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The Retreat of Agricultural Lands in Thailand

by

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THE RETREAT OF AGRICULTURAL LANDS IN THAILAND

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Abstract

For much of the last century, the expansion of agriculture was a dominant force transforming Thailand’s landscapes, but since the 1990s the dominant — yet often overlooked — trend is one of agricultural retreat. This shift started in the 1960s and 1970s and is most intense in provinces of the central region where urbanization has proceeded rapidly. However, the decline of agricultural lands can now be seen in diverse geographical contexts in all regions of the country. Using secondary sources and recent fieldwork conducted in northern Phetchabun province, the paper describes three types of agricultural decline occurring in Thailand: private conversion to other land uses, land confiscation by the state and voluntary abandonment of agricultural lands. Although the latter type has rarely been reported in Thailand, it was found to be of particular importance in the study region, at least from the 1980s to early 2008. Its existence is explained by a cost-price squeeze in maize cultivation and the difficulty to find profitable and marketable replacement crops in rainfed areas. Politically, voluntary land abandonment created opportunities and facilitated the seizure of agricultural lands by forest authorities. Economically, it increased the costs of production of remaining maize farmers in zones where abandonment was important. This illustrates how agricultural retreat in Thailand must be seen as the result of distinct, but at times interacting, sets of processes.

Keywords

Agricultural land loss, economic development, forestation, forest conservation, Thailand.
Introduction

Agriculture has been and still is of high importance in Thailand, both in economic terms and as a marker and symbol of national identity. Yet, despite the interventions and projects of NGOs, royal institutions and the state, the linkages between Thailand, its people and its economy with agriculture have become more tenuous over the years. In macro-economic terms, the direct contribution of agriculture to economic growth has been largely outpaced by those of non-agricultural sectors (Siamwalla, 1996 & 1999). Also, in regards to employment in agriculture, this relative decline became absolute at the turn of the 1980s (Coxhead & Plangpraphan, 1998). As this decline has proceeded, agriculture became less important in the livelihood strategies of numerous rural inhabitants and their progeny (Rigg, 2001 & 2003). The decline in economic and employment terms has been accompanied by changes in the evolution of agricultural areas: while pockets of agricultural expansion are still reported in some districts, the total hectares under agriculture has ceased to expand and is in fact declining. Given the rapidity and extent with which agricultural expansion has proceeded since World War II and the continuing references in the Thai media to the threat of further forest encroachment (ex: Anonymous, 2007 & 2008a; Khuenkaew & Khamthita, 2007; Samabuddhi, 2005; Pakkawan & Harai, 2008; Post Reporters, 2008a & b; Wipatayotin, 2008), the idea that agricultural lands would be declining in Thailand is intriguing. Yet, the phenomenon of agricultural retreat and especially its causes have thus far attracted only limited academic attention and are to a large extent poorly understood.

Gaining an accurate understanding of this phenomenon and its causes is important in several ways. First, the current decline of agricultural lands in Thailand could have significant implications in terms of total agricultural production, environmental management, social justice, and more generally the geographical distribution of both population and economic activities. Accurate and detailed information on the forms this decline is taking and the causal mechanisms involved is needed in order to correctly judge if, and in what contexts, the decline is positive and needs to be encouraged, or is rather a cause of concern and should be controlled. Moreover, the retreat of agricultural land appears to be a phenomenon common in the process of economic development as it was experienced in most currently industrialized nations (see below). For both empirical and theoretical reasons, it is of high importance to judge to what extent the current decline of agricultural lands in Thailand is linked to the rapid economic development the country underwent and in what ways the causal mechanisms involved are similar or dissimilar to what occurred and is occurring in other countries. This would help evaluate in what contexts the phenomenon could occur in developing countries and help policy-makers across the globe devised more appropriate and context-sensitive measures to manage a potentially problematic decline of agricultural lands.

In this paper, I review the empirical evidence for a net retreat of agricultural lands at the national scale in Thailand, distinguish between three types of agricultural decline based on their proximate causes and then explore some of the underlying factors and processes at play. The paper is based upon secondary sources as well as fieldwork conducted by the author in the north of Phetchabun province, Northern Thailand, from January to July 2007 and January to March 2008. This study is part of a larger research project on recent forest changes in Thailand and the apparent emergence of a forest transition.

Preliminary notes on agricultural lands declines

Some preliminary remarks on the nature of the object of study in this paper — the decline of agricultural lands — and its existence outside Thailand must first be made. In this paper, agricultural lands always include inland shrimp ponds, rubber and fruit-trees plantations, but
exclude silvicultural plantations even if they are managed on short cutting cycles. When national statistical sources are used to describe changes of total agricultural lands, the specific variable used is farmholding lands, which covers (in theory) all lands owned or claimed by agricultural households and used in total or in part for agricultural production. It thus includes cultivated and housing areas, idle lands and grasslands. During fieldwork, I ceased to consider a piece of land as agricultural in the following conditions: (i) it is now managed for non-agricultural purposes, including reforestation and forest conservation, (ii) it is reported by knowledgeable informants — land owner, village headman, neighbours — as “abandoned” (in Thai: ploy (ล้ำา), thingwai (ทิ่มไก) or thingpai (ทิ่มปาย)) or inaccessible for cultivation and was left unmanaged for an unusually long period of time. Where land used to be continuously cultivated, I considered fields left uncultivated for approximately 5 years or more as “abandoned” (understood in a wide sense).\(^1\) On the other hand, in zones where long fallow periods are still practiced, land left uncultivated was rarely considered by informants as abandoned and thus were generally classified as agricultural. I tried as much as possible to determine if any cessation of cultivation was tied to agricultural expansion elsewhere within or outside the study region and the country as this could have high political and theoretical importance.

