author [57–59] and can be seen as part of longitudinal research by both authors that stretches back more than twenty years. While the fieldwork portion of this study was relatively short, we are confident in our findings, as they build on many years of previous research in these and other areas looking at similar issues.

We obtained statistical data from a number of sources including interviews conducted specifically for this study, but also from previous research, and from other sources identified during a literature review. This paper seeks to introduce the concept of telecoupling to the “land grab” or “land rush” community and to engage with LCS through PE. The project on which this paper is based also seeks to use remotely sensed images to document changes in land cover. Therefore, during our field interviews we used a camera with a built-in Global Positioning System (GPS) to track field visits and record land cover. We used these data to create Figure 1. We supplemented field research with a literature review, including both published literature, and for northeastern Cambodia, data available on the internet. Indeed, before and after the fieldwork we conducted a literature review, especially in relation to LCS and PE, in order to prepare us for framing and writing this paper.

2. Results

The Case Studies

In order to demonstrate how we conceptualize telecoupling within broader PE and LCS frameworks, one linked to examining the impacts of large-scale economic land concessions for rubber in southern Laos and northeastern Cambodia, we provide examples of telecoupling in our field areas. We could provide various other examples, but the purpose of this paper is not to be exhaustive but rather to explore the usefulness of the telecoupling concept for understanding land-use change, and we want to see how a PE lens might improve the way telecoupling is conceptualized. We chose the case studies based on: (1) past research conducted near the plantations, and familiarity of the concessions by the first author; (2) the size of the plantations (they are the largest ones we know of in southern Laos and northeastern Cambodia); and (3) because all the concessions are in southern Laos (Champasak, Xekong and Attapeu Provinces) and northeastern Cambodia (Stung Treng and Ratanakiri Provinces), which made travel easier.

One of the key points that we want to make is that just as path-dependent understandings of land-use changes from the past are no longer considered sufficient, neither should we only privilege long-distance connections. Instead, we need to carefully assess both changes immediately adjacent to plantations and those occurring farther away, as well as the links between them. We need an approach that considers the complex connections between multiple places, and we should recognize that multiple factors related to political economy, ecology, politics, culture and individual agency are all important and highly variable. We also conceptualize flows related to telecoupling as multi-directional (*cf.*, [26]) and not just as moving

in a particular direction, such as from plantations to other places. Indeed, there are flows from other places to plantations, often via the movements of labor.

Land-Use Changes Adjacent to Rubber Plantations in Southern Laos: Nearby Telecoupling

In Bachieng District, Champasak Province three Vietnamese companies (Lao-Viet Company, Dak Lak Company, and Yaotiang Company) have developed the bulk of each of their 10,000 ha rubber concessions since the mid-2000s. These developments have caused villagers to lose access to significant amounts of agricultural and forest land, as well as dramatic environmental and livelihoods changes. Serious problems associated with these concessions have been widely reported elsewhere [11,12,16,17,19,47,55]. In Lambin and Meyfroidt's language, this could also be referred to as "displacement effects".

More recently the clearance and expansion of the plantations has ended and the rubber in Bachieng is being tapped, thus presenting a whole new set of issues. One significant issue is that most of the relatively flat land in the eastern part of the district near the border with Paksong District has been planted with rubber and some villagers who want to continue farming have been forced to make small swidden fields in steep ravines such as those now found along Champi Stream. Thus, rubber development has resulted in marginal lands rarely cultivated previously to be cultivated as the last option for local people who want to continue farming. This is what we mean when we refer to "nearby telecoupling", an idea closely linked to "displacement effects".

In Yeup Mai Village, Thateng District, Xekong Province, we found another example of nearby telecoupling. Yeup Mai is an ethnic Katu community that was moved in 1997 to this location as a result of the Lao government's program to resettle highland minorities in the lowlands (see [60–62]). Again, we see displacement effects at work. In 2006, the Lao-Viet Company (a subsidiary of the Vietnamese Rubber Group (VRG)), began taking over much of Yeup Mai's agriculture and forest land. It was later revealed that the village headman had signed a paper giving the company the right to plant rubber seedlings on the land. According to one villager, only 20 to 30 meters of land outside of the village settlement is still owned by the village. The rest of the land surrounding the village has been planted with rubber, leaving villagers with almost no agricultural land. People who were left without land for agriculture told us they "borrowed" land from the adjacent long-established ethnic Souay village of Yokthong, in order to cultivate swidden. People also had to drastically reduce the number of livestock they raise due to a dramatic decline in grazing areas (see [14]). Many community members struggled to regain control of their land and this eventually led to short but harsh jail terms for those leading the resistance. Following Lambin and Meyfroidt [29], this could be referred to as a "cascade effect". Even today a group of 55 families remains openly defiant; refusing to officially sign away the land that the company has planted with rubber. These villagers either want their land returned, or they want to be relocated someplace where there is sufficient agricultural land. Another 37 families are also upset with the loss of their land, but they have decided to work for the company rather than demand the return of their land.

