

Creating agro-forestry commons for the landless and socially marginalized: A case study from Nepal's Terai region

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Abstract

This paper examines the emergence, present status and potential of agro-forestry commons, which have been initiated by the landless and marginalized section of the society in the southern Terai region of Nepal. In the Terai, lush forests lie in the northern side mainly along the outer Himalaya called Siwalik range contrasting with the southern part with almost no forests but densely populated settlements. How existing common forest institutions initiated by the government are not sufficient to address the access of the people living in southern Terai is analyzed. This study argues that new ecological landscape and subsequent politico-economic changes are emerging in the southern Terai with the creation of agro-forestry commons in response to defective state policies and semi-feudal production relations therein. Taking three Terai districts for the samples, outcomes of the new agro-forestry commons include emergence of new commons, increased livelihood assets, diversity in agro-forestry commons and increased ecosystem services. These new commons face a number of first and second generation issues as well. The first generation issues include the scale of the commons, conflicts with the local elites, legitimization, choice of management models and equitable benefit sharing. Tenure security, unpaid ecosystem services and forest regeneration versus livelihoods of the poor are some prominent second generation issues. The paper concludes that policy formulation for the agro-forestry commons, conversion of public land commons to community forests until their explicit policy, expansion to larger scale and recognition of ecosystem services are some points to be considered to address the issues.

Key words: *Nepal; Terai; community forestry; agro-forestry commons; social exclusion*

1. INTRODUCTION

This paper examines the emergence, present status and potential of agro-forestry commons, which have been initiated by the landless and marginalized section of the society in the southern Terai⁴ region of Nepal. The Terai is distinct from the hills in terms of not only geographic terrain, but also the ecological and political economic contexts. Lush forests lie in the northern side mainly along the outer Himalaya called Siwalik range contrasting with the southern part with almost no forests but densely populated

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⁴ The Terai is the low flat land lying mainly to the south of the Siwalik Hills extended from East to West along the country, covering approximately 20 percent of the country's land area. But it accommodates nearly half of the total population of the country.

settlements. Present day ecological and politico-economic landscapes in the Terai is attributed to state policies in the past to clear forests in the plain, resettle hill migrants and encourage the persistence of semi-feudal agrarian relations. Government policies to clear forests for revenue generation and settlements in the Terai during Panchayat era, a mono-party political system under the direct rule of the King, from 1960s to 1980s are argued to be mainly responsible for massive destruction of forests in the southern Terai (Bhattarai, Conway, and Shrestha 2002; Pokharel and Amatya 2000). Regarding land-holding systems, the southern Terai has long been characterized by *Jimidari*⁵ system, a remnant form of feudal landowning, similar to *Zamindari* system in some parts of contemporary north India (Yadav 1984). In contrast to the Hills, the physical characteristics of the geography (flat and easy to cultivate) coupled with the government policies prior to 1950s in favour of feudal land ownership such as *Birta* and *Jagir*⁶ have contributed to persisting semi-feudal relations resulting in a gap between landed and landless class in the Terai (Joshi and Rose 1966; Shrestha 1990). In the 20 Terai districts, nearly 35 percent of the households occupy more than 70 percent of agricultural land, whereas about 15 percent of the households are absolutely landless (CBS 2004).

The demography of the Terai is composed of three major streams of population. First are the native inhabitants of the Terai, such as Tharu and Dhimal. The second category of population belongs to the *Madhesi*⁷ origin having migrated from India and residing in the southern plain. The third form of population in the Terai are called the *Pahadi*⁸ migrants, who are composed of two major groups- Indo-Aryan origin fled from northern India during Muslim invasions in the history and the hill ethnics (Yadav 1984; Shrestha 1990; Regmi 1984; Joshi and Rose 1966). People in the Terai regardless of their origin depend on forest resources despite variability in their degree of dependency. For example, ethnic inhabitants, such as Tharu need forests (and wetlands therein) for basic livelihoods including food and fodder, whereas people residing in the southern plain depend on forests for fuelwood (for cooking and heating) and timber (for building material). Consequently, immense human pressure on remaining forests in the Terai is a continuous phenomenon over time particularly since massive resettlements after 1960s (Shrestha 1990; Bhattarai, Conway, and Shrestha 2002; Soussan, Shrestha, and Uprety 1995).

