

Self-sufficiency or surplus: Conflicting local and national rural development goals in Cambodia

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Abstract

Cambodia is currently experiencing profound processes of rural change, driven by an emerging trend of large-scale land deals. This article discusses potential future pathways by analyzing two contrasting visions and realities of land use: the aim of the governmental elites to foster surplus-producing rural areas for overall economic growth, employment creation and ultimately poverty reduction, and the attempts of smallholders to maintain and create livelihoods based on largely self-sufficient rural systems. Based on the MuSIASEM approach, the rural economy of Cambodia and different rural system types are analyzed by looking at their metabolic pattern in terms of land use, human activity, and produced and consumed flows. The analysis shows that the pathways of self-sufficiency and surplus production are largely not compatible in the long term. Cambodia's rural labor force is expected to increase enormously over the next decades, while available land for the smallholder sector has become scarce due to the granting of Economic Land Concessions (ELC). Consequently, acceleration in rural–urban migration may be expected, accompanied by a transition from self-employed smallholders to employment-dependent laborers. If the ELC system achieves to turn the reserved land into viable agribusinesses, it might enable added value creation; however, it does not bring substantial amounts of employment opportunities to rural areas. On the contrary, ELC have high opportunity costs in terms of rural livelihoods based on smallholder land uses and thus drive the marginalization of Cambodian smallholders.

JEL classification: Q15, Q57, R11, R14, J22

Keywords: Cambodia, Land grabbing, Economic land concessions, Poverty reduction, Rural development

Introduction

"The government talks about poverty reduction, but what they are really trying to do is to get rid of the poor. They destroy us by taking our forested land, 70% of the population has to disappear, so that 30% can live on" (Villager, affected by an Economic Land Concession in Cambodia (Licadho, 2009)).

Within the recent years, Cambodia has experienced profound processes of rural change, associated to the large granting of land concessions for economic purposes. While rural smallholders have been striving to achieve and maintain livelihoods based on largely self-sufficient smallholder agriculture (cf. Leuprecht, 2004), the governmental elite is

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seeking the establishment of large-scale industrialized agriculture capable of providing surplus flows for overall economic growth, employment creation and ultimately poverty reduction (RGC, 2004, 2008). This paper discusses impacts, constraints and potential future consequences of these contrasting land use paths in Cambodia.

A variety of studies have discussed the recent changes in the rural sector of Southeast Asia (SEA) and Cambodia. Hall et al. (2011) identified and discussed four powers of exclusion that have shaped land use and land users in SEA. Borras and Franco (2011) analyzed the political dynamics of land grabbing in SEA with a particular focus on the role of the European Union. Furthermore, a number of reports from development organizations (Leuprecht, 2004; OHCHR, 2007) and NGOs (e.g., Licadho, 2009), critically discussed the negative impacts of Cambodia's land management strategy on human rights and human development in rural areas. While these studies have addressed important aspects of the political and social dimension of rural change in Cambodia and Southeast Asia, there is further need for a quantitative assessment of the current processes of rural change in order to discuss potential future pathways of land use and rural livelihoods in Cambodia.

Within this context, this article analyzes, based on the MuSIASEM approach (Multi-Scale Integrated Analysis of Societal and Ecosystem Metabolism) applied to rural systems (Giampietro, 2003), patterns of land use and human activity of the rural economy of Cambodia and of different rural system types. The constraints, impacts and potential future consequences of the governmental Economic Land Concession (ELC) system are addressed and the incompatibility of different development visions and realities, such as expressed by a villager in the introductory statement, are discussed. Although the geographic focus of this paper is Cambodia, we further contribute to the more general debates on agricultural and rural development that have recently emerged with the global land grab (Borras et al., 2011; Scheidel and Sorman, 2012; von Braun and Meinzen-Dick, 2009; Zoomers, 2010). Hence, we address currently debated issues in land use and rural development studies, i.e., the potential contribution of large-scale land deals to rural employment (Li, 2011; Vermeulen and Cotula, 2010); the perception that the global South inhabits large reserves of 'idle' agricultural land (Borras and Franco, 2010, 2011; Cotula et al., 2009); the role of domestic actors in the land grab phenomenon (Deininger, 2011; Hall, 2011; Siciliano, 2012); and the opportunity costs of large-scale agribusiness in terms of poverty reduction and livelihood opportunities based on smallholder land use (De Schutter, 2011).

The paper proceeds as follows: the next section provides background information on Cambodia, its development policy and the ELC system. The 'Methodological framework and data' section introduces the methods and data, on which basis the 'The rural economy of Cambodia: land use, demography and human activity' section analyzes potential challenges and constraints for ELC in terms of land use, demography and human activity. The 'The employment potential of Economic Land Concessions (ELC)' section discussed rural employment issues related to ELC, and highlights the opportunity costs in terms of livelihood opportunities from smallholder land uses. Finally, the 'Self-sufficiency or surplus: conflicting local and national rural development goals' section illustrates the fundamental differences between self-sufficient and surplus-producing rural systems and the paper concludes in the 'Conclusion' section on the existence of conflicting development visions and realities as drivers of rural change.

Background—land users and land use governance in Cambodia

During the last 50 years, Cambodia experienced an eventful history that drastically affected rural and urban populations as well as their way to make use of their central natural resource: land. Ruled under six different regimes and constitutions that were accompanied by war, civil war and the devastating Khmer Rouge rule, Cambodia's population saw growth and decline, massive dislocation between cities and rural areas and constantly changing rules under which they were allowed to use the land (Fig. 1). It took until 1993 to establish the current Kingdom of Cambodia as a constitutional monarchy with a democratically elected government, which has pursued the development of the country based on a market oriented economy (Chandler, 2008; Leuprecht, 2004).

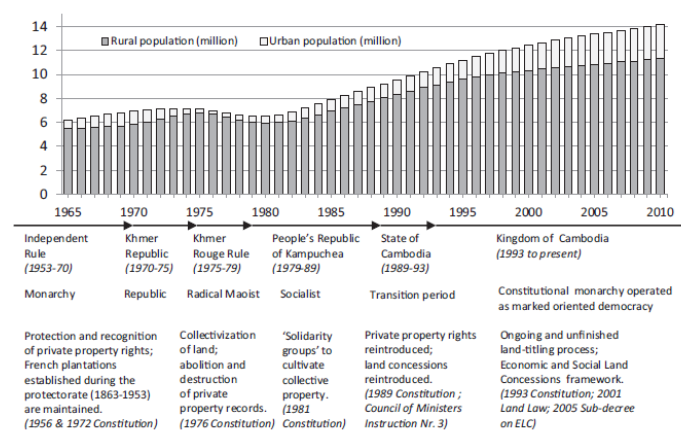


Fig. 1. Population dynamics, key historic periods and land use governance in Cambodia since 1965. Source: adapted from Chandler (2008), FAO (2011), Russel (1997) and Thiel (2010).

Nowadays, Cambodia has slowly recovered from its recent history, however faces current socio-economic challenges. Despite of rapid economic growth of almost 10% Gross Domestic Product (GDP) growth during 1998–2008 and 7.1% in 2011, the per-capita GDP remains low at 897 current US \$ (2011) and poverty headcount ratios in terms of income over 2 dollars-a-day (PPP) were at 56% in 2007 (World Bank, 2010a). Rural communities further identified via participatory poverty assessments a variety of other major concerns. Among them are food insecurity, lacking assets to pay health costs, limited access to education, poor physical infrastructure and particularly increased vulnerability due to lacking access to land and community natural resources, driven by growing demographic pressure and increasing competition over natural resources from outside actors (ADB, 2001; Ballard et al., 2007). Although population growth has slowed down from an annual rate of 4.8% in 1984 to 1.2% in 2011 (World Bank, 2010a), the total population more than doubled since 1980, with a growing urban share (Fig. 1), leading to increasing resource needs exerted on the country from both the rural and the urban population. Total external debt outstanding was in 2010 with 27.6% of GDP relatively low and remained constant over the last years in relative terms (IMF, 2012), however, more than doubled in absolute terms since the establishment of the Kingdom of Cambodia in 1993 (World Bank, 2010a), requiring an economy capable of generating surplus flows for external trade.