Another important consequence of tapping is the implication for labor because tapping rubber is labor intensive compared with the labor required for other crops. Experts generally consider that it takes one person to tap one hectare of rubber. Key informants suggest that in Yeup Mai the Lao Viet Company

divides the income it receives from rubber sales into three parts; one part to the tapper, one to the company, and one to the government as a tax or land concession fee. Villagers who work as tappers receive between 500,000 and 1,000,000 kip (8000 kip = US\$1) per month; some villagers also work as weeders at a rate of 1,400,000 kip/ha. Laborers report that their income is insufficient, and that it has declined with the fall of global rubber prices over the last couple of years [63,64], resulting in fewer people willing to work as tappers. The Lao-Viet Company has thus imported more replacement laborers from Vietnam. So far we know little about where these Vietnamese come from or what they do with the money that they earn from tapping (see next section). As a consequence of the decline in rubber prices as well as conflicts between village livelihoods and the development of plantations, the Lao government has placed a moratorium on any new large-scale land concessions for rubber or eucalyptus plantations [65]. Eakin *et al.* [23] would see this feedback mechanism as a crucial element of telecoupling.

The telecoupling stories told in eastern Bachieng and Yeup Mai Village are fairly typical and unsurprising, but are nevertheless important. Villagers left without access to agricultural land are forced to find it elsewhere, and are thus either increasingly farming marginal and steep land, land that they previously rarely cultivated, or “borrowing” land from adjacent villages and thereby placing pressure on other places. The Lao-Viet, Dak Lak, and Yaotiang rubber plantations are influencing land-use changes in areas adjacent to the plantations.

Vietnamese Labor on Rubber Plantations in Southern Laos: Transnational Labor Telecoupling

We call the second forum of telecoupling we observed “transnational labor telecoupling”, as it relates to labor from one country migrating to another and then repatriating wages to their home country. In Lambin and Meyfroidt’s [29] language, this could be also called a “remittance effect”. In this case, we are referring to Vietnamese rubber tappers working on Vietnamese rubber plantations in southern Laos. As we mentioned above, as rubber prices have declined, so have the wages paid to rubber tappers. In 2013–2014 wages declined by approximately half, and many Lao citizens stopped tapping, preferring to look for other wage labor opportunities, including traveling to Thailand as illegal laborers (*cf.*, [52]). As a result, the Vietnamese owned rubber companies turned to importing tappers from Vietnam.

One ethnic Lao tapper we met explained why many like him are being replaced by Vietnamese workers. Originally from Na Sone Village, Sanasomboun District, Champasak Province near the Mekong River, this former farmer and other lowland Lao people from villages where paddy land was scarce migrated to Thong Chan, Bachieng District to open up land for cultivating rice. When the Lao-Viet Company acquired their land for a rubber plantation, the population was displaced. This farmer thought about returning to his original village, but there was no land left so he decided to become a rubber tapper. He reported that there were over 30 households in Thong Chan when rubber development began around the village. Of these, 13 moved to the area established by Lao-Viet Company for rubber workers to live called Nikhom 1. Of those 13 households only eight were still tapping four years later. A few households were fired for not tapping correctly; some households were able to rent lowland paddy and stopped tapping to become rice farmers again; and a few better-off households had more options to move and set up elsewhere. We plan to investigate these telecouplings further.

Of the four rubber plantations we visited in Champasak, Xekong and Attapeu Provinces, it is evident that the plantations closest to Vietnam, particularly the Lao-Viet Company plantation in Xekong and the

Hoang Anh (HAGL) plantation in Attapeu, have more Vietnamese tappers working for them than do the plantations in Champasak Province, where Lao labor is more available. These Vietnamese tappers represent an important telecoupling story, as they are generating income as tappers in Laos and sending at least part of that income back to Vietnam.