⁵ Jimidari was a form of feudal production relation in which a functionary (a Jimidar) was responsible for land-tax collection from peasants in the villages of the Terai. In this system, the Jimidar was also given a significant area of land for his personal cultivation in a way that he had right to get his land cultivated from unpaid labor and material from the villages.

⁶ *Birta* was a chunk of land granted by the kings or the prime ministers to any individuals for their loyalty. *Jagir*, on the other hand, was a block of land allotted to government employees and functionaries for their remuneration. These lands were usually tax-free and inheritable (Shrestha, 1990).

⁷ The Terai is also known as *Madhes* and therefore its traditional inhabitants are referred as *Madhesis*. In practice, the communities who have similar culture and language with northern India are normally called *Madhesis*. Communities migrated from the hills are not called Madhesi even if they have been residing in the Terai for decades.

⁸ 'Pahad' refers to the hill or mountain and therefore the people who live in the hills or have migrated from the hills are called *Pahadis* or *Pahadiya*.

Government has initiated various policies and programmes to address issues of public pressure on forest resources and has created multiple regimes and institutions at various spatial scales outlightning different objectives. Large chunks of forests mainly in the Terai and high altitudes remain under government control in the form of protected areas or government-managed forests, whereas various modalities of forest commons such as community forestry and collaborative forestry have also been institutionalized. Regardless of digression in implementation, creating equitable and sustainable access of all the people to forest resources has been a common objective of state policies of Nepal government not only at present but also in the past particularly after 1950s (GON 1988). In this connection, special attention has been paid to the Terai since the year 2000 issueing Revised Forestry Sector Policy as a guiding principle to address various forestry issues in the Terai ranging from deforestation to sustainable management and people's access to forest resources (GON 2000).

Profound studies have been undertaken in the Terai on how deforestation occurred in the state forests (e.g. Pokharel and Amatya 2000; Shrestha 1985; Shrestha 1990; Soussan, Shrestha, and Uprety 1995), to what extent inequitable benefit-sharing persist among users within community forestry (e.g. Iversen et al. 2006; Adhikari, Di Falco, and Lovett 2004), how access of communities to protected areas is contested (e.g. Brown 1996) and why the existing institutional modalities such as community and collaborative forestry could not address the access of the southern people to forest commons (e.g. Bhatta et al. 2007; Bampton and Cammaert 2007; Bampton, Ebregt, and Banjade 2007). Bound within the box of existing forests and their institutions, studies hitherto, however, have overlooked the potential of creating new forestry commons in the southern plain. At a time when people, mostly landless and marginal landholders, in the southern Terai need a practical solution to address their access to forest resources but the complexities persist in the existing policies and socio-economic settings, some alternative approach would be noteworthy. We argue that existing faulty institutions can be challenged and new common institutions can be created to transform both ecological and political economic *status quo* in a particular geographic setting. While so doing, we provide the evidences of how existing forest institutions have curtailed accessibility of the landless and marginalized households in the southern Terai to forest resources and to what extent the available public and institutional lands are potential to craft the access of these households to new agro-forestry commons. While looking at feasibilities, we also describe several layers of constraining issues of the new commons to be addressed by government policies, programmes and local actions.

2. CONTEXTUALIZING PROBLEMS

The geographic locations of the land and forest resources aggravated by problematic forest policies, existing resource institutions and agrarian relations are the contexts that underpin the distribution conflicts over forest resources in the Terai. Constrained by the geographic location, the land and forests together in the Terai embody at least 11 modalities contingent upon basically two criteria- access and control across different property rights regimes (Fig 1 and Table 1). Placing protected area at one extreme and private forests at the other in a continuum of accessibility and control of government agency versus individual household respectively, the landless and marginal landholders

in the Terai have least access to and control over forest resources regardless of property rights institutions.