Cambodia has largely a rural economy, with 80% of the population living in rural areas and around 75% of the active labor force working in agriculture, forestry, hunting and

fishing. Despite of this large share, the agricultural GDP accounted in 2007 only for 26.7% of the total GDP (constant 2000 prices), of which the service sector was the largest contributor (38.3%), followed by industry with 28% (NIS, 2008b). In consideration of a potentially higher contribution of the rural sector to economic growth and poverty reduction, the *Rectangular Strategy for Growth, Employment, Equity and Efficiency in Cambodia* of the Royal Government of Cambodia (RGC) has set agriculture as a center stone of its overall development policy:

*“Indeed it is necessary to enhance and broaden the base for economic growth by opening and utilizing the **potentials in other sectors, especially in the high-potential agricultural and agroindustrial sectors**, so that the nation will obtain larger positive windfall gains in the **improvement of the livelihoods of the rural people**. The agriculture policy of the Royal Government is to **improve agricultural productivity and diversification, thereby enabling the agriculture sector to serve as the dynamic driving force for economic growth and poverty reduction**”* (RGC, 2004: 13, emphasis added).

In order to promote such agricultural development, Cambodia was, and still is, in the need of a proper land administration system that informs well about land use, land users and land use rights (Thiel, 2010). Land use governance has experienced fundamental changes in Cambodia, ranging from private property rights and concession systems during the French protectorate (1863–1953) and the subsequent regimes, over a complete collectivization under the Khmer Rouge regime (1975–1979), to the reintroduction of private property and land concessions in 1989 under the State of Cambodia (Fig. 1). After this, smallholders were encouraged to apply for formal land titles to agricultural and residential land, but the land administration was unable to deal with more than 4 million applications lodged, resulting that less than 10% of them were processed at the end of 1995 (Russel, 1997). The current land-titling process results in 250,000–300,000 new land titles annually; however, at least 12 million parcels remain still unregistered (Thiel, 2010). In addition to the land-titling system for smallholders, a system of Social Land Concessions (SLC) was established (Land Law 2001), aimed at providing land for landless, land poor people and other disadvantaged groups for subsistence and family farming (RGC, 2003) (Table 1).

Table 1
Social and Economic Land Concessions: a land management for sufficiency and surplus production.

	Social Land Concessions (SLC)	Economic Land Concessions (ELC)
Socio-economic purpose	Sufficiency oriented	Surplus oriented
Duration	No time restriction	Restricted to max. 99 years
Area	Max. 1250 m ² for residential and max. 2 ha for agricultural use	Max. 10,000 ha for agricultural and industrial use
Property and use rights	Can be transformed into private property	Cannot be transformed into private property

Source: adapted from Thiel (2010).

However, for the development of agriculture as engine for economic growth, a land concession system was needed that allowed for the generation of large surplus flows for the economy; both in terms of commodities produced and tax fees. Since 1989, concessional land larger than 5 ha could be granted to private companies for crop production “to support the national economy” (Russel, 1997). Despite of the fundamental lack of information regarding land use and land registration, agricultural concessions were generously awarded, leading to increasing land conflicts and a shortage of arable land at the end of the 1990s (Leuprecht, 2004). The 1992 Land Law failed to regulate land concession and although the new constitution of the Kingdom of

Cambodia was promulgated in 1993, it took almost ten years to establish the new 2001 Land Law that would regulate concessional land. Finally, in 2005, the RGC (2005) issued the current sub-decree on Economic Land Concession (ELC) with the final objective to determine the procedures and criteria of revising concessions prior to the 2001 Land Law and granting new ELC. According to the sub-decree, among the main purposes of ELC is the promotion of agro-industries, large projects investments, the creation of employment in rural areas and fiscal revenues². And according to “*Invest in Cambodia*”, a governmentally supported investors magazine: “*For investors looking to grow and process crops, Cambodia is an ideal location with plenty of land available for agricultural concessions*”³. The following sections of this article will provide and assessment of the constraints, impacts and potential future consequences of this land use policy.

Methodological framework and data

In order to assess constraints and impacts of the ELC system, it is necessary to get an understanding of the current rural economy of Cambodia (the ‘The rural economy of Cambodia: land use, demography and human activity’ section) as well as to analyze the performance of the proposed concessions systems, i.e., industrialized large-scale plantations, in comparison to common current rural systems, i.e., smallholder agriculture (‘The employment potential of Economic Land Concessions (ELC) and Self-sufficiency or surplus: conflicting local and national rural development goals’ sections). To do so, this paper uses core concepts from the MuSIASEM approach (Multi-Scale Integrated Analysis of Societal and Ecosystem Metabolism) applied to rural systems analysis (Giampietro, 2003; Gomiero and Giampietro, 2001; Serrano and Giampietro, 2009; Siciliano, 2012). In particular, we draw on the concepts of ‘societal metabolism’, ‘rural system types’ and ‘impredicative loop analysis’.

The societal metabolism approach looks at socio-ecological systems by analyzing the processes of material and energy transformation required to sustain a given identity and to perform structural and functional activities (Giampietro et al., 2009, 2011). In order to formalize the socio-metabolic process in terms of *what the system is* and *what the system does*, we employ the concepts of ‘funds’ and ‘flows’, developed by Georgescu-Roegen (1971). ‘Funds’ refer to those elements of the system that are maintained and unchanged during a production process (hence, the identity of the system), while providing crucial services for the process to happen. ‘Flows’, refer to those elements that enter but do not exit the production process (i.e., input-flows), or exit, but do not enter the production process in the same state (i.e., output-flows). Flows hence are transformed by the funds during the socio-metabolic process. Following the MuSIASEM approach, we consider land use and human activity among the most crucial funds of rural systems and look at flows of commodity production and consumption, and their monetary value. Thus, we look at patterns of land use and land cover to represent the biophysical identity of rural systems and analyze patterns of human activity (i.e., time allocated to sleeping, eating, on-farm and off-farm work, education and leisure) to represent the socio-cultural identity of rural systems. Sustainability and lasting rural poverty alleviation ultimately is about maintaining the integrity of the

² Concession rental fees range from 0 to 10\$/ha/yr, depending on the quality and location of concession land (MAFF, 2011).

³ <http://www.investincambodia.com/agriculture.htm> (accessed on 04.04.2011). These words were also used by other governmental bodies to promote ELC; e.g., <http://www.cambodianembassy.org.uk/> (accessed on 01.03.2012).

funds and their transformative services, in order to sustain a desired socio-ecological system (Scheidel, 2013). For land in production, this means maintaining the productive properties and for land not in production, it means maintaining critical ecosystem functions that serve as ecological overhead. For human activity, it means to guarantee survival (i.e., maintaining the physiological overhead in terms of sleeping, eating, personal care, care of elderly and children) as well as maintaining a valued socio-cultural identity (i.e., the social overhead: patterns of leisure, education, social institutions) (Giampietro, 2003). For the assessment of the current situation of rural Cambodia in 'The rural economy of Cambodia: land use, demography and human activity' section, we thus account for both productive and non-productive activities of the population, as well as for productive and non-productive land uses.