The law in Laos stipulates that not more than 10% of a company's employees are supposed to be foreigners [16]. But Vietnamese companies have been able to petition the Lao government to increase the percentage of Vietnamese laborers working on their plantations by claiming that they are unable to find enough Lao labor to meet their requirements. Some of these Vietnamese tappers have come as single men; others have arrived with their wives. One Lao tapper we spoke with reported that the Vietnamese tappers are hard workers. Some may be looking for opportunities to resettle in Laos (see below for an example in Cambodia), although this has not yet been confirmed. We will further investigate the telecoupling or remittance effects between these laborers and land-use changes in Vietnam. We are interested in where these laborers come from in Vietnam, how much they earn, and what they do with their income, particularly back in Vietnam. Are they using their work on plantations in Laos to stake out new economic opportunities in Laos, and if so, how are these new opportunities being negotiated?

Laborers from Southern Cambodia and Rubber Plantations in Northeastern Cambodia: Opportunistic Telecoupling

We call the third type of telecoupling discussed here “opportunistic telecoupling”, as it involves laborers from distant parts of southern Cambodia making use of employment on large-scale rubber plantations in northeastern Cambodia to investigate opportunities to either grab land in the area where they are working or to buy it from villagers living near the plantations. This category is also linked to Lambin and Meyfroidt's [29] idea of “remittance effect”, but the key changes that occur might also be referred to as a sort of “cascade effect” as well.

Over the last few years a large number of rubber saplings have been planted in northeastern Cambodia by large foreign and Cambodian investors who received economic land concessions from the Cambodian government, and also by smaller and middle-level Cambodian investors from various parts of the country [66]. Despite the decline in rubber prices, investors are continuing to expand their rubber plantings. Two of the largest rubber companies operating in Sesan District, Stung Treng Province are Sopheak Nika and Sopheak Pheenik. The two companies that are believed to be owned by the same person, an important Cambodian businessman named Okhna Sopheak Nika Molika. The Cambodian government officially only allows a single company to obtain 10,000 ha as an economic land concession for plantation agriculture. Therefore, in order to receive 20,000 ha concession, the company needed to be divided into two so that each company could have a 10,000 ha concession. The company also has a rubber processing factory in Sesan District, adjacent to the road from Stung Treng to Ban Lung. Baird [67] discussed the Sopheak Nika and Sopheak Pheenik concessions and the enclosure of important agricultural and forest areas of ethnic Brao villagers living nearby the plantations. Much of the 20,000 ha concession has now been planted with rubber. However, due to the involvement of a non-government organization (NGO), Development and Partnership in Action (DPA), 3000 ha was reportedly removed from each of the two concessions and turned into community forests. Some of the land was also reported to have been given to villagers for swidden cultivation. Half the land went to the Brao village of Katot

and half went to the ethnic Khmer and Brao village of Jarawp. According to the village headman of Katot Village, which includes 68 families, DPA started working in the village just a few months after the concessions started developing their rubber plantations. However, 2000 ha of the rubber planted near Katot died due to flooding, and were not replanted with rubber. Instead, about 1000 ha were replanted with teak trees.

The Sopheak Nika and Sopheak Pheenik companies need a consistent labor force available to work for them all the time. Local people want time off for harvesting rice and other social and economic activities, and will generally only work when they want to. The companies consequently decided to hire laborers from southern parts of Cambodia where there are large number of land-less villagers. It is politically much more sensitive to hire Vietnamese laborers in Cambodia as compared to Laos, due to past conflict between Khmer and Kinh peoples, so Vietnamese laborers have not been brought in to work on the plantations as in Laos (see above). Only local people who do not cultivate rice and can work all year round are working for the companies now.

The companies have been hiring ethnic Khmer people from the south to work on their plantations in northeast Cambodia since around 2006; and many families have moved to the Northeast to work for the companies. One group of laborers moved just outside of Katot Village. Forty-nine of these migrant families have taken advantage of their employment to buy land from Brao villagers, with many gaining as much as 10 ha each. According to one Brao villager, the Khmers often sold small holdings of much more expensive land in the south and then used the money to buy larger amounts of cheaper land near the village. The village headman reported that sometimes the profit from selling one hectare of land in the south could be used to buy 10 ha of land near the village. Initially, the cost for land near the village was US\$800/ha but it has now risen to US\$3000/ha. These Khmers have since quit their jobs with the rubber companies and have become farmers living just outside of Katot Village. Some have even hired the same people from whom they bought their land to be laborers for them in the dry season, paying them 20–25,000 riel (US\$5–6.25)/day (laborers bring their own rice/food). The money that Brao villagers received from selling their land was usually spent quickly. Fortunately, however, villagers have reportedly not yet sold their lowland rice paddy land.