Also, it should be remarked that the long-term cessation of agricultural activities over significant land areas is a relatively common phenomenon. Historically, it has occurred several times as a result of major crises and mass-migration. Examples can be drawn from Europe (ex: Black Plague epidemic in the 14\(^{th}\) and 15\(^{th}\) century; Mather et al., 1999), the Americas (the 16\(^{th}\) and 17\(^{th}\) century depopulation in North and South America; Denevan, 1992) and Asia (the crash of the Eastern Java and Angkor empires; Whitmore 1984: 263). More recently, it has also occurred in a general (national) context of economic development. In fact, most industrialized nations have seen their agricultural areas reduced during the last century, a phenomenon that was often accompanied by an expansion of diverse forms of wooded lands. The literature on the subject is extensive, whether it concerns North America (see for example: Bell, 1989 & 1996; Jean 1985; Kerr and Holdsworth 1990; Ramankutty & Foley 1999; Rouffignat 1992), Europe (Correia, 1993; Kuemmerle et al., 1998; Mather, 1992; Mather et al., 1999) or East Asia (Dumont, 1987: 88-93; Francks et al., 1999: ch. 2; Hayami, 1975: ch. 2; see also the literature reviews in Benayas et al., 2007 and Leblond, 2005: ch. 1). Inspired by the near universality of this phenomenon, several authors, notably those working on forest transitions, have put forward the idea that the passage from a predominantly agricultural economy to one centred on industry and services would generally result in a stabilization and then decline of cultivated areas, and thus create opportunities for forestation. Explanations vary greatly in the literature on the subject, but generally include some of the following: biophysical factors, inter-sectoral growth and wages differences, changing income expectations, the formation and spatial expansion of increasingly competitive national and global agricultural markets, the long-term decline in absolute and relative terms of agricultural output prices, the colonization of better endowed cultivation zones, as well as direct and indirect state interventions encouraging and accelerating the abandonment of farming on land deemed unfit for cultivation and by farmers condemned as economically uncompetitive and irreversibly traditional (Bell, 1989; Jean, 1985: ch. 2-3; Mather, 2001; Perz, 2007; Rudel et al., 2005; Ogura, 1967: ch. 5). Also, it is noteworthy that the diminution

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1 The use of the term “abandonment” is somewhat problematic. By abandonment, I am referring to cases where (a) the former land user has lost or do not care to exercise his moral or legal rights to the land (true abandonment), and (b) the former land user is known to maintain his rights to the land, has cease manage it in any way but could resume his use of the land in the future (temporary abandonment; long-term land falling). The French concept of “déprise agricole” denotes more accurately and with less ambiguities what is called here for convenience purposes “land abandonment”.

Leblond, Jean-Philippe
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of agricultural lands can be seen as both a positive and negative change. Many rural sociologist and geographers in Europe and Quebec have described and emphasized the negative environmental and social consequences or implications of agricultural land decline: increased forest fires, a reduction of total biodiversity in agro-pastoral regions, the “exportation” of deforestation to other regions, the disarticulation of rural economies, a further pauperisation of remaining farmers and the social desertification of marginal regions (Dionne, 1992; Jean, 1985; MacDonald et al., 2000; Benayas, 2007). For others, the phenomenon is largely positive as it can lead to a more rational utilization of factors of production, increased income for remaining and former farmers, an expansion of forest cover and greater biodiversity (Benayas, 2007; Meyfroidt & Lambin, 2008; Walther, 1986; Rudel et al., 2005; Timmer, 1988).

Lastly, within Thailand’s current national territory as well the overall area under agricultural production has at times declined in specific regions, notably as a result of localized epidemics, wars and forced migrations. Localised agricultural abandonment could even be found in periods of rapid agricultural expansion, such as during the upland cash crop boom of the 1950s to 1970s. Diseases, insufficient rainfall and inadequate cultivation practices causing rapid soil erosion: all could lead to the failure and abandonment — at least temporarily — of a new settlement or field (Bruneau & Cabassouel, 1973: 8; Hirsch, 1990: 36; Phongpaichit & Baker, 2002: 57). As will be shown, by its magnitude and driving processes current declines of agricultural lands in Thailand differ fundamentally from what could previously be seen.

A view from recent official statistics

There are two main current sources of agricultural statistics in Thailand: the Office of Agricultural Economics (OAE) surveys and the National Statistical Office (NSO) agricultural censuses. These sources are subject to significant, but different sampling and non-sampling errors (FAO, 2002; Leblond, 2004: 104-7). As none can be said to be definitively more reliable than the other, both will be used. At the national level, the two sources present a similar evolution of farmholding lands whereas a rapid expansion proceeded during the 1960s and 1970s. This expansion slowed down and eventually came to a halt in the late 1980s/early 1990s. This was followed by a slight (1.3% between 1992 and 2005; OAE data) to modest (5.1% between 1993 and 2003; NSO data) decline of the total hectareage of farmholding lands (Figure 1).

An analysis of provincial level data reveals that the decline of farmholding lands first begun and is strongest in Central Thailand, particularly in the Lower Chao Phraya and Eastern Seaboard regions (Molle & Thippawal Srijant, 2000; Leblond, 2004; see Figure 2). According to OAE provincial data, the decline of farmholding lands between 1988 and 1999 represented more than 20 percent of the respective province’s total area in 8 cases, all of which are in theses two regions of Central Thailand. In the rest of the country, in particular in the South, statistical sources present at times contradictory trends. Nevertheless, it seems clear that in the 1990s agriculture retreated in much of the Central region, the lower North and in a corridor running from Nakhon Ratchasima to Udon Thani provinces in Northeast Thailand, where the main industrial and service centres of this region are concentrated.

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2 Two other sources exist: the Land Development Department (LDD) Land Use Surveys and the Department of Agricultural Extension (DAE) monthly estimations. Although the LDD has recently improved significantly the spatial resolution and quality of its Land Use Survey, both sources do not offer reliable long-term data series. In regards to NSO data, note that the term agricultural “census” could be an exaggeration, at least in the study area where it appears some enumerators still relied in 2003 on the estimates of village headmen, subdistrict chiefs and other knowledgeable individuals.
Figure 1. Evolution of farmholding lands according to NSO (1963-2003) and OAE (1960-2005) data

Sources: NSO: NSO Agricultural census and Intercensal surveys (various editions); OAE: Agricultural Statistics of Thailand, various editions.

Figure 2. Change of the percentage of provincial areas occupied by farmholding lands between the early 1990s and early 2000s according to the OAE (a) and the NSO (b)

Sources: NSO: NSO Agricultural census and Intercensal surveys (various editions); OAE: Agricultural Statistics of Thailand, various editions.