In order to be able to compare the performance of a rural system operated under concessions to those operated by smallholders ('The employment potential of Economic Land Concessions (ELC) and Self-sufficiency or surplus: conflicting local and national rural development goals' sections), the complexity and diversity of rural life needs to be simplified in accordance with the purpose of analysis. We use the concept of rural system types in order to deal with rural complexity (Giampietro, 2003). With 'type', we refer to a general set of expected relations of funds and flows of rural systems, which provides relevant information to understand the particular 'instances' (i.e., realizations) of such types in real life. A simple example illustrates the type concept well: the transport types 'bicycle' and 'car' have millions of different realizations each, but the realizations share enough commonalities that allow discussing general aspects, i.e., what you can do with cars, and what you can do with bicycles. Based on the purpose of this paper, we define a simple typology that consists of two rural systems types: (a) the average Cambodian smallholder village, which represents a general pattern of the current rural Cambodia and (b) industrialized, large-scale agribusiness as pursued to be developed with the ELC system. The performance of both systems in terms of production and reproduction patterns will be compared using an impredicative loop analysis (ILA) (see Giampietro, 2003 for a detailed description). Briefly, an ILA is a methodological tool to provide a representation of the linkages between selected fund and flow elements. We use an ILA in 'Self-sufficiency or surplus: conflicting local and national rural development goals' section to analyze the relations between the land in production, the flows produced, the required labor, and the total amount of human activity (labor plus dependent part) that is associated to and sustained by each rural system type. The smallholder system type will be used to discuss the general performance of the current rural reality, while the ELC system type is used to discuss the urban and governmental vision of rural systems.

All data employed in the paper come from various secondary sources. Statistical data are generally taken from the Cambodian National Institute of Statistics (NIS) and include the Cambodia Socio-Economic Survey 2009 (NIS, 2010), the General Population Census (NIS, 2008a), the Statistical Yearbook of Cambodia (NIS, 2008b) and the Time Use Survey (NIS, 2007). Currently, no national agricultural census is available that informs coherently about land holdings, land uses and production data; hence they need to be integrated from various sources. While we take ELC data from the Ministry of Agriculture, Forestry and Fisheries (MAFF, 2011), we use the Cambodian Agrarian Structure Study (ACI, 2005) as source for average industrial production data and average smallholder production data. The average smallholder village type is calculated based on average statistical data on demography, human

activity, land use and production for rural villages in Cambodia. Finally, although the data come from secondary sources, the presented research is inspired by a three months research stay in Cambodia during 2011, which included visits and interviews to various development organizations, NGOs, farmers' associations, governmental workers and farmers.

The rural economy of Cambodia: land use, demography and human activity

This section presents land use, demography and human activity in Cambodia in order to understand the current situation of rural Cambodia in terms of land availability and demographic pressure as well as to identify constraints, impacts and future consequences of the ELC system. Fig. 2 puts SEA in a global context by comparing the region with other world regions in terms of used land potential and inhabitants per hectare of land with rain-fed cultivation potential as a measure of demographic pressure on agricultural land. The axes cross at world average.

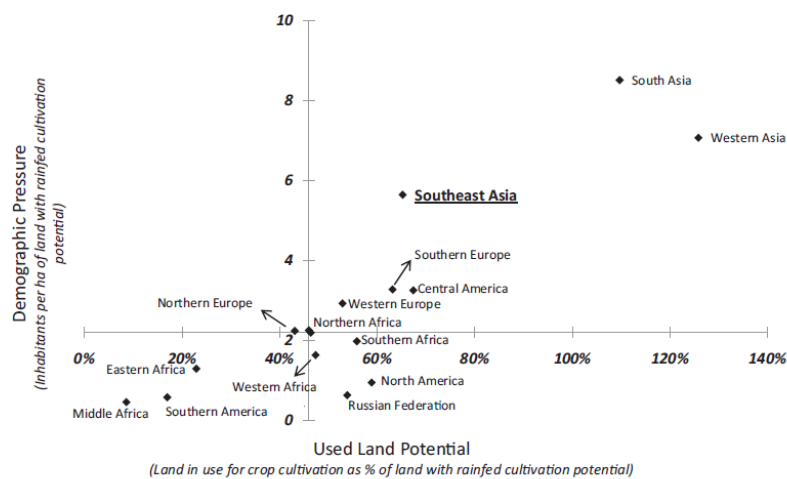


Fig. 2. Demographic pressure on cultivable land and used land potential across world regions in the year 2008. Source: own calculation, based on data from FAO (2011) and Fischer et al. (2002). Note: the axes cross at world average.

It can be seen, that SEA is among the world regions with the highest demographic pressure on cultivable land resources and has a large share of its cultivable land potential already used. Thus, on a regional level, SEA faces significant constraints of agricultural expansion. At the national level in terms of inhabitants per total land area, Cambodia's population density has grown rapidly from 36 hab/km² in 1980 to 80 hab/km² in 2010; and nowadays remains at a medium level between neighboring Lao PDR (27 hab/km²), and Thailand (135 hab/km²) and Vietnam (280 hab/km²) (2010 values, from World Bank, 2010a). A closer look on land use, population dynamics and human activity will help to assess if, and under which conditions, Cambodia has "*plenty of land available for agricultural concessions*", as mentioned by official propaganda (Royal Embassy of Cambodia, 2011).

Land use in Cambodia

The calculation of a non-overlapping land use account for Cambodia is not straightforward, because statistical sources are not always up to date or may provide contradictory information. Moreover, land use categories that are theoretically exclusive overlap in practice; in particular, large parts of ELC and mining concessions reach into protected areas (ODC, 2012; Vrieze and Naren, 2012). Fig. 3 presents a rough approximation to land use in Cambodia, based on official data integrated from various

sources. Data on protected areas, shrub land and agricultural area under production are taken from NIS (2008b). Data on the built environment are adapted from ACI (2005). Data on the share of smallholder land for household consumption and cash crop production were estimated based on the proportion of agricultural output absorbed by household consumption, using a 65% share (Mund and Ngo, 2005)⁴. ELC data are taken from MAFF (2011) and forest concessions data from the Forestry Administration Cambodia (FA, 2012). Mining concessions are not presented in the figure because they largely overlap with other categories such as forests, protected areas and ELC (ODC, 2012) and no official data on the total expansion was found. Reports however indicate that mining concessions amount up to no less than 1.9 million ha (Vrieze and Naren, 2012).

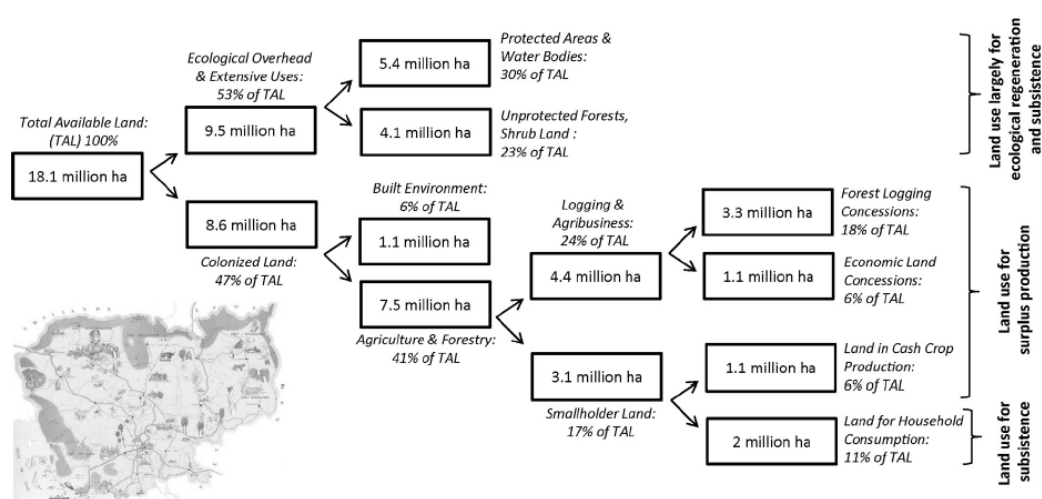


Fig. 3. An approximation to land use in Cambodia. Source: own elaboration, see text.