To begin with protected areas, neither nearby nor distantly located communities have access to or control over these management regimes designed strictly for biodiversity/landscape conservation and eco-tourism led by government authority (Brown 1996; Ghimire 1994). In government-managed forests, another classification, is solely controlled by the Department of Forests, thus constraining community access to forest resources (Bhattarai, Conway, and Shrestha 2002; Chakraborty 2001; Pokharel and Amatya 2000). The private forests on the other hand by definition is accessed and controlled by private individuals, specially the landed households possessing surplus land beyond that they need for agriculture. The remaining classification of forests, which fall under common property regimes (namely buffer zone community forests, collaborative forests, community forests, leasehold forests and religious forests) are the only modalities that are theoretically available for the local communities to access at a varying degree (Ojha et al. 2007). However, the access of the landless and marginal landholders in the southern Terai to these forest commons is also constrained and limited by various factors.

From the late 1970s, the government implemented community forestry policy of handing over state-owned forests to local communities to conserve, manage and sustainably use forest resources. Despite a national policy, community forestry has favoured *Pahadis* by default as their settlements are close to forest resources. The policy guides the hand-over of community forests to the group of local people (the group is later called as 'community forestry user group' (CFUG) after hand over) considering their capacity and willingness to manage forests defined by the proximity of their settlements from the forests (GON 1993, 1995). The CFUGs by their own operational plans and statutes approved by the government forest offices can exclude outsiders from using direct benefits of their community forests, such as timber and fuel-wood. This has resulted in a number of intended and unintended outcomes. The intended outcomes of community forests include the legitimized access of nearby local people to forest resources (Gilmour and Fisher 1991; Kumar 2002), the sustainable management of forest resources by people's participation (Chakraborty 2001), improved forest condition and biodiversity (Nagendra 2002; Nagendra et al. 2008), increased forest-based livelihood opportunities of local people (Pokharel and Nurse 2004) and increased resilience of organized people during insurgent conflicts (LFP 2010; Karna, Shivakoti, and Webb 2010). The unintended consequences of community forests, particularly in the Terai include the reduced access of southern people to forest resources and alienation of *Pahadis* and *Madhesis* over the use of direct benefits of forests (Baral et al. 2008; Bhatta et al. 2007). Although the ecosystem services of community forests in the north are highly perceived and valued by the people in the south (Dhungana et al. 2008), they have gradually been deprived of benefitting from direct use values of forests, such as timber and fuel-wood.

Buffer zone community forests, lauded as participatory conservation efforts (e.g. Paudel, Budhathoki, and Sharma 2007) are confined around protected areas, which are mostly located in the northern parts of the Terai, thereby physically curtailing the access

of the landless people of the southern parts. Leasehold forests for community access is designed only for the hills, which implies that people living in the southern plain have no access to this commons (Bhattarai and Dhungana 2005). Religious forestry is confined to sacred places in which the benefits of the forests are limited for religious purposes of the particular religious organization which is managing the forest (GON 1993, 1995). As a consequence, the people in the southern plain started protesting against the problematic forest policy that created access disparities among the citizens over national forest resources.

Collaborative forestry, another forestry intervention integrating central government, local government and local people as the collaborating partners (similar to joint forest management in India), attempted at least in theory to create access of the southern people to the forests lying in the northern parts (GON 2000; MFSC 2004). Nonetheless, the efficacy of the collaborative forestry in providing commodity benefits, such as timber and fuelwood, to the southern people has been rather insignificant, unsustainable and contested due to bureaucratic and management complexities (Bampton, Ebregt, and Banjade 2007; Bhatta et al. 2007).