Note: A similar analysis of OAE data for the period 1988-1999 presents less disagreement with NSO data. However, this 1988-1999 data analysis could be less reliable than the 1992-2001 one because the 1988 estimate’s sampling frame is derived from 8 years old population data, while the 1992 estimate is based on the 1990 Population and Housing Census.
Evidence from the literature: three types of agricultural lands declines

There have been little serious causal analyses of the decline of agricultural lands in Thailand. Among relevant studies are those of Coxhead and Plangpraphan (1998) and Coxhead and Southgate (2000) who produced an econometric analysis of Northern Thailand provincial data on economic and agricultural indicators for the 1989-1995 period. They concluded that the economic boom caused agricultural wages to increase very rapidly, which led to a reduction of the use of agricultural labour and land. Coxhead and his co-authors did not produce local-level (direct) empirical evidence linking the rise of agricultural wages to the decline of agricultural lands. Nevertheless, their reasoning is indirectly supported by studies conducted since the mid-1980s which have documented the deagrarianisation of rural livelihoods, the scarcity of farm labour, an increase of agricultural wages and the transformations these changes have encouraged in agriculture, in particular to minimise labour costs (ex: Funahashi, 1996; Poapongsakorn et al., 2006; Rigg, 2001; Trebuil et al., 2007).

While serious causal analyses of agricultural land retreat have been few, reports of agricultural land loss can be found easily in media articles (ex: Chang Noi, 2008; Keeratipipatpong, 2008; Pakhawan & Pathan, 2007), case studies and other academic publications (reviewed below). The dominant view in these publications and among officials, scholars and NGO workers I have met is clear: agricultural land is being lost because of urbanisation and land confiscations by the state. However, based on a review of this literature and my fieldwork in Phetchabun province, I suggest that there are in fact three main types of agricultural retreat in Thailand: (a) voluntary land conversion, (b) land confiscation by the state, (c) voluntary land abandonment. The distinction is done on the basis of the type of land use decision that directly led to the cession of use for agricultural purposes of the land. In other words, the distinction is based on the proximate (or direct) cause of the change of land use and not on the underlying human or environmental causes (cf. Geist and Lambin, 2001).

**Type I: Voluntary conversion to non-agricultural land uses**

This type of decline occurs as a result of a (relatively) voluntary decision by the current land-owner to convert the land to non-agricultural land uses. In doing so, the owner is seeking higher, often economic, benefits from the use of the land. Agricultural lands have been converted for example to residential areas, factories, shopping centres, golf courses, and silvicultural plantations, generally teak or *Eucalyptus calomadulensis*. As such, this conversion is unlikely to be easily reversed and can be considered quasi permanent. Included in this type of agricultural decline are idle agricultural lands bought for speculative purposes and which will eventually be converted. Such lands have proliferated during the economic boom of 1988 to 1996 in particular in the Bangkok and Chiang Mai regions (Enters, 1995; Askew, 2002: ch. 7; Ross & Anuchat Poungsomlee, 1995). This first type of agricultural retreat is well documented in the Lower Chao Phraya, Eastern Seaboard and Chiang Mai regions, as well as along major transportation corridors (see Cohen & Pearson, 1998; Hara et al., 2004; Hung & Yasuoka, 2000; Lebel et al., 2007; Madhavan et al., 2001; Molle & Srijantr, 2000; Rigg & Ritchie, 2002; Sangawongse, 2006; Srisawalak-Nabangchang & Wongchancho, 2000; Torrii et al., 2000). In these regions, rapidly increasing land prices have attracted the attention of not only land developers and speculators, but also of some farmers who have thus realized a quick capital windfall (See Askew, 2002: ch 7; Brett Wyatt, PhD candidate at Chiang Mai University, pers. comm., July 2 2008).3 This is probably the dominant type of

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3 The positive and mutually beneficial relationships between land buyers and land sellers depicted by Askew in regards to the situation in Nonthaburi province contrasts highly with the situation in Southeastern Thailand where Barney (2001:58) has found several underhanded tactics
agricultural retreat in the aforementioned regions.

It should be noted that the conversion of agricultural lands can indirectly increase the likelihood of further nearby land losses. Indeed, individuals persisting to farm within or close to rapidly urbanizing zones face increasing environmental and logistical problems, which are due for example to overpriced lands (which excludes farmers from the land market), lack of access to the land or irrigation infrastructures, industrial pollution, and problems of flooding⁴ (Askew, 2002: ch. 7; Lebel et al., 2007; Rigg, 2001: 118-121; Ross & Poungsomlee, 1995; Srisawaiak-Nabangchang & Wonghanchao, 2000).

**Type II: Confiscation of agricultural lands**

The second type of agricultural land loss occurs when the state confiscates agricultural lands or forcibly excludes agriculture as a possible land use. For the land owner or claimant, it is thus an involuntary change. This type of agricultural land loss has been implemented by several institutions, including state forest agencies⁵, the Royal Irrigation Department (RID) and Energy Generating Authority of Thailand, often with the assistance of police, military and paramilitary forces (usually the Border Patrol Police). Officially, the decision is motivated by “national interests”, usually in regards to a mix of the following objectives: forest biodiversity and upper-watershed conservation, the construction of irrigation, transportation or energy-generating infrastructures, floods mitigation, drug-control and national security. In Thailand, the concept of “national interest” usually accords higher importance to the (perceived) interests of lowlanders, particularly paddy-growers and urban populations. It should be noted however that not all land confiscations by the state have ultimately resulted in a diminution of total agricultural lands. Up until the closure of the agricultural frontier in the 1980s, it was still possible for state agencies to relocate farmers on new agricultural lands, or for evicted individuals to claim and clear previously forested lands. Since then however the level of control by forest agencies has considerably increased and it is reasonable to believe that most displaced farmers have been unable, uninterested or too scared to clear and claim new agricultural lands.

Land confiscations have occurred throughout the country, both at high and low elevation, and have taken many forms. On the one hand, RID reservoir projects can involve important displacement of population and typically lead to substantial contiguous low-lying and flat areas being expropriated. For example, the most recent important project, the Pasak Cholasit Dam, necessitated the relocation of more than 35 000 people and flooded an area of 182 km². The amount paid by the RID in compensation is significant and can be easily manipulated, for example by planting fruit trees. These projects are thus often preceded by massive land buying by officials and speculators.⁶ On the other hand, forest agencies have also been responsible for village relocation, particularly in the late 1980s and early 1990s (Forsyth and Walker, 2008:46-50; Kurashima & Jamroenprucksa, 2005), but population and land evictions (i.e. without financial compensation) have been arguably more common. In general, a single case of land confiscation by forest authorities affects contiguous areas of a (relatively) more modest extent and causes the displacement of fewer communities and

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⁴ Flooding problems in Thailand are usually associated with upper watershed deforestation. They can however have a quite direct political origin, such as when in late 2006, a few weeks after the September coup, the Royal Irrigation Department flooded without appropriate compensation paddy fields upstream of Bangkok to prevent the city to be flooded. As such, the agency was following the example of HM King Bhumibol who had done so on his own land in Ayutthaya province (Hongthong 2006; Pongpao & Samabuddhi 2006).