This does not appear to an isolated strategy, as we heard about and observed similar circumstances when we visited Ratanakiri Province. This situation does not fit well with the categories provided by Lambin and Meyfroidt [29], thus indicating that the broader concept of telecoupling fits better. Ethnic Kreung villagers told us that Khmers from the south initially came to work for the Hoang Anh Mang Yang Rubber Corporation, a large-scale rubber plantation being developed in Veun Say District. However, later some of those laborers explored the area and starting obtaining their own small plots of land in the area, after which they quit working for the rubber company. As one Kreung villager put it, *“The good ones buy land from the villagers, but the bad ones just take it.”* In any case, many poor southerners have used employment with rubber plantation companies as a way to find land for themselves, thus resulting in land-use change nearby but outside of the plantations, but also changing land-use patterns in the areas from where they originally came. We hope to further explore these connections.

3. Discussion

Through our initial investigations, the idea of telecoupling has proven useful for focusing our attention on land-use changes associated with but outside of plantations themselves, especially if a flexible and nuanced framework informed by the PE tradition is applied. From the research conducted so far we have broadly characterized these connections as: “nearby telecoupling”, “transnational labor telecoupling” and “opportunistic telecoupling”. We do not believe that these are the only types of telecoupling related to these land concessions, but they do demonstrate the potential usefulness of applying the idea of telecoupling through drawing upon ideas from LCS and PE, and of considering both nearby and distant affects. Thinking about connections, and the ways in which they develop can help us to operationalize telecoupling as a heuristic device during fieldwork, rather than as a limiting structural framework that actually impedes us from seeing or examining particular connections across space. But we also caution that applying telecoupling as a replacement for experience and long-term study is unlikely to be productive. We want to identify links in a grounded way. The details are important, and they need to be recognized.

Based on our fieldwork, “nearby telecoupling”, our own grounded term, occurs when large-scale rubber plantations enclose village agriculture and common forest lands, forcing villagers to redirect their agricultural or forest foraging activities to other lands and forests adjacent to or in relatively close proximity to the rubber concession and changing land use in those areas. This is clearly the case for the steep marginal lands adjacent to plantations in Bachieng District, Champasak Province, areas previously not cultivated. It is also the case for areas adjacent to the rubber plantation in Thateng District, Xekong Province, which has enclosed the agriculture and forest lands of people from Yeup Village and forced them to “borrow” land from a neighboring village, thus causing land-use change in areas adjacent to the plantation.

One point that is emerging as a result of this research is that ethnic minorities appear to be much less likely to move far from their original lands than the majority lowland populations in Laos and Cambodia respectively. In Cambodia, the legal designation for upland ethnic minorities is “indigenous peoples”, a concept that is not officially recognized in Laos [68], but has important legal ramifications in Cambodia in terms of land tenure, since only those defined as “indigenous peoples” are legally entitled to communal land tenure [18]. The propensity of these minorities to not move long distances might suggest: (1) that many of these peoples have limited experience outside of a relatively narrow geographical areas, and this lack of experience makes it less likely and more difficult for them to move farther away; and (2) that these minorities lack the kinship ties and other social networks beyond their relatively narrow geographical area. In Laos, for example, upland ethnic minorities are much less likely to become illegal laborers in Thailand than the ethnic Lao people living closer to the border; while in Cambodia ethnic minorities are less likely to seek wage labor work far away from their homes than ethnic Khmers. This has resulted in areas nearby or adjacent to land concessions in areas inhabited by ethnic minorities experiencing extensive land-use changes, especially in areas where ethnic minorities are displaced by large rubber plantations. Nearby telecoupling is likely to be more common when these groups are involved.

“Transnational labor telecoupling” involve Vietnamese laborers tapping rubber on Vietnamese owned rubber plantations in southern Laos and sending at least some of their income home as remittances. We hypothesize that this is affecting land-use in the places where they originally came from. We will conduct more detailed research on this topic in the near future.