Consequently, the landed people in the south have started adapting to the unavailability of forest products by using trees in their own private lands or by alternative sources, such as biogas and kerosene instead of fuel-wood (Bhatta et al. 2007). However, the poorer sections of the community, particularly the landless and marginal landholders in the southern Terai face severe difficulty in meeting their livelihoods due to the scarcity of their private lands exacerbated by their income poverty to purchase alternative energy sources. In response to the unfavorable land distribution to the poor aggravated by the unintended outcomes of existing forestry commons, the poor and excluded in the southern Terai have developed strategy to create agro-forestry commons in the uncultivated public lands⁹ (Kunwar et al. 2008).

3. CONCEPTUAL FRAMEWORK AND METHODS

The emerging agro-forestry commons have been studied from common property theory. Although a number of variables ranging from resource system to external environment and their indicators have been developed for highly institutionalized commons (e.g. Agrawal 2008; Agrawal and Goyal 2001; Ostrom 1990, 2005), the agro-forestry models in this study are assessed through three fundamental criteria suggested by Blaikie and Brookfield (1987). They are individual use with collective possession; many users with independent collective rights over the resources; and the collective right of the group to exclude non-members from using the resources.

In the theoretical framework, we focus on 'access' and 'control' as the key factors around which the debate revolves. However, in common property discourses, four terms, viz. property rights, tenure, control and access are often encountered confusingly requiring a context specific clarification. In this connection, empirical evidences show

⁹ The public lands here refer to the uncultivated lands of two categories, either 'institutional' such as around school, irrigation canal side and road side or 'public' without any individual's title, thus belonging to the central or local government.

that property (rights) and control are two different things that have no strict correlation in producing sustainable resource management (and thereby pro-poor benefits) under specific political, economic and ecological contexts (Rangan 1997). In other words, the concept of property rights regimes or ownership (mostly community versus state) does not necessarily provides clear explanation for sustainable resource management, but who controls the access matters under different property regimes. The tenure, on the other hand, is sometimes used as synonym of secure property rights (e.g. Meinzen-Dick et al. 2002: 2) or defined differently as “system of access to and control over land and related resources” (European Union 2004: 2). Access to common pool resources, to some scholarships, is the means of strategy of a community or a household to achieve various livelihood assets (natural, social, financial, human and physical)(Scoones 1998). Comparing and contrasting these ideas, we assume in this paper that it is the control and access, not the property or tenure that immediately affect people’s livelihoods in regards with forest resource management. Having said that, however, property rights (formalized communal ownership) and tenure security are the underlying interests of the community group for long term guarantee of that access and control.

The existing contexts of forest and land resources in the Terai discussed in Section 2 and summarized in Table 1 are discussed from control and access perspectives to illustrate how these two factors interplay across different regimes and resource management modalities. Since property rights regimes are a confusing concept in some contexts, we use just ‘regime’ (state, community or private) in this paper to denote the access to and control over forest and land resources. The legal classification of forests and land resources in the Terai (in Fig 1) is placed against which organization or agency controls the resource resulting in the modification of access. The protected area and government-managed forests are solely accessed and controlled by the government or its subsidiaries falling under state control regime, whereas private agricultural land and private forests are solely controlled and accessed by individual land owners. The community forest, religious forest and leasehold forest lying between the sphere of state and individual control in the spectrum, on the other hand, are solely controlled and accessed by the groups of communities. However, there are some overlapping areas as well. The bufferzone community forest is controlled by the protected area authority (the central government) but accessed by the local bufferzone community group.