⁵ In this paper, the term state forest agencies refers to the Royal Forest Department and the Department of National Parks, Wildlife and Plant Conservation.

⁶ This was the case in the four recent reservoir projects of northern Phetchabun I visited.

Leblond, Jean-Philippe
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households residing in hilly or mountainous regions. For example, the two largest projects in northern Petchabun each covers “only” 32 km² and did not lead to population displacement.

Among the many institutions responsible for land confiscations, forest agencies occupy a predominant position, at least since the 1980s. Their predominance is linked to the important political changes that occurred since the end of the communist threat in 1982 and the growing political influence of grassroots groups and NGOs contesting top-down state initiatives. On the one hand, and to the exception of royal projects such as the Pasak Cholaisit dam, large irrigation and energy-generating projects have become extremely difficult to implement (Israngkura, 2000; Harkness, 2002; Handley, 2006: ch. 19; Fieldwork 2007 & 2008). On the other hand, the conservation of forests, which represents since the 1989 logging ban the core mission of state forest agencies, has become a major political objective for a great number of political and civil society actors (Grainger, 2004). In contrast to major exotic tree plantations projects such as Khor Jor Kor which required large-scale land confiscation and were strongly opposed by broad sections of the public and most environmental NGOs (Pye, 2005), upper-watershed forest conservation projects, which also requires land confiscations, did not meet such unambiguous opposition. In fact, many lowlanders, NGOs and influential groups have offered open support to the use of such means to forest and watershed management (Forsyth, 2007; Kurashima & Jamroenprucks, 2005). As a result, forest-related projects have sprouted throughout the country, numerous new protected areas have been demarcated (now representing 18 % of country) and the level of conservation pressure in hilly and mountainous regions has increased (Vandergeest, 1996 & 2003).

The extent of agricultural land confiscations is difficult to evaluate. One of the rare relevant figures available was published by McKinnon and Vienne (1989, cited in Maniratanavongsiri, 1999: 165) who estimated that 5000 people had been involuntarily moved out of national parks before August 1988. Agricultural lands have been confiscated by forest agencies in all regions of the country. They are reported in numerous case studies, including Barney (2001), Duengkae et al. (2006), Fujita (2004), Ghimire (1994), Hirsch (1992 & 1995), Kesmanee (1988), Kesmanee and Trakansuphakorn (2005), Maniratanavongsiri (1999), Midas (1991: 31) and Neef et al. (2003). Based on a review of these case studies and publications such as Kitawachakul (1998) and Kurashima and Jamroenprucks (2005), it appears that land confiscations due to forest conservation measures have been particularly frequent in the late 1980s and 1990s, with a calmer period during the mid-1990s and probably since the early 2000s. Households and communities residing at high elevation and practicing land extensive types of agriculture, in particular those of ethnic minority origins are believe to be more prone to land confiscation (see Delcore, 2007; Kijtewachakhul, 2003; Vandergeest, 2003).

Agricultural land confiscation can encourage some further agricultural land decline. For example, state interventions or its threat have at times motivated individuals and communities to strategically halt cultivation on some of their lands and facilitate its forestation. This is part of a political strategy which aims at convincing forest agencies and other political actors that they are good forest stewards and thus large-scale land confiscation or complete village eviction is unnecessary (Neef et al., 2003; Tomforde, 2003; Walker, 2004).

**Type III: Agricultural land abandonment**

This type of agricultural retreat occurs when the land owner or claimant decides to stop using the land without being directly forced to do so by the state or any other actor. The motivation is not enrichment, but rather to avoid economic losses through the continued use of the land.
The halting of agricultural production activities provides an opportunity for secondary succession to take place. While well known in developed countries, this type of agricultural retreat has rarely been described in the Thai literature. One example can be found in lowland coastal areas where economic and ecological problems in shrimp cultivation have led to shrimp ponds abandonment (Dierberg & Kiattisimkul, 1996; Flaherty et al., 1999). Estimates of the extent of such unutilised farmland range from 4500 to 45 000 hectares for the period 1990-1997 (Towatana et al., 2003; Visuthismajarn et al., 2005). In some cases, higher shrimp prices have led to the recultivation of abandoned ponds, thus illustrating that this form of agricultural loss can be reversed relatively easily (Lebel et al., 2002).

In the next section, I will draw upon fieldwork conducted in northern Phetchabun province to further explore the diverse forms that agricultural land retreat have taken in Thailand. This will provide an opportunity to further describe the three types of agricultural land decline and identify the social and environmental contexts in which it has occurred.

Study region

Fieldwork was conducted in the Pasak valley and the surrounding hills and mountains of the districts of Lom Kao, Lom Sak and Khao Kho, Phetchabun province (Figure 3). As mentioned earlier, this study of agricultural land retreat is part a larger research project on recent forest changes in Thailand and the apparent emergence of a forest transition. The study region was chosen because it was reported by official sources as a hot spot for both reforestation and deforestation and was undergoing a retreat of its agricultural land area. The specific sites of study were chosen so as to include (1) lowlanders* (mostly Lao Lom) and ethnic minorities (Hmong), (2) lowland, upland and highland elevation zones and (3) administrative areas of high, medium and low conservation pressure, respectively national parks and wildlife sanctuaries, national forest reserves and non-demarced legal forestland (also called “ordinary forest” — paa thammada — or “1941 forest” — paa 2484). Cultivation is prohibited by law in all these administrative areas, but the level of law enforcement varies (Fujita, 2003; Vandezee, 1996).