Fig. 3 shows that Total Available Land (TAL) in Cambodia amounts to 18.1 million ha. Protected areas, wildlife sanctuary and water bodies (including the Tonle Sap Lake) cover 30% of TAL and provide important ecosystem functions, thus serving as a crucial ‘ecological overhead’. Large parts of protected areas are moreover located in mountainous regions, making them badly suited for large-scale agriculture. Shrub land and unprotected forests not under logging concessions (23%) involve largely extensive uses that range from regeneration over community-forests to production not under concessions (FA, 2010). The remaining colonized land areas consists of the built environment (6%), and agriculture and forestry (41%). Within the last category, the total smallholder land, serving as a crucial livelihood asset for about 10.7 million rural people (NIS, 2008a), merely accounts for 17%, resulting in an average land use of less than 0.3 ha/cap. In comparison to the smallholder sector, 110 companies were awarded ELC and logging concession land, accounting for 24% of TAL (FA, 2012; MAFF, 2011).

In the last decade, the Cambodian Government was effective in granting ELC. Official data indicate a total concession area of 1.15 million ha in 2009, of which 956,690 ha

⁴ While Mund and Ngo estimated a subsistence share of 60–65% of total agricultural output, other estimates for subsistence rice consumption range from 50% to 77%; see e.g. Meyer et al. (2009).

have been validated and contracted with 85 companies (MAFF, 2011)⁵. Note that this is a rather conservative number, since MAFF data do not include concessions below 1000 ha. In fact, other calculations indicate a total of 2 million ha of ELC land (Vrieze and Naren, 2012), which is substantially higher. Based on the MAFF data, the majority of 5 the projects are dedicated to forestry (46%); followed by rubber (19%), oil palm (9%) and other crops such as sugarcane, jathropha and grains. Companies with Cambodian head offices dominate the sector, representing 61% of all concession land and 41% of all companies. This confirms that domestic actors play an important role in the recent land grab phenomenon (Deininger, 2011; Hall, 2011). Chinese companies are the second most important actors, accounting for 22% of total land size. The remaining 17% of concession land is divided between Vietnamese, American, Thai and other Asian companies (own calculations, based on MAFF, 2011).

On an aggregated level (Fig. 3), we can see that the current amount of concession land could only be granted due to the small land holdings of the rural population. Land for further ELC could currently only come from unprotected forests and shrub land, protected areas, or from (unregistered) smallholder land. However, total forest cover was already in 2008 with 10.5 million ha (NIS, 2008b) more than 2% below the Cambodian target of maintaining 60% (FA, 2010) and both ELC and mining concessions have already penetrated large parts of protected areas as well as unprotected forests (ODC, 2012). In addition to the quantity of available land, also certain qualities, such as productivity, suitability for large-scale agriculture and access to markets which usually characterize lowlands, matter and may drive investors' operations into areas already cultivated by smallholders (Cotula et al., 2009). In fact, the granting of ELC has widely affected Cambodian smallholders because of substantial problems regarding the allocation of concession land (Licadho, 2009). Due to the unfinished land-titling process, information on smallholder land is largely missing, resulting in problems of weak land governance (Thiel, 2010). It was estimated that since 2003, no less than 400,000 people have been affected by land disputes and forced evictions in only 12 out of 23 provinces (Vrieze and Naren, 2012).

Regarding the current land grab debate, the perception of vast available reserves of 'idle' or 'underutilized' land in the global South gained prominence among governments trying to attract investors as well as among investors seeking for opportunities and partly has its roots in technical land mapping based on satellite imagery (Borras and Franco, 2010, 2011; Cotula et al., 2009). However, it is not clear to which extent such 'idle' land accounts for the above mentioned qualities; to which degree it has been undervalued because production is not marketed (von Braun and Meinzen-Dick, 2009); if fallow land is included (Cotula et al., 2009); and to which degree land use fragmentation due to peasant settlements would interfere with large-scale concessions. As seen above, the large granting of ELC in Cambodia was only possible due to small land holdings of the rural population; through increasing land conflicts due an overlap of concessions and smallholder land; and through the penetration of concessions into (protected) ecosystems. All this supports that the perception of "*plenty of land for agricultural concessions*" needs to be reconsidered by the Cambodian government as well as within the land grab debate.

⁵ Note that 9 companies, accounting for 587,000 ha concession land, have contracted land above the legal limit of 10,000 ha and MAFF is currently trying to negotiate the reduction of concession land.

Demography and human activity in Cambodia

The long-term consequences of the rapidly declining land availability for the smallholder sector can be well understood by looking at demographics and human activity in Cambodia. Fig. 4 shows the demographic structure and patterns of human activity for the Cambodian population. While the population pyramid on the left of Fig. 4 shows the population decomposed in economically active and inactive persons, the pyramid on the right represents hours of human activity in terms of monetary income generating work, other productive work and non-productive work, calculated on the basis of NIS data (NIS, 2007, 2008a). Income generating activities were calculated by summing up work as employed, own business work, and the share of agricultural work invested in crops sold on the market. This share was calculated based on the proportion of agricultural output for household consumption (65%) and agricultural output for selling (35%) (Mund and Ngo, 2005). Other productive activities include agriculture work for household consumption (tending rice, tending other crops, tending animals, hunting, fishing), household work (fetching water, collecting firewood, construction, weaving, sewing, textile care, handicraft (not textile)) and housework (buying, cooking, washing, cleaning, care of children and elderly). Non-productive activities include all other activities, in particular education, sleeping, eating and drinking, personal care, travels and leisure time.

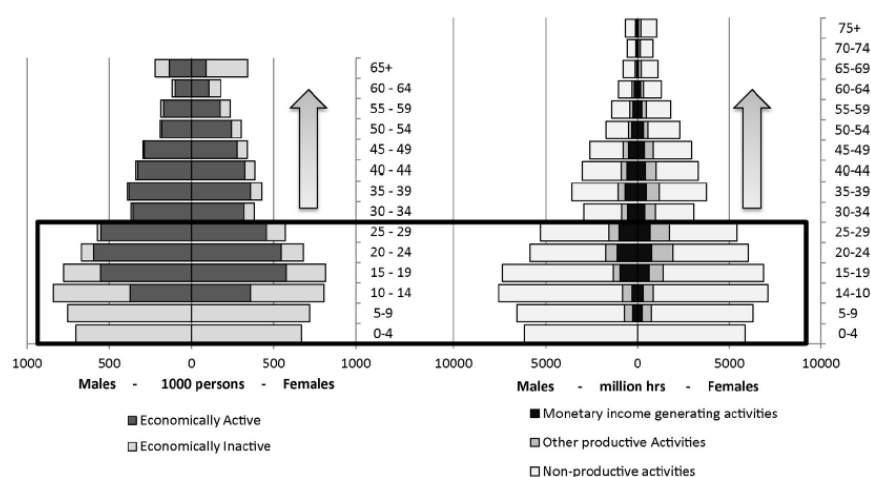


Fig. 4. Population structure of Cambodia (2008), decomposed for economically active/inactive persons (left pyramid) and human activity in terms of monetary income generating activities, other productive and non-productive activities (right pyramid). Source: own calculation, based on NIS (2007, 2008a,b). Note: persons below 4 years, for which no time use data were available, were accounted as spending all their time on personal care (sleeping, eating, drinking, and personal hygiene).