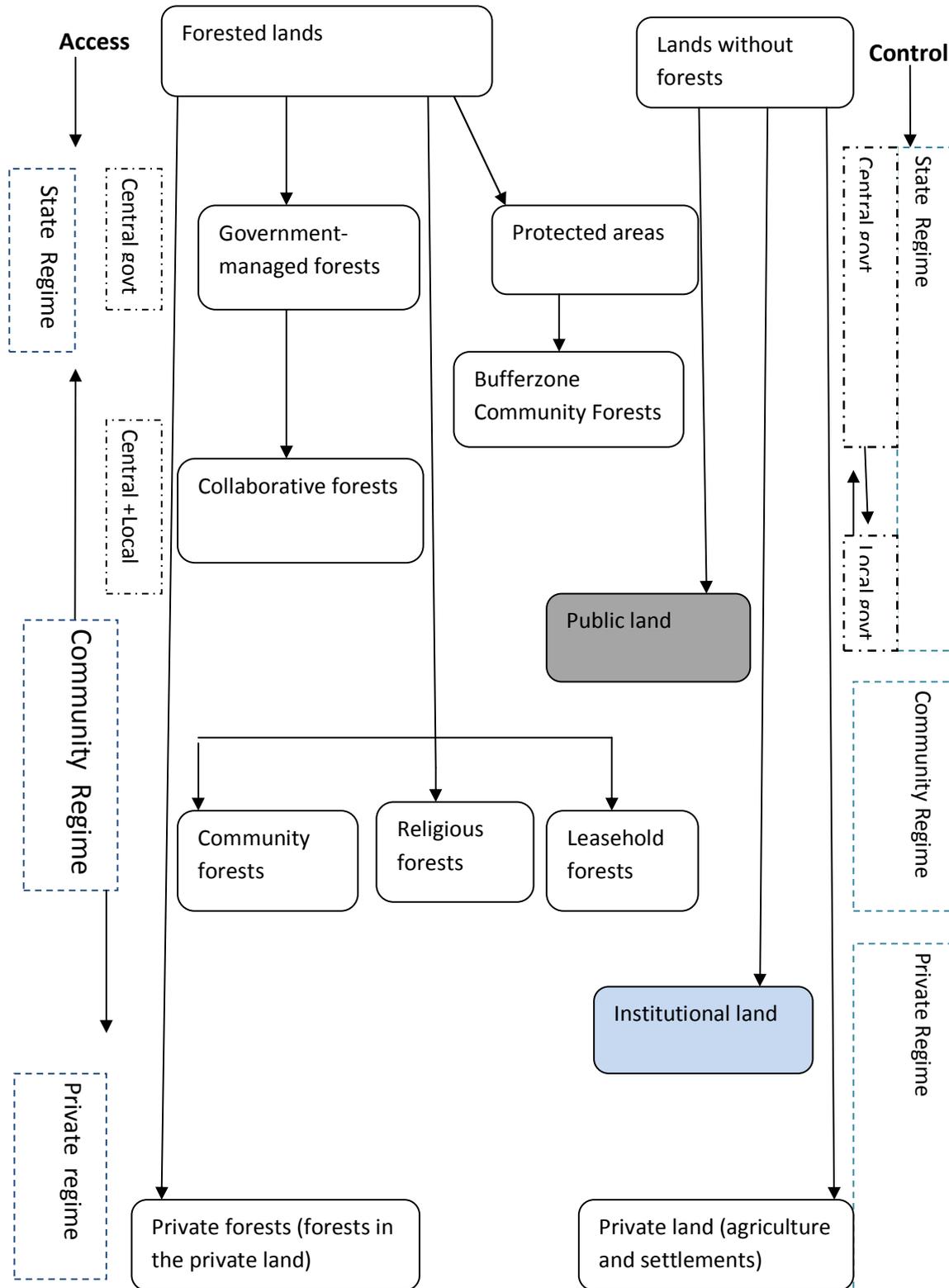
Collaborative forest is controlled jointly by the Department of Forests (central government) and local government, while accessed by central government, local government and local community groups. The public land is an uncultivated land under the control of the local government but access of the local people is practiced for some uses such as grazing. The institutional land, on the other hand, is under the control of public or private institutions, such as schools or roads, but local people have access to this land in the same way as in the public land (under local government control).