Finally, “opportunistic telecoupling” involves ethnic Khmer people from southern Cambodia going to work for large-scale rubber plantation companies operating in northeast Cambodia. These laborers frequently use their positions as an explicit strategy to explore new areas and acquire land for themselves, either through purchasing it from villagers or through squatting on it. These laborers often initially send remittances back to relatives in southern Cambodia, thus potentially impacting land-use change there (much like the “transnational labor telecoupling”). Over time, however, “opportunistic telecoupling” becomes increasingly important as the laborers use their familiarity with the geography and social circumstances of the new area to gain access to land. They then quit their plantation jobs and become migrant farmers from southern Cambodia, thus leading to new types of land-use change that are indirectly but definitely linked to the rubber plantations developed nearby.

4. Conclusions

Globalization and neo-liberal markets have increased the speed in which decisions made in one place can affect people and places elsewhere, even if the rate of change and its magnitude is quite uneven. Long-distance trade has been occurring since the advent of human civilization and this trade affected how people lived and used land elsewhere, nor is theorizing about this new. As mentioned above, PE has a long history of documenting cross-scale links between people, places, and power. Teleconnections has been used in atmospheric science to refer to climate anomalies being related to each other at large distances (typically thousands of kilometers) through atmospheric circulation. Applying this idea to understanding some of the effects of globalization has been fertile and produced a number of theoretical frameworks for explaining different types of impacts. Liu *et al.* [25] suggest that teleconnections examines cross-scalar impacts on biophysical environments, globalization on socioeconomic environments, and telecoupling on both biophysical and socioeconomic environments. What is important, and which has not been studied systematically, is how people use land in one place (a result of both socioeconomic and biophysical agents) affects how people use land in other places (either nearby or far away). Lambin and Meyfroidt [29] perhaps do the best job of summarizing some of the ways in which socioeconomic decisions made in one location influence land-use changes elsewhere. Our paper adds some new mechanisms to this framework, particularly the observation that some land-use changes are driven by opportunistic behaviors. Although even this also is not new as examples of farmers following logging roads into the forest in order to claim land cleared as a result of timber harvesting have been reported frequently (e.g., [69]). Perhaps more significant is the observation that just as understanding the impacts of globalization requires a multi-sited ethnography; a solid understanding of the socioeconomic drivers of land-use change requires an approach that looks at biophysical and socioeconomic impacts of change at multiple sites. This requires following both the people and their land-use practices and observing how they change and how they influence changes elsewhere. To date, neither the LCS community that focuses on mapping land-use changes and the biophysical and socioeconomic impacts of these changes, nor the PE community that focuses across multiple scales on how history, power, and economic forces affect land-use practices, have looked specifically at how changes in land-use in one place drives changes in land-use elsewhere on the landscape.

Although we still have more fieldwork to do regarding the impacts of large-scale rubber development on land-use change outside of concession areas, our investigations in southern Laos and northeast

Cambodia have so far indicated that applying the concept of telecoupling, informed by insights from PE, can be fruitful for learning more about the types of changes that large-scale economic land concessions are causing, apart from the impacts in the actual concession areas and on local people, which have already been well documented. Although there are undoubtedly many other kinds of telecoupling worth considering, “nearby telecoupling”, “transnational labor telecoupling” and “opportunistic telecoupling” are three important types of telecoupling that we have identified based on our fieldwork so far.

As a next step, we plan to dig deeper into what we have learned about telecoupling to assess the types of land-use changes that are occurring due to large-scale economic land concessions. We will investigate Vietnamese rubber tappers in Laos and telecoupling linking them to landscapes in Vietnam. In Cambodia we plan to learn more about how Khmer laborers affect land use outside of rubber concessions. In addition, we will explore other kinds of telecoupling linked to large-scale rubber development in southern Laos and northeast Cambodia, ones that we do not have sufficient space to elaborate on here, but nevertheless have the potential for further expanding the ways we think about land-use changes associated with large-scale rubber plantations.

For most PE scholars, the idea of telecoupling is unlikely to be as useful as it will for those working in LCS, as PE has a long tradition of flexibly linking land-use changes to political economic processes far away. But despite this, we believe that applying the concept of telecoupling can be beneficial to both those in PE and LCS, as the concept can, as a heuristic tool intended to be used during grounded fieldwork, help focus our attention on particular types of nearby and distant changes, ones with particular spatial connections and linked to land-use changes.

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Author Contributions

Both authors contributed to the paper through conducting a literature review, fieldwork, and writing.

Conflicts of Interest

The authors declare no conflict of interest.

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