What becomes visible from both population pyramids is that Cambodia has an extremely young population. This relates back to the devastating rule of the Khmer Rouge regime during the 1970s, in which an estimated number of 2.2–2.8 million people lost their life (Heuveline, 1998). While the associated socio-demographic impacts are far-reaching (De Walque, 2006), particularly the cohorts aged above 30 years – that is born before the genocide – are vastly diminished. However, the cohorts below 30 years are rapidly growing, implying that an extremely high number of young people enter each year the labor force. According to NIS (2010), during 2004–2009 around 1.3 million persons entered the labor force, of which 1 million were located in rural areas. This corresponds to an overall increase in the labor force of 20% on the national level, and 22% in rural areas. Although such a rapid growing labor force has led to a low dependency ratio of merely 55 dependents per 100 workers (World Bank, 2010a) and a large share (60%) of economically active population (Fig. 4, left pyramid),

it represents a severe challenge for Cambodia to provide sufficient livelihoods opportunities.

The official unemployment rate of merely 0.7%, with 1.8% in Phnom Penh, 2.2% in other urban areas and 0.35% in rural areas (NIS, 2010) would suggest that Cambodia is doing well in terms of employed people (defined as all persons that worked at least one hour during the survey-reference-period of seven days, including unpaid family workers, NIS, 2010). However, a deeper analysis is required to reveal employment quality (i.e., underemployment) and employment source (i.e., self-employed subsistence work versus employment from other sectors). Regarding underemployment, many workers, especially from rural areas, are seeking additional employments in spite of long working hours, reflecting the low and seasonal earnings from agriculture (Morris, 2007). Regarding the employment source, an analysis of human activity, as proposed by the MuSIASEM approach, helps to get a more detailed understanding about the sources of livelihood opportunities in Cambodia. While the pyramid on the left of Fig. 4 shows a graphical representation of human activity in terms of monetary income generating, other productive and non-productive activities, Fig. 5 provides an aggregated approximation to human activity in the economy of Cambodia.

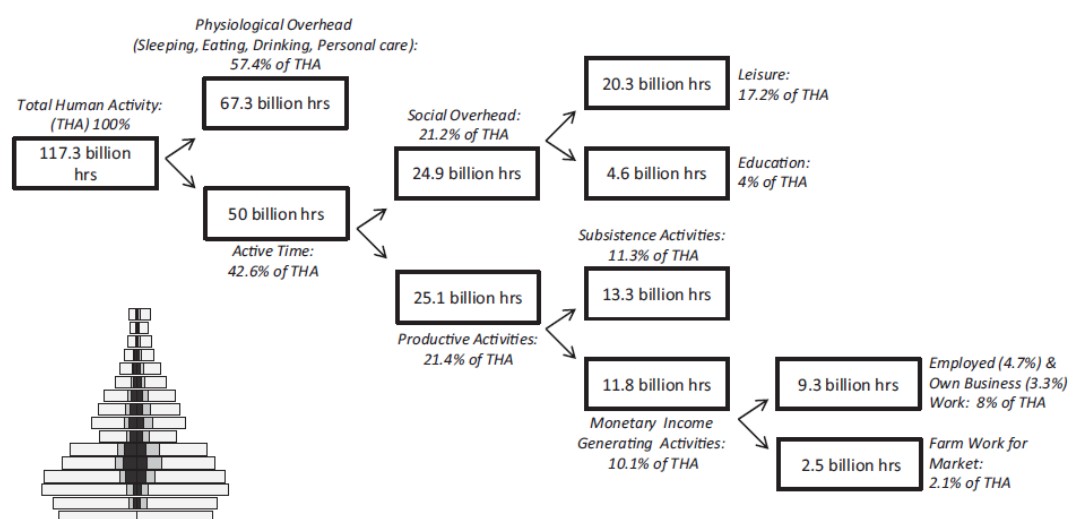


Fig. 5. Human activity in Cambodia. Source: own calculation, based on NIS (2008a,b, 2007).

Cambodia's Total Human Activity (THA) is composed of a total time budget of 117.3 billion hrs (population \times 24 h \times 365days), of which a generous share of 57% is dedicated as physiological overhead in terms of sleeping, eating and personal care. From the remaining potentially active time, around 21% of THA is dedicated to productive activities, which are further split into subsistence activities (11.3% of THA), employed work (4.7% of THA), own business work (3.3%) and farm work for the market (2.1% of THA) (Fig. 5). A land-time-budget-analysis from neighboring Lao PDR (Grünbühel and Schandl, 2005) shows a similar pattern, however with a larger share of subsistence activities (25% of THA). Such a pattern of human activity can be understood as a pattern of a largely agrarian, non-industrialized economy, in which a large share of productive activity is dedicated to the agricultural sector, in particular to subsistence activities. On an aggregated national level, such as presented in Fig. 5, subsistence activities together with farm work for the market account for 63% of all productive activities (in terms of hours of work). This implies that livelihood activities

outside the agricultural sector, including urban areas such as Phnom Penh, account only for 37% of total livelihood activities in Cambodia. If we account only for rural areas, subsistence activities together with farm work for the market, make up 68% of all livelihood activities (calculations based on NIS, 2007, 2008a).

In summary, what we can see is that two thirds of the livelihood activities come from subsistence activities and ‘self-employed’ farm work for the market. These livelihood activities are however based on very small land holdings (see the ‘Land use in Cambodia’ section) that generally do not allow for large incomes or for sharing with the next generation. Hence, in order to provide livelihood opportunities for the growing rural population, people that enter the labor force will need either land for subsistence, or jobs outside the ‘self-employed’ smallholder sector. Yet, while the rural labor force is growing rapidly, land availability has declined drastically due to ELCs. This is putting enormous pressure on the subsistence economy and forcing young Cambodians to seek livelihood opportunities outside the smallholder sector. Thus, it can be expected that within the next decades, Cambodia’s rural sector will experience a fundamental change from an economy based on a ‘self-employed’ peasantry, toward an economy based on employment-dependent laborers, suggesting acceleration in rural–urban migration. Such a transition happened in many industrialized countries; however, there is a crucial difference in the underlying driving forces. In many industrialized countries of the global North, land was left without farmers due to the availability of other livelihood opportunities in other sectors. In Cambodia, farmers are left without land and thus are forced to seek jobs in other sectors.

The employment potential of Economic Land Concessions (ELC)

We turn now to discuss if the ELC system can provide the promised and needed employment in rural areas. According to article 3 of the ELC sub-decree, among the main purposes for which ELC can be granted is: *“To increase employment in rural areas within a framework of intensification and diversification of livelihood opportunities and within a framework of natural resource management based on appropriate ecological system”* (sic, RGC, 2005).

The majority of the ELC projects have not yet entered in a productive state and only some started with preparative activities such as land clearing, while even less started to actually plant crops (MAFF, 2011). Thus, rather than to assess the *actual employment* provided, it makes more sense to provide a discussion on the *employment potential* of the ELC system for rural areas as well as to point out potential problems that will need to be addressed by Cambodian policy makers. It is important to note that along the life-cycle of the obtained products from both smallholder and ELC systems also further jobs are associated in urban areas, such as through the processing, trade and retail sector. Since the ELC policy focuses on employment in rural areas, we limit our quantitative assessment to the job opportunities in rural areas that are directly related to the proposed agribusinesses.

To do so, we use general estimates on jobs/ha for different industrial crops from the recent World Bank (2010b) report ‘Rising global interest in farmland’ in order to come up with a rough assessment of the employment potential of ELC (Table 2). Table 2 indicates that although forestry accounts for most ELC projects in terms of area, it has quite a low job potential. ELC projects for rubber plantations are the second largest group in terms of areal expansion and, being labor-intensive, have the highest job

potential of 420 jobs/1000 ha This is consistent with data from private rubber plantations in Kampong Chan province, that suggest 400/jobs/ha during the most labor-intensive production phase (year 6–29 of production; calculations based on [ACI \(2005\)](#), considering 300 workdays/year as one ‘job’). The total potential jobs estimated for all registered ELC projects amount to around 235,000 for 1.1 million ha of concession land.