Table 1: Common Pool Land and Forest Resources in the Terai prior to new commons(after GON 1993, 1973)

Common Pool Resources	Who has access?	Who controls?	Where located?	Current use pattern
Protected areas	The central government	The central government	Mostly northern parts of the Terai	Conserved for biodiversity and eco-tourism
Government-managed forests	The Department of Forest	Department of forests	Mostly northern parts of the Terai	Managed for government revenue
Buffer Zone Community Forests	Local community around protected area	The central government	Mostly northern parts of the Terai	Conserved for eco-tourism and forest products
Collaborative forests	Proportionate access of Department of Forests, local government and local people regardless of distance from the forests within the same district	Department of Forest and local government	Northern parts of the Terai	Managed for forest products and revenue
Community forests	Local community group at the vicinity of forests	Local community group	Mostly northern parts of the Terai and Siwalik hills	Managed for forest products and revenue
Leasehold forests	Local community group at the vicinity of forests	Local community group	Northern parts of Terai	Managed for forest products and forage
Religious forests	Religious organization	Religious organization	Mostly northern parts of the Terai	Conserved for sacred landscapes
Private forests	Private landholders	Private landholders	Mostly in the southern Terai	Forest products
Private cultivated land	Private landholders	Private landholders	Across Terai mostly in the southern Terai	Cultivated for agriculture
Registered Institutional land	Local people	Concerned institution or organization	Across Terai but mostly in the southern Terai	Mostly uncultivated
Uncultivated public land	Local people	Local government	Mostly in the southern Terai	Grazing land, playing ground or barren

The study was undertaken with a combination of secondary information, field visits, group discussions and individual interviews. Three adjoining districts in Nepal's western Terai, namely Nawalparasi, Rupandehi and Kapilvastu were taken case study sites for the study. Livelihoods and Forestry Programme (LFP), a bilateral aid programme between UK-DFID and the government of Nepal has been in operation in the three districts since 2002. The LFP in collaboration with forest and soil-conservation offices at central, regional and local levels aims at reducing vulnerability and increasing livelihoods of the poor and excluded through sustainable and equitable management of natural resources. LFP applies sustainable livelihoods approach in which livelihood is defined as a pentagonal set of natural, physical, financial, social and human assets of households in association with a group and respective common resources. In this study, substantial data and information were collected from LFP, NGOs working for the social mobilization in agro-forestry commons and district forest offices. The principal investigator of this study accompanied with field assistants visited at least 45 public land management groups and their managed public lands across the three districts. Group discussions were undertaken in each of the group visited followed by interviews with key informants in the groups. During the visits, the people managing public lands also showed their records of activities and outcomes such as rules, management plans and incomes associated with the public land management. These records were vital to verify, triangulate and substantiate the data and information available in secondary sources from the aforementioned offices.

Figure 1: Forest and land classification under different control and access regimes in the Terai



4. OUTCOMES AND POTENTIAL OF AGRO-FORESTRY COMMONS

The intervention in the public and institutional lands have several outcomes. The respondents identify at least four streams of outcomes positively contributing to their livelihoods and ecology. The emergence of new commons in the area where local commons for the landless and marginal landholders were virtually non-existent, increasing social assets, diversified agro-forestry models and increasing ecosystem services are the major benefits that the local people perceive from creating agro-forestry commons.

4.1 Emergence of new commons

The agro-forestry commons have been found to meet the three basic criteria of common property identified by Blaikie and Brookfield (1987). The first criterion of common property that requires collective possession by a group and use by individual member is assessed against the nature of ownership and rules of use. The possession of the agro-forestry resource is collective for minimum 20 years and maximum indefinite time period following the contract made between the groups and the respective village development committees (the local government unit at village level) or the respective local institutions such as schools. Since the public land is broadly defined by Local Self-Governance Act of Nepal as the land under the jurisdiction of local government (GON 1999), the contract between the group and the local government is legally effective. Similarly, the contract made between the group and the respective local institutions such as school is also effective given the right of the local institutions over the land. Following the contracts and the rules made by the group to manage and utilize the agro-forestry resources, individual member households are using the resource under the rules. Thereby, the first criterion is established despite the lack of a separate legal backing such as for community forestry. The second criterion that the group has independent use rights over the resource is also satisfied at least for the contract period because no other external agency but their own rules can control their use. The third criterion, which is just the extension of the first two, that the group has collective right to exclude non-members of the group from using the resource is also fulfilled at least for the tangible goods such as forest products and agriculture crops. Except for retaliatory intervention by local elites in some cases, the groups generally are enjoying their collective rights to exclude non-members. The agro-forestry practices under discussions thereby fall under newly emerging common property regimes.