The Pasak valley bottom (20-30 km wide, <200 m asl; first elevation zone) is fairly densely populated (100-200 inhab/km²). On each side of the valley, within the Eastern and Western Phetchabun Ranges, is a first row of hills and cliffs (300-600m asl) interspersed by dissected valleys (second elevation zone). These hills and valleys have been opened up by logging and military operations mostly during the 1960s and 1970s. Lowland farmers quickly followed and cleared the land for maize and mung beans cultivation (see Table 1 for district-level data on agricultural expansion). In all but a few cases, lowlanders maintained their residence in the lowlands, several kilometres away. Further west in the Western Phetchabun range is the Highland zone (800-1600 m asl; third elevation zone). It is permanently populated at low density (40 inhab/km²) by a mix of lowlanders (>50% of the population and cultivated lands) and ethnic minorities, mainly Hmong. Up until the completion of the Lom Sak-Phitsanulok road in the early 1960s, the Highlands were sparsely populated by Hmong people and still highly reside in the hills and mountains. This appraisal does not refer to the actual site of residence.

* Hmong are the second most important hill tribe ethnic minority group in Thailand. In the study region and in Thailand in general, they have been and still are the object of suspicion and criticism, in part due to their traditional practice of pioneer shifting cultivation and their enrolment with communist forces. The first Hmong group probably arrived in the study region around 1867 but was later decimated. The second and more successful vague of migration occurred in the late 1930s (Anonymous, NDa & NDb; Fieldwork, 2007).

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<table>
<thead>
<tr>
<th>Districts (as of 1963)</th>
<th>Farmholding lands as a percentage of district area (% of district area)</th>
<th>Change of farmholding areas (% / yr)</th>
</tr>
</thead>
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<td>Lom Kao</td>
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<td>15,1</td>
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<tr>
<td>Lom Sak</td>
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<td>15,7</td>
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<td>50,0</td>
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<tr>
<td>Wichian Buri</td>
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<td>43,4</td>
</tr>
<tr>
<td>Total</td>
<td>11,2</td>
<td>31,2</td>
</tr>
</tbody>
</table>

Sources: NSO Agricultural Censuses, provincial editions
Note: Calculation based on 1963 administrative units. Using current district limits would show some increase of agricultural land between 1993 and 2003 in the newly created districts of Nam Nao (formerly included in Lom Kao) and Wang Pong (formerly within Chon Daen).

Figure 3. Location and topography of the districts of Lom Kao, Lom Sak and Khao Kho, Phetchabun province, and the three zones where most of the fieldwork was conducted.

Sources: Digital Chart of the World, Department of National Parks, Wildlife and Plant Conservation.
forest. In the two following decades, deforestation and agricultural expansion proceeded swiftly, a phenomenon directly linked to Thai military operations against the Communist Party of Thailand (CPT). At the end of 1968, skirmishes between relocated Hmong villagers and Border Patrol Police units escalated and the Thai military intervened by massively bombing and napalmng villages and forest land north of the Lom Sak-Phitsanulok road. Soon after, approximately 90% of the Hmong population of the region flew to the forest and joined ranks with the CPT (Hearn, 1974: ch. 7; McCoy, 1971; Mottin, 1980: 60; Race, 1974). The CPT then established two important strongholds to the south and north of the Khao Kho plateau. In the mid-1970s, following apparently the suggestion of HM King Bhumibol (Anonymous, 1985; Chitbundit, 2004), the military decided to encircle the CPT camps, in particular those within the southern one, by a network of roads, peasant-soldiers sympathetic to their cause which they settled in strategic hamlets, and cultivated or simply denuded lands (McBeth, 1981; Rietmueller, 1988; Fieldwork, 2007). Whether spontaneous or organized by the state, the migration and agricultural colonisation by low-landers that followed was not only tolerated, but encouraged by the authorities. After the demise of the CPT in the early 1980s, the de facto policy towards human occupation on the plateau changed. While state-sponsored migration, often assisted by numerous royal or state projects, continued until 1995 in a two kilometres corridor along the roads, the state increasingly viewed the presence of farmers outside this corridor as a source of major environmental problems. Finally, it is noteworthy that many ethnic Thai farmers cultivating in the Highlands outside the corridor maintained their primary residence in the lowlands and only worked and resided close to their fields a few weeks during the year (Fieldwork, 2007 & 2008; Chapagain, 1991; Klaisomboon et al., 1992; Melese, 1988; Rietmueller, 1988).

Methods

Three main zones in the Western and Eastern Phetchabun ranges characterised by recent forest and agricultural land changes were studied (Figure 3). Within each zone, sites representing deforestation (i.e. potential agricultural expansion) and reforestation (potential retreat of agriculture) were identified using official forest maps and then visited and photographed. With the help of neighbouring villages’ headmen and residents, current and previous land-users of the site were then identified and semi-structured interviews were conducted with them in their village or while revisiting the site. The questions aimed at reconstructing the land-use history of the site and elucidating the reasons why agricultural cultivation was stopped, resumed or maintained. To corroborate information given by land-users and further explore causal links, semi-structured interviews were also conducted with local merchants, influential individuals, village and subdistrict elected representatives, district officials, as well as officials at different level of the hierarchy of the Royal Forest Department, the National Parks, Wildlife and Plant Conservation Department, the Agricultural Extension Department, the Land Development Department and the Welfare Department. Finally, short visits were also made to other sites where agricultural abandonment and reforestation were reported in northern Phetchabun province and the districts of Dan Sai (Loei province) and Nakhon Thai (Phitsanulok province).

Agricultural retreat in northern Phetchabun

According to NSO agricultural censuses, total agricultural lands in Phetchabun province declined between 1993 and 2003 by 23 800 hec-

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10 A similar operation had been attempted previously but had not included the distribution of land to land-poor lowlanders. This second operation was part of the Nam Khek Watershed Development Project (Anonymous, 1985). HM the King is reported as having a special interest in this project (McBeth, 1981), which he visited in 1979 and 1985 (Anonymous, 2000).
tares (or 4.9%)\(^{11}\). This decline was felt throughout the province, but is relatively slow compared to the pace of agricultural expansion during the three previous decades (Table 1). In the northern districts of Lom Kao, Lom Sak and Khao Kho (current administrative boundaries), the same source reports a reduction of farmholding lands from 86 894 to 78 864 hectares, or 8030 ha (9.2%). The decline of cultivated land was documented during fieldwork in all elevation zones, but was more important outside the valley bottom, in rainfed, hilly or mountainous areas with or without high conservation pressure. Based on interviews, it appears the current period of agricultural retreat begun in the late 1980s and intensified in the 1990s.