Table 2
Job potential of Economic Land Concessions in Cambodia—a rough assessment.

Main purpose	Forestry	Rubber	Oil palm	Sugar cane	Jathropa	Grains	Other ^b	Total
Total ELC area (1000 ha)	525	196	107	56	8	38	220	1150
Jobs/1000 ha	20	420	350	153 ^a	420	10	400	–
Potential jobs	~11,000	~83,000	~38,000	~9000	~4000	~400	~90,000	~235,400

Source: own elaboration, based on data from MAFF (2011).

Note: For projects that have stated various cultivation purposes, the first purpose has been used for categorization. Values on potential jobs are generally rounded upwards, assuming labor-intensive investments.

^a Rainfed, 1/3 mechanized.

^b The category “Other” summarizes all other ELC projects for which either no information was given regarding the purpose, or no jobs estimates are available from the World Bank. In order to estimate the job potential we assume labor-intensive investments of 400 jobs/1000 ha.

While around 235,000 new jobs in rural areas sound promising, the picture changes rapidly if this number is put into context. First of all, this number is in fact lower than the amount of people (400,000) that have been reported to be negatively affected by land conflicts and forced evictions due to the granting of ELCs ([Vrieze and Naren, 2012](#)). Secondly, in rural Cambodia yearly 220,000 persons enter the labor force (average of 2004–2009, [NIS, 2010](#)). Based on the optimistic assumption that all ELC projects would materialize soon and would further be managed during the 70 years of contract time, they would have the potential to provide enough long-term jobs (50 years of work, from age 15 to 65) for the labor force cohort of one year. However, the persons that enter the labor force during the following 49 years would not have any benefits in terms of direct employment in ELC agribusinesses; but rather will encounter the countryside with little land available for their own smallholder enterprise.

Hence, the ELC system bears the severe risk of triggering rural–urban migration motivated by a vast number of job-seekers from rural areas. Whether the indirectly created jobs in urban areas such as in the retail and trade sector can absorb the rapidly growing rural labor force, remains questionable; however, it becomes clear that the potential of ELCs for direct employment creation in rural areas, as pursued by the 2005 ELC sub-decree, is limited. Moreover, this pathway of rural change, based on a vision of surplus providing rural systems fostered by the urban elites, has large opportunity costs in terms of alternative land uses (cf. [De Schutter, 2011](#)) for rural poverty reduction and self-sufficiency. On the basis of 2 ha/household (a value which is above the Cambodian average of 1.7 ha ([ACI, 2005](#)) and which represents twice as much land for about half of all Cambodian households ([NIS, 2010](#))), the opportunity costs in terms of livelihoods based on smallholder farming amount to 575,000 households, corresponding to no less than 2.7 million Cambodians.

Self-sufficiency or surplus: conflicting local and national rural development goals

What could be seen so far is that the ELC system, in terms of livelihood opportunities, does currently not serve as ‘dynamic driving force of poverty reduction’ but rather bears the risk to act as major driver of rural change, manifesting itself in a shift from a self-employed smallholder sector toward employment-dependent laborers. Weak land governance, land speculation, corruption and other factors certainly play an important role regarding the issue of why large-scale land deals do not necessarily benefit ‘the poor’ (cf. [Leuprecht, 2004](#)). However, we aim to add another argument to the debate:

there is a fundamental conflict between the urban elite's vision of rural development and poverty reduction based on industrialized land use, and the visions and realities of rural communities themselves, who see their livelihoods fundamentally dependent on access to land for smallholder agriculture (Ballard et al., 2007).

Fig. 6 shows an impredicative loop analysis (ILA) of two rural systems: the average smallholder system of agriculture and livestock production (i.e., the average Cambodian village) versus a model of private rubber plantation with 30 years rotation during production phase (year 6–29). We use the average smallholder system to represent a rural system type that largely reflects the current rural reality in Cambodia and take the private rubber plantation as an example of the urban elite's vision of agricultural and rural development within the ELC scheme. The ILA illustrates the following relations for the two rural system types (see Fig. 5: explanation): (a) the cash value of the goods produced for a fixed amount of land in production (1000 ha); (b) the amount of labor hours required for the cultivation of the land; (c) the total human activity associated with the workers (labor hours plus dependent part such as family); and (d) the value of goods consumed within the production system. Again, the compared two systems are 'types' based on average values. Hence, realizations of such types differ in practice, according to the particular socio-ecological context. Nevertheless, the differences between the compared systems are large enough to discuss some general trends of contrasting land uses regarding value added (as an important feature for the urban elite's) and rural livelihood opportunities (as an important feature for the rural population).

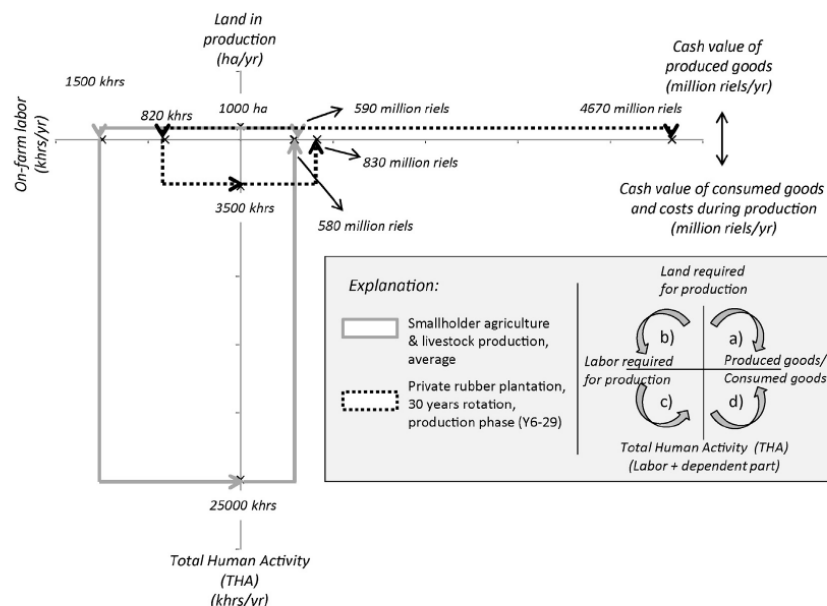


Fig. 6. Impredicative Loop Analysis (ILA) of two rural system types in Cambodia. Note: the 'cash value of produced goods' of both systems refers to the value of gross agricultural and livestock production. The 'cash value of consumed goods and production costs' in the average smallholder system refers to the cash value of total agricultural output absorbed through household consumption using a 65% share (Mund and Ngo, 2005) plus the total production costs. Source: own calculations, based on various sources. All data on rubber production are taken from ACI (2005) and refer to a 30 years rotation model in Kampong Chan, assuming a workload of 8 h/workday. Total human activity associated to the rubber production system was calculated based on average household size (NIS, 2008b) in terms of hours, of which the depend part was calculated based on the labor required to arrive at an income allowing for average household consumption in rural Cambodia (NIS, 2010). Data on average smallholder agriculture and livestock production come from ACI (2005) and NIS (2007). Total human activity of the smallholder system is calculated based on the ratio of time allocated to agriculture & livestock activities to all other activities of the average rural household (NIS, 2007). Note: all cash values have been rounded and deflated (2005 constant prices).