The respondents during the interview suggested that the *de facto* property rights in the lands of the southern Terai used to remain in two major regimes, either in the form of private property, such as private agriculture land or publicly owned uncultivated lands. The third form of property, i.e. the common property regime in land resources was almost missing in the southern Terai until the emergence of agro-forestry commons.

4.2 Increasing social and other livelihoods assets

Social asset, which is broadly defined as an important component of rural livelihoods in connection with an individual's relationships with others includes, but not limited to, networks, connectedness, membership of groups, collective action and access to wider

social institutions (Carney 1998). Creation of agro-forestry commons has contributed to increased social assets among the landless and marginalized households through the formation of Public Land Management Group (PLMG), different interest sub-groups under PLMGs and district and regional networks of PLMGs .

Table 2: Statistics of households by landholding in the three study districts

Total number of households	188,128
a. Total landless households	25 percent of total households
b. Total marginal landholding households	40 percent of total households
Total number of public land management groups formed until 2008 in three districts	251
Proportion of households engaged in agro-forestry commons	8 percent of total households
a. Landless households	18 percent of total landless households
b. Marginal landholding households	7 percent of total marginal landholding households

Source: LFP (2009), CBS (2009)

By the end of 2008, as many as 251 PLMGs have been formed covering 18 and 7 percent of total landless and marginal landholding households respectively in the three study districts (Table 2). The majority of the beneficiaries are from the landless poor and socially excluded marginalized category. Out of 14,902 households involved in PLMGs, more than 60 percent are landless, whereas nearly 50 percent are disadvantaged ethnic groups, 21 percent from Dalit (highly stigmatized community by untouchability culture) and 19 percent from Muslim minority (Table 3). Within the PLMGs, various focus or interest sub-groups have been formed including Dalit sub-groups, women sub-groups, fishery sub-groups, vegetable farming sub-groups, non-timber forest product cultivation sub-groups, saving credit sub-groups and goat keeping sub-groups. The decision-making positions of the disadvantaged groups such as the women, the landless and the Dalit in the PLMGs has contributed to developing leadership capabilities in these groups to raise voices in their favor in the overall development process and against their social discrimination (Kunwar et al. 2008). Recently, the different public land management groups have been federated into district networks in each district and a regional network covering three Terai districts in the study area. The district and regional networks have targeted to bring the remaining uncultivated public lands under agro-forestry commons and to lobby for specific policy formation for securing their tenure rights on these commons.

The landless people have been able to harvest vegetables, fish, grasses, fruits and fuel-wood from these 251 patches of agro-forestry commons, ultimately contributing to their other livelihoods assets such as human and financial assets.

Table 3: Statistics of households in agro-forestry commons by social inclusion in three districts

Caste	Number	Percentage
Dalit*	3160	21
Ethnic communities	7513	50
Religious minorities (Muslims)	2839	19
Other	1390	9
Total	14,902	100

*Dalit: socially suppressed and stigmatized community by untouchability culture

Source: LFP (2009),

4.3 Diversity in agro-forestry models

A number of management models for the newly formed agro-forestry commons have emerged. At least four diversified agro-forestry models under common property regimes have been classified in this study. The models mostly depend on the nature of lands available coupled with the livelihoods interests of the people organized into the groups to manage the commons. Primarily, the lands can be divided into lands and ponds. In the lands, people have found to plant tree seedlings followed by cultivating vegetables. In some other cases fruit trees have also been planted. Such lands in combination with trees/fruit trees and agriculture crops have been classified as agro-horti-silviculture in this paper. In three or four year time, most of the lands under agro-horti-silviculture model have found to turn to 'forest only' category being unsuitable for practicing agriculture crops any longer due to denser canopy of the trees. In some other land category, grasses have been planted along with tree seedlings, which is termed as 'silvo-pasture' in this paper. Another model is the 'silvo-fishery' in which the groups practice fishery in ponds with tree planting on the bunds of the ponds.