**Voluntary land conversion**

In all elevation zones within the study region agricultural lands have been converted to make way for teak plantations (below ~500 m), secondary and main residences (all zones; for urban and rural households) as well as resorts (all zones). Land conversion is the dominant form of agricultural decline only along the main roads, at proximity to district centres, major intersections, and lowland nucleated villages, thus in zone of high land value. Away from the main roads, in zones of low land value such as on river terraces and low hills, converted agricultural lands can also be seen interspersed between cultivated and cultivated plots and mostly in the form of teak plantations. These are located on land privately owned or at least in non-demarcated legal forest lands, a zone where land titles can be obtained easily, at least for influential individuals. Interviews with local intermediaries and land buyers suggest these conversions have become more common during the boom years and are mostly financed by upper and middle class individuals residing in the region and elsewhere, especially in Bangkok. Dedzoe et al. (2001) evaluated that between 1986 and 1992 land conversions represented 4% of a 2500 ha zone of the Pasak valley bottom. It seems clear however that land conversions represent a smaller proportion of total agricultural land loss than two other proximate causes.

\(^{11}\) According to provincial level OAE data, the decline was rather of 67 212 ha (or 10.1%) between 1992 and 2001.

| Table 2. Protected areas and state-led reforestation in the districts of Khao Kho, Lom Sak and Lom Kao, Phetchabun province |
|---|---|---|
| Land area (ha) | Percentage of total area |
| Protected areas | 115 919 | 36 |
| Land reforested by four major projects | 21 732 | 7 |
| Forest cover in 2007 | 130 843 | 41 |
| Total area | 320 077 | 100 |


Notes: Protected areas include Khao Kho National Park, which has yet to be officially declared. The four reforestation projects are: Khao Kho Forest Development Project (including the FAO/UNDP/Royal Thai Army Reforestation of Denuded Lands in Khao Kho Project), Nam Chun Nam Ko Watershed Restoration Project, PTT Permanent Afforestation Project in Honour of the King’s Golden Jubilee and the Eastern Pasak Watershed Forest Office Plantation Project.
Land confiscation

According to available data, the first episode of land confiscation in the study region occurred in early 1968 when the Border Patrol Police forced for national security purposes the relocation of 8 Hmong villages out of a zone south of the Phitsanulok-Lomsak road (McCoy, 1971). After the communist insurgency ended, a second phase of land confiscation begun with the Nam Khek Watershed Development Project and the construction of the Khao Kho Royal Palace in the mid-1980s. Land confiscations became truly important in the early 1990s and have remained so until now. Most land confiscations cases documented occurred in one of the two following situations: (1) the creation, expansion or simple management of a protected area (ex: Khao Kho National Park) and (2) state or royal projects (ex: Khao Kho Forest Development project or Nam Ko Reservoir Royal Project), which with few exceptions are located in hilly or mountainous areas, within national forest reserves or areas de facto controlled by the military. The resulting land cover has typically been block plantations of economic tree species, notably teak and various species of pines, eucalyptus and acacia (see Annex).12 As mentioned earlier, land confiscations can affect substantial contiguous areas, the largest individual parcel being a 3200 ha plot in the Eastern Phetchabun range planted as part of the celebration for the King’s Golden Jubilee. In some cases, villagers agreed, albeit reluctantly, to leave the land, in particular when the state project relied on royalist symbolism and rhetoric. In other situations, however, serious resistance was met and authorities either negotiated, which sometimes led to the reduction of their demands or the complete cancellation of the project, or they used, with various levels of success, direct means to evict farmers. For example, whereas in most instances the head of the Nam Chun Nam Ko Watersheds Restoration Project and Khao Kho National Park negotiated with land owners and subdistrict authorities, he instead adopted an uncompromising and aggressive stance in regards to a small upper-watershed area formerly used by Hmong and lowlanders but now covered by a forest plantation. In this case, and perhaps in part without his approval, forest and military authorities have made use of death threats, warning shots, killing of cattle, destruction of houses and other property, ultimatum and verbal intimidation (Fieldwork 2007 & 2008). Based on available information and statistics, it appears most of the land seized so far in the study region was occupied by lowlanders and not ethnic minorities.13

Given the size of the land area officially affected by these interventions (Table 2), one could easily conclude that they largely explain the retreat of agriculture. However, interviews conducted with forest officials and former occupants reveal a more nuanced picture. In the case of two reforestation projects, officials or knowledgeable employees acknowledged that no more than 50% of the claimed reforested area was effectively or successfully planted. More importantly, in most cases of state confiscation studied an important portion of the agricultural land seized was already under secondary forests following land abandonment or long-term fallowing when the project or protected area was created. In theses instances, at best, state interventions rendered permanent a cessation of cultivation that was potentially temporary.

Land abandonment or long-term fallowing

During the 1980s and at least until 2007, the profitability of maize cultivation declined, while

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12 Most species planted, including teak, are non-indigenous to the region.

13 Space limitations do not allow an appropriate explanation of this counter-intuitive observation. For now, suffice is to say that lowlanders occupied the largest land areas in the hills and mountains and they were much more affected by the decline of the profitability of maize cultivation. This decline has had much local political repercussions (see next two sections). It should be noted that while important inequalities and biases were documented in the administrative process leading to land confiscation, the latter affected both lowlanders with little access to village and subdistrict authorities and Hmong.

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the risks involved in cultivation increased tremendously (Fieldwork, 2007 & 2008; Palmer, 1989; Rietmuller, 1988; Klai somboon et al., 1992). As a result, many decided to leave their fields uncultivated, first for one year and then for longer periods of time. This occurred mostly in hilly areas with little access to water and roads. Elsewhere, in particular in the Highlands, replacement agricultural land uses have been found and supported, often with the help of the state and royal projects (ex: temperate fruit trees, cabbage and ginger). Abandonment was typically followed by natural re-vegetation of the site, often leading to secondary forest re-growth dominated by bamboo and deciduous trees of generally low stature (see Annex). The cessation of agricultural activities resulted in different landscapes. In the 1970s, the low hills adjacent and lying east of Lom Kao town were completely cultivated (Fieldwork 2007 & 2008; aerial photographs, 1:15 000, 1975). At the time of study, these hills were covered by a complex mosaic of small agricultural plots and secondary forests patches where the latter tended to occupy steeper areas. On the other hand, further east and closer to the Pasak River, secondary forests formed larger contiguous patches covering both (relatively) flat and steep areas.