What can be seen clearly from Fig. 6 is that the two systems have different identities and functions regarding their socio-metabolic patterns of production and reproduction. Looking at the smallholder system (full gray lines in Fig. 6), we can see that the main function consists of its own reproduction. Most of the flows, produced at a limited rate,

are fed back to maintain the funds of the system, i.e., patterns of land use and human activity. Although often operated at low yields, smallholder agriculture has the potential to maintain land productivity and biodiverse agro-ecosystems in the long-term (Altieri et al., 2011). As these systems operate largely outside the market economy (e.g., labor exchange, production for household consumption), total income is generally underestimated in official statistics (NIS, 2010), fostering the perception of ‘poor’ rural areas, when using income as proxy for poverty evaluation (Scheidel, 2013). However, this rural system type can provide livelihood opportunities for a comparatively large population (see Fig. 6: THA), thus resulting in a high carrying capacity in terms of persons/ hectare. Regarding the function of such a rural system from a governmental perspective, little surplus is left for trade and the remaining Cambodian society in urban areas. However, although the surplus flows are limited, they consist mostly of food (i.e., rice), thus bearing benefits for the Cambodian society in terms of food security. The large-scale private rubber plantation system, as a relevant and job-intensive example of the ELC land use scheme, clearly has a different function, oriented to economic surplus production (Fig. 6, dashed lines). The funds that produce the flows are largely modified and decreased; industrial land use, such as rubber plantations, has generally severe environmental impacts in the long-term (Ziegler et al., 2009) and the identity of the associated social system changes to employment-dependent laborers. A smaller fraction of labor is required that sustains with the generated incomes a disproportionally smaller amount of total human activity. Hence, the carrying capacity of such rural systems is reduced in order to produce surplus flows that, rather than self-consumed, are passed on to other sectors.

Currently, most ELC projects have not yet materialized (MAFF, 2011) and the question remains open whether the potential future benefits and tax revenues that may be obtained will be re-invested in Cambodia and particularly in rural areas. Justified by the governmental discourse of poverty reduction based on overall economic growth, ELCs however have currently led to the exclusion of other potential land users and thus to large opportunity costs in terms of livelihood opportunities for smallholders. Thus, to understand current processes of rural change in Cambodia, the existence of fundamentally conflicting local and national realities and visions of land use, rural development and poverty reduction need to be considered. Such different visions of rural development might have less conflict potential under conditions of low demographic pressure, which however do not apply to Cambodia, an even less in the future in which productive land resources may become scarce globally (Scheidel and Sorman, 2012). Under the conditions of land scarcity, such conflicting visions of rural development are not compatible in the long-term, driving the local population into a situation in which “*their land is needed but their labor not*” (Li, 2011: 286). Theoretically, this can be understood as a drastic trade-off between different visions, scales and dimensions of rural development. In development practice however, it may unfortunately imply – as stated by the villager (introduction) – “*to get rid of the poor*”.

Conclusions

Cambodia, on its path of development is experiencing profound processes of rural change and future pathways are challenging as they are facing drastically changing relations between land use and human activity. While the rural labor force is growing at a rapid pace, land availability for the subsistence economy has declined drastically due to the large promotion of land concessions, leaving farmers without land. Consequently, rural–urban migration can be expected to accelerate tremendously, provoking a

transition from a self-employed smallholder sector to employment-dependent laborers. If, in the future, the ELC system achieves to materialize the projects for which large amounts of land have been reserved, the interest of governmental elites on surplus production for national economic growth may be served. However, the opportunity costs of alternative land uses in terms of smallholder livelihoods based on subsistence and self-sufficiency are enormous and need to be considered by Cambodian policy makers.

Within this context, we have argued that acknowledging the existence of different visions, scales and dimensions of rural development and poverty reduction is crucial to understand the current conflicting processes of rural change in Cambodia. Development and poverty reduction efforts at the national level, focused on the production of surplus flows for overall economic growth, does not necessarily benefit development at the local level, based on smallholder production that provides only limited amount of surplus flows, but sustains the involved funds such as land and labor and may provide a large amount of livelihood opportunities. The existence of such conflicting development visions and poverty dimensions matters, as in the case of Cambodia, the governmental development policy bears the risk to foster ‘getting rid of the poor’ rather than ‘getting rid of poverty’. Considering rural development and poverty reduction as a complex challenge that involves various dimensions and scales of development (Scheidel, 2013), thus ultimately requires dealing with the questions of rural development and poverty reduction for whom and for how long.

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References

- ACI, 2005. Final report for the Cambodian Agrarian Structure Study. Prepared for the Ministry of Agriculture, Forestry and Fisheries, Royal Government of Cambodia, the World Bank, the Canadian International Development Agency (CIDA) and the Government of Germany/Gesellschaft für Technische Zusammenarbeit (GTZ) by Agrifood Consulting International, Bethesda, Maryland.
- ADB, 2001. Participatory Poverty Assessment in Cambodia. Asian Development Bank, Manila <http://www.adb.org/sites/default/files/pub/2001/poverty-assessment-cambodia.pdf> (22.01.2013).
- Altieri, M., Funes-Monzote, F., Petersen, P., 2011. Agroecologically efficient agricultural systems for smallholder farmers: contributions to food sovereignty. *Agronomy for Sustainable Development* 32, 1–13.
- Ballard, B., Sloth, C., Wharton, D., Fitzgerald, I., Murshid, K., Hansen, K., Runsinarith, P., Sovannara, L., 2007. *We are Living with Worry all the Time—A Participatory Poverty Assessment of the Tonle Sap*. Cambodia Development Resource Institute, Phnom Penh.
- Borras, S., Franco, J., 2010. From threat to opportunity? Problems with a code of conduct for land-grabbing. *Yale Human Rights & Development Law Journal*.
- Borras, S.M., Franco, J., 2011. *Political Dynamics of Land-grabbing in Southeast Asia: Understanding Europe’s Role*. Transnational Institute (TNI), Amsterdam.
- Borras, S.M., Hall, R., Scoones, I., White, B., Wolford, W., 2011. Towards a better understanding of global land grabbing: an editorial introduction. *Journal of Peasant Studies* 38, 209–216.