In a manner similar to what is described by Benchaphun Ekasingh et al. (2001 & 2004) and Piti Kantangkul (2004), during the last two decades the costs of production in maize cultivation increased much more rapidly then the output price and productivity, thus creating a price-cost squeeze. As seen in Figure 4, maize farm-gate prices expressed in constant value first declined at the turn of the 1970s and then remained relatively constant until 2007 but with sizeable inter-year fluctuations. In regards to the costs of production, several factors and processes can explain their rapid augmentation. First, expenditures for labour increased rapidly during the 1980s and 1990s. This is due to (1) the progressive replacement of exchange labour arrangements by wage labour and (2) the impressive increase of daily wages from the late 1980s onward (Figure 5). Several changes of techniques of production can be linked to the need to reduce labour costs, including the use of herbicides and, since the early 2000s, of mechanical seeders. Also, in most areas under maize cultivation except in the lowland and intermountain valley bottoms, land fertility declined markedly over the years (Fieldwork, 2007 & 2008; Palmer, 1989). This led to the need to use growing amounts of fertilizers, and contributed to the rapid adoption of costly hybrid maize seeds in the 1990s. The growth of production costs entailed that greater amounts had to be borrowed. This meant that the usual risks involved in maize cultivation (dry spells, diseases, price fluctuations) incurred much more significant debts. In a context where wage labour employment and its guarantied income was easily available in or outside the region and where the intensification of agriculture in the lowlands (and parts of the highlands) was promising high and relatively safe returns, many local farmers decided that upland rainfed maize cultivation was not worth the risks. This often occurred after farmers had experienced repeated years of negative or barely positive gross margins and had experimented with different alternative techniques of production and sometimes crops.

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14 However, over the last 2 years, the price of maize in the study region has increased significantly and this could render maize farming much more profitable. In fact, in early 2008, many former maize farmers were highly optimistic in their capacity to make a profit this time and were attempting to reclaim abandoned fields. Local middlemen and merchants however were showing less enthusiasm and were keen to point out that the price of inputs, fertilizers in particular, have increased much more rapidly during the same period. It is thus difficult to judge if the process of abandonment described in this section will proceed in the future or be (partly) reversed.

15 Tree species found in abandoned plots include pradu (Pterocarpus macrocarpus), sadao (Azadirachta indica), mai daeng (Xyliya xylocarpa) krathin yak (Leucaena leucocephala) and mai makha (Afzelia xylocarpa). Botanical names were obtained by comparing common Thai or Lao lom names given by villagers or forest officials to tree lists comprised in a RFD database and in Garner et al., (2000).
Figure 4. Farm gate maize prices (constant value) at the national level and in the Upper Phetchabun Region, 1966-2007.

Notes. Constant price calculated based on World Development Indicators (online edition) consumer price index (CPI), with 2000 as the reference year. CPI value for 2007 was unavailable. It is assumed that no inflation occurred between 2006 and mid-2007. 1US$ = 32,5 Thai Bath in May 2008.

Figure 5. Evolution of agricultural wage labor in the Upper Phetchabun region, constant 2000 value.

Notes: Up until the mid-1980s, maize cultivation was usually done using exchange labor, thus labor cash costs were often nil. Large landowners however had been using wage labor from Isan for several years (Rietmueller 1988). Constant price calculated based on World Development Indicators (online edition) consumer price index.
Agricultural land retreat and changing farming conditions

In the study region, the retreat of agricultural lands profoundly changed the political and economic farming conditions for the remaining farmers. In most cases studied, agricultural land losses, in itself, could be seen as encouraging a further retreat of agriculture. Two examples can be given. First, in relatively remote and isolated zones in the east and west of Lom Kao district, the abandonment of farm-land by a first group of farmers was reported to have increased the costs of production for the remaining farmers because (1) the burden of road repairs had to be divided among fewer individuals and (2) middlemen increased the transportation costs as the volume of production that could be bought in the farming zone was reduced and/or the roads became more hazardous. At the same time, land abandonment also increased the abundance and the difficulty of controlling pests (mostly wild pigs). In the end, this further increased the price-cost squeeze facing the remaining farmers.

Second, in regards to the political context of farming and as previously mentioned, it appears the long-term falling of agricultural lands (and the price-cost squeeze which explains it) has made it easier for forest agencies to increase their level of control over the utilisation of legal forestland and permanently seize former agricultural land. In theory, forest agencies can evict any farmer illegally occupying legal forestland. It can be argued however that in practice evictions are only implemented in specific situations, such as when the risk and level of violence anticipated is low, the population affected minimal, the political impact for the government positive or negligible and/or the benefits for forest officials and authorities are high. In this context, the voluntary cessation of cultivation has had many positive impacts for forest agencies. First, for a new protected area to be declared, forest authorities must show that the land has value for conservation. As secondary forests replaced maize fields, forest officials were able to claim that these areas had such value and could be targeted for conservation. Second, to avoid the risks involved in evicting farmers from land they are still cultivating, forest officials now focus on land fellowed for several years and thus covered by secondary forests. In these cases only are they enforcing, although still with relative strictness, a ban on forest clearings. By doing so, forest officials have generally managed to avoid confronting entire communities for the proportion of villagers affected by this ban is kept at a minimum.16 Finally, as the profitability of rainfed maize farming at mid and high elevation declined, a growing number of lowlanders, and especially the politically influential landed elite, lost interest in their upland fields and instead devoted their attention to other agricultural or non-agricultural sources of revenues. In some cases, conflicts erupted within an administrative village or subdistrict and opposed households dependent on upstream maize farming to those focusing on paddy fields agricultural intensification, which requires better irrigation. As a result, the cohesiveness and capacity of mobilisation of lowlanders threatened by land eviction was profoundly reduced, as was their ability to convince elected representatives at the village, subdistrict or constituency level authorities to engage in a fight against foresters.