- Chandler, D., 2008. *A History of Cambodia*, 4th ed. Westview Press, Boulder.
- Cotula, L., Vermeulen, S., Leonard, R., Keeley, J., 2009. Land Grab or Development Opportunity? Agricultural Investment and International Land Deals in Africa. IIED/FAO/IFAD, London, Rome http://www.ifad.org/pub/land/land_grab.pdf (07.03.2010).
- De Schutter, O., 2011. How not to think of land-grabbing: three critiques of largescale investments in farmland. *Journal of Peasant Studies* 38, 249–279.
- De Walque, D., 2006. The socio-demographic legacy of the Khmer Rouge period in Cambodia. *Population Studies* 60, 223–231.
- Deininger, K., 2011. Challenges posed by the new wave of farmland investment. *Journal of Peasant Studies* 38, 217–247.
- FA, 2010. Cambodia Forestry Outlook Study. The Forestry Administration (Cambodia), Bangkok <http://www.fao.org/docrep/014/am627e/am627e00.pdf> (30.03.2012).
- FA, 2012. Statistics. The Forestry Administration (FA) (Cambodia), Phnom Penh <http://www.forestry.gov.kh/Statistic/StatisticEng.htm> (29.05.2012).
- FAO, 2011. FAO Statistical Databases. Food and Agriculture Organization of the United Nations <http://faostat.fao.org/>
- Fischer, G., van Velthuizen, H., Shah, M., Nachtergaele, 2002. *Global Agro-ecological Assessment for Agriculture in the 21st Century: Methodology and Results*. International Institute for Applied Systems Analysis (IIASA), Food and Agriculture Organization of the United Nations (FAO), Vienna.
- Georgescu-Roegen, N., 1971. *The Entropy Law and the Economic Process*. Harvard University Press, Cambridge, London, 476 pp.
- Giampietro, M., 2003. *Multi-scale Integrated Analysis of Agroecosystems*. CRC Press LLC, Florida, 472 pp.
- Giampietro, M., Mayumi, K., Ramos-Martin, J., 2009. Multi-scale integrated analysis of societal and ecosystem metabolism (MuSIASEM): theoretical concepts and basic rationale. *Energy* 34, 313–322.
- Giampietro, M., Mayumi, K., Sorman, A.H., 2011. *The Metabolic Pattern of Societies: Where Economists Fall Short*. Routledge.
- Gomiero, T., Giampietro, M., 2001. Multiple-scale integrated analysis of farming systems: the Thuong Lo Commune (Vietnamese Uplands) case study. *Population & Environment* 22, 315–352.
- Grünbühel, C., Schandl, H., 2005. Using land-time-budgets to analyse farming systems and poverty alleviation policies in the Lao PDR. *International Journal of Global Environmental Issues* 5, 142–180.
- Hall, R., 2011. Land grabbing in Southern Africa: the many faces of the investor rush. *Review of African Political Economy* 38, 193–214.
- Hall, D., Hirsch, P., Li, T.M., 2011. *Powers of Exclusion: Land Dilemmas in Southeast Asia*. NUS Press, Singapore.
- Heuveline, P., 1998. 'Between One and Three Million': towards the demographic reconstruction of a decade of Cambodian history (1970–79). *Population Studies* 52, 49–65.
- IMF, 2012. Cambodia – Staff Report for the 2011 Article IV Consultation – Debt Sustainability Analysis. International Monetary Fund.
- Leuprecht, P., 2004. Land concessions for economic purposes in Cambodia. A human rights perspective. Special Representative of the Secretary General of Human Rights in Cambodia, Phnom Penh.
- Li, T.M., 2011. Centering labor in the land grab debate. *Journal of Peasant Studies* 38, 281–298.
- Licadho, 2009. Land Grabbing & Poverty in Cambodia: The Myth of Development. LICADHO – Cambodian League for the Promotion and Defense of Human Rights, Phnom Penh <http://www.licadho-cambodia.org/reports/files/134LICADHOREportMythofDevelopment2009Eng.pdf> (12.12.2010).
- MAFF, 2011. Economic Land Concession – Cambodia. Ministry of Agriculture, Forestry and Fisheries (MAFF), Phnom Penh <http://www.elc.maff.gov.kh/> (12.03.12).
- Meyer, A., Hager, V., Choung, S., 2009. Promoting Biodiversity Conservation in Cambodia – Assessment report of the Cambiodiversity Project (161). Organisation for International Dialogue and Conflict Management (IDC), University of Natural Resources and Applied Life Sciences Vienna (BOKU), Royal University of Agriculture Cambodia (RUA), <http://www.idialog.eu/uploads/Cambiodiversity/ASSESSMENT%20REPORT.pdf> (07.03.12).
- Morris, E., 2007. Promoting Employment in Cambodia: Analysis and Options. International Labour Organization (ILO) Subregional Office for East Asia, Bangkok, http://ilo.org/wcmsp5/groups/public/—asia/—ro-bangkok/documents/publication/wcms_bk_pb_137_en.pdf (04.04.12).
- Mund, J., Ngo, B., 2005. Present situation and future perspective of Cambodian agriculture. In: Conference on International Agricultural Research for Development, University of Bonn <http://www.tropentag.de/2006/abstracts/full/326.pdf> (07.03.12).
- NIS, 2007. Cambodia Socio-Economic Survey 2004 – Time Use in Cambodia. National Institute of Statistics (NIS), Ministry of Planning, Phnom Penh, Cambodia.
- NIS, 2008a. Cambodia General Population Census 2008. National Institute of Statistics (NIS), Ministry of Planning, Phnom Penh, Cambodia.
- NIS, 2008b. Statistical Yearbook of Cambodia 2008. National Institute of Statistics (NIS), Ministry of Planning, Phnom Penh, Cambodia.
- NIS, 2010. Cambodia Socio-Economic Survey 2009. National Institute of Statistics (NIS), Ministry of Planning, Phnom Penh, Cambodia.
- ODC, 2012. Maps – Open Development Cambodia. <http://www.opendevdevelopmentcambodia.net/maps/> (29.05.12).

- OHCHR, 2007. Economic land concessions in Cambodia – a human rights perspective. United Nations Cambodia Office of the High Commissioner for Human Rights (OHCHR), Phnom Penh <http://cambodia.ohchr.org/WebDOCs/DocReports/2-Thematic-Reports/Thematic CMB12062007E.pdf> (30.03.12).
- RGC, 2003. Sub-Decree on Social Land Concessions. The Royal Government of Cambodia (RGC), Phnom Penh.
- RGC, 2004. The Rectangular Strategy for Growth, Employment, Equity and Efficiency in Cambodia. The Royal Government of Cambodia (RCG), Phnom Penh.
- RGC, 2005. Sub-Decree on Economic Land Concession. The Royal Government of Cambodia (RGC), Phnom Penh <http://www.elc.maff.gov.kh/en/laws/13-sub-decree-on-elc.html> (01.03.12).
- RGC, 2008. Rectangular Strategy for Growth, Employment, Equity and Efficiency Phase II. The Royal Government of Cambodia (RCG), Phnom Penh.
- Royal Embassy of Cambodia, 2011. Agriculture. Investment and Business Promotion Unit, Royal Embassy of Cambodia, London, UK <http://cambodianembassy.org.uk/> (08.01.13).
- Russel, R., 1997. Land law in the kingdom of Cambodia. *Property Management* 15, 101–110.
- Scheidel, A., 2013. Flows, funds and the complexity of deprivation: using concepts from ecological economics for the study of poverty. *Ecological Economics* 86, 28–36.
- Scheidel, A., Sorman, A.H., 2012. Energy transitions and the global land rush: ultimate drivers and persistent consequences. *Global Environmental Change* 22, 588–595.
- Serrano, T., Giampietro, M., 2009. A multi-purpose grammar generating a multi-scale integrated analysis of Laos. *Reports on Environmental Sciences – ICTA Working Papers* 3.
- Siciliano, G., 2012. Urbanization strategies, rural development and land use changes in China: a multiple-level integrated assessment. *Land Use Policy* 29, 165–178.
- Thiel, F., 2010. Donor-driven land reform in Cambodia—property rights, planning, and land value taxation. *Erdkunde* 64, 227–239.
- Vermeulen, S., Cotula, L., 2010. Agricultural Investment: A Survey of Business Models that Provide Opportunities for Smallholders. IIED/FAO/IFAD/SDC, London, Rome <http://www.ifad.org/pub/land/agriinvestment.pdf> (12.07.10).
- von Braun, J., Meinzen-Dick, R., 2009. “Land grabbing” by foreign investors in developing countries: risks and opportunities. In: IFPRI Policy Brief 13. International Food Policy Research Institute.
- Vrieze, P., Naren, K., 2012. Carving up Cambodia – one concession at a time. In: *The Cambodian Daily Weekend*, March 10–11, Phnom Penh, <http://www.licadho-cambodia.org/land2012/> (29.05.12).
- World Bank, 2010a. Data Catalog. The World Bank <http://data.worldbank.org/> (22.01.13).
- World Bank, 2010b. Rising Global Interest in Farmland: Can it Yield Sustainable and Equitable Benefits? <http://www.donorplatform.org/content/view/full/457/2687> (09.09.10).
- Ziegler, A.D., Fox, J.M., Xu, J., 2009. The Rubber Juggernaut. *Science* 324, 1024–1025.
- Zoomers, A., 2010. Globalisation and the foreignisation of space: seven processes driving the current global land grab. *Journal of Peasant Studies* 37, 429–447.