Conclusion

During the 1990s and early 2000s, total agricultural areas in Thailand have declined. In this paper, I have identified three important types of agricultural retreat and discussed their characteristics and context of emergence based on secondary sources and fieldwork conducted in northern Phetchabun province. The typology proposed in this paper is not perfect and should be tested and further refined. Indeed, it is possible that it does not cover all forms of decline of agricultural lands in Thailand. Moreover, and as discussed previously, the three proximate causes

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16 Exceptions to this strategy however exist, as illustrated by the current conflict which pits Hmong and lowland villagers against the Nam Chun Nam Ko Watersheds Restoration Project and the creation of Khao Kho National Park.
(or types) identified are not mutually exclusive. In fact, they can be hard to separate on the ground and more than one proximate cause can play out in a given situation.

Nevertheless, the typology and the results presented in this paper are important in many regards. First of all, they point towards the existence in Thailand of agricultural land abandonment, a proximate cause formerly largely unknown and which deserves further attention. Second, the typology could be used in the future as a basis for the construction of models or theories explaining the location and existence of agricultural retreat as each type of agricultural retreat tend to be associated with different geographical, social, economic and political contexts. As such, models or theories should incorporate the diverse potential causal pathways leading to agricultural land retreat. In a similar vein, regional or spatial generalization could be made based on the typology. For example, the three types of agricultural retreat tend to have different spatial characteristics: while the decision leading to land conversion and abandonment affect one field (or part of a field) at a time, one decision to confiscate land can affect several farmholdings an even an entire valley or hill. Also, it could be argued that land conversion tend to dominate in lowland areas close to major urban centres and communication routes, whereas land confiscations and land abandonment are the dominant types in hilly or mountainous areas with low land values. Further work should however be conducted in order to validate or render more sophisticated such relatively simplistic generalizations.

Third, the decline of agricultural lands can have highly different social and environmental impacts or implications. The typology can help make sense of the different possible outcomes and thus judge when and how this decline should be managed. As mentioned earlier, land conversion is the result of a voluntary decision and it motivated by the desire of the land user to increase the benefits from the use the land. Thus, this type of agricultural retreat is likely to be perceived, at least by land users, as a positive and rational change. On the other hand, the two other types of agricultural land decline are more likely to be perceived negatively by land users: land confiscation is intrinsically involuntary and at times implemented with violence, whereas land abandonment was typically described in the study region as a heart-breaking decision rendered necessary by the deterioration of the economic and environmental farming conditions. In other words, and bearing in mind exceptions, people appears to be pulling themselves out of agriculture and into more lucrative land uses in the first type of agricultural decline, whereas they are pushed off the land in the second and third type of agricultural retreat. Based on the observations made in the case study region, the environmental consequences of the tree types agricultural land retreat could also be generally distinct as the resulting land covers have been typically built-up land and economic tree plantations in the case of land conversion, economic or non-economic tree plantations and infrastructures in the case of land confiscation, and naturally-regenerating secondary forests in the case of agricultural land abandonment. Moreover, contrary to land confiscations and land conversions, land abandonment can be relatively easily reversed if market conditions change and land use restrictions are absent (i.e. if abandonment is not followed by de facto land confiscation).

Lastly, the results of this paper are important as they reveal the many deep changes transforming Thailand, as well the serious problems and challenges facing a great number of small-scale farmers. Indeed, the main processes directly involved in the retreat of agriculture in Phetchabun — increasingly uncertain and marginal profitability of agricultural production, greater state interventions in upper watersheds, and higher income expectations — have affected during the 1990s and early 2000s all regions of the country, albeit to different degrees and with uneven consequences. Many politicians, journalists, academics and influential figures in Thailand have been quick to condemn recent policies financially supporting farmers and rural households as ‘populist’ and dangerous for the
nation’s well-being. In doing so, they have failed, I believe, to notice the seriousness of the problems that have affected farmers during the 1990s and early 2000s and to adequately identify their causes. Some observers might argue that the recent increase of the price of rice, maize, cassava and other crops will boost farms profitability and thus ease farming problems. This is of course only possible if (1) the increase of the output price is not compensated by similar or higher rises of input costs and (2) contrary to OECD/FAO predictions (Anonymous, 2008b), agricultural prices remain high for several years and do not resume their long-term decline. As such, it appears risky to count on the recent food crisis to solve current farming problems. Perhaps in fact it is time to re-evaluate the capacity of the traditional Thai conservative approach to agricultural policy formulation, which relies on a self-help strategy as well as ad hoc and incompressive projects, to help manage the challenges of farming in an economy dominated by the industrial and services sectors.

Will the decline of agricultural land persist in the future? To what extent and in what ways could it be affected by changing agricultural, commercial and forest policies? The answer to these questions must be based, I believe, on the recognition that the retreat of agriculture is the result of different proximate causes (the three types identified in this paper), each caused by a different set of processes and factors which under certain circumstances can interact together in a self-reinforcing manner. The answer will also need to take into account the growing direct involvement of wealthy urban investors in landownership and agriculture at the ‘agriculture-forest interface’ (cf. Fisher & Hirsch 2008). Since 2006 in northern Phetchabun, many former maize fields covered by secondary forests and located within non-demarcated legal forestland have been cleared and reclaimed mainly for rubber cultivation. By far, most of the clearings were financed and organized by members of the local elite, urban middle and upper class and rubber farmers from the South; all want to capitalize on increased rubber prices and speculation opportunities. These investors are subject to different constraints and opportunities, in particular in regards to their capacity to buy protection from corrupt officials. It is far too soon to evaluate how this gentrification of land ownership will affect rural landscapes and livelihoods.

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The Retreat of Agricultural Lands in Thailand


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Plate (a). Wage labourers weeding a recently-planted *Eucalyptus camaldulensis* plantation (right) located next to a teak plantation (left) and on former maize fields, Lom Sak district.
Plates (b) and (c). (b) Non-Economic eucalyptus plantation (~13 yrs old), Khao Kho district, Khao Kho Forest Development Project; (c) Former maize fields (uncultivated since the early-mid 1990s), Lom Sak District, piedmont of the Western Phetchabun Range.
Plate (d). Secondary forests growing on former rainfed maize fields in the surroundings of a village in the hills northeast of Lom Kao town, Lom Kao district. Since ~ 2006, abandoned fields in the area have been reclaimed and cleared to cultivate maize, rubber or establish teak plantations. Note that steeper areas have not been reclaimed (yet?).

Plate (e). Former maize field covered by bamboo-dominated secondary forest (right) to be cleared and planted in rubber (as in left), located on non-demarcated legal forests in the hills east of Lom Kao town, Lom Kao district, case under investigation by the Department of Special Investigation since 2006.