Table 4: Area of different modalities (in ha) in new commons in the three districts until Nov. 2008.

Total area of public and institutional land including agro-forestry commons	22,274
Total area in agro-forestry commons	1362.22
a. Agro-horti-silviculture	134.96
b. Silvo-fishery	167.71
c. Silvo-parture	69.67
d. Forests	
(I) Still as public land	592.64
(II) Turned to community forests	396.24

Source: (LFP 2009)

4.4 Generating ecosystem services

As we discussed earlier, the common pool resource available for the landless and marginal landholders in the southern Terai is only uncultivated public and institutional lands. A preliminary estimate suggests that approximately 0.3 million hectares of uncultivated public and institutional lands are available throughout the 20 Terai districts of Nepal. It equals about six percent of the total forest area in the country. According to the latest study, the rate of negative forest cover change in the 20 Terai districts was found to be 0.08 percent per year (DOF 2005). Creating agro-forestry commons in the public lands combined with halting deforestation in the national forests would contribute to positive forest transition in the country.

In the three Terai districts under discussion, about seven percent of the public lands have turned to agro-forestry commons by the end of 2008 (LFP 2009). Given the area of available public land for management, potential of creating more agro-forestry commons exists.

Albeit contested and argued in terms of scale and location, various studies suggest that creating forests or agro-forests in uncultivated lands generate a number of ecosystem services, such as biodiversity conservation (genetic, species and ecosystems), carbon sequestration, greenery (landscape beauty) and soil conservation (McNeely and Schroth 2006; Costanza et al. 1993). Even though complexity persists to evaluate other ecosystem services in monetary terms, the carbon service has been monetized elsewhere using average international price of carbon sequestration from afforestation/reforestation under Clean Development Mechanism (CDM) of the Kyoto Protocol (Swallow, Meinzen-Dick, and van Noordwijk 2005). On an average, plantation forests have found to sequester at least seven metric tons of carbon per hectare per

year in the similar contexts as in the Terai (Dhungana, Oli, and Mandal 2007). Nearly 600 hectares of the new commons have already turned to forests meeting eligibility criteria of CDM (i.e. the land was completely barren for more than 50 years before plantation, planted after the year 2000, crown cover more than 30 percent, tree species having minimum three meter at maturity and all patch larger than 0.5 hectares by area). It implies that these newly emerged commons are also eligible and feasible for carbon trading under CDM as an alternative management for income generation for the landless and marginalized communities.

Small scale agro-forestry lands have also been argued to be effective means of biodiversity conservation, while reducing hunger vulnerability of the farmers in the developing world (Bassett 2010). Under 'Island Biogeography Theory' (Whittaker and Fernández-Palacios 2007) , which Perfecto & Vandermeer (2010) refer synonymously as the 'Matrix Quality Model', agro-forestry lands provide suitable corridors or matrices for plants and animals to migrate from one natural habitat to another. Under these conservation paradigms, scattered forest patches work metaphorically as habitat islands for the plants and animals surrounded by the ocean of agriculture or barren lands. The conversion of the barren land or monoculture farm to agro-forestry contributes to creating agro-ecological system or matrix as a corridor for the movement of plants and animals between habitat islands (Perfecto and Vandermeer 2010). Unlike large scale monoculture farm of forestry or agricultural crops, small scale agro-forestry provide a win-win outcomes to biodiversity conservation and food security in the poor country like Nepal.

5. ISSUES AND CHALLENGES

Despite a number of achievements and potential for desirable livelihoods and ecological impacts of public land management through agro-forestry commons, there are some issues and challenges restraining the momentum of desirable impacts. Given the various phases of interventions and progress, a number of first and second generation issues have been identified during the study.

5.1 First generation issues

These issues relate to the initial phase of bringing public lands into agro-forestry commons which are not properly institutionalized. Wider concern of reduced access of the southern people to upstream national forests, the reluctance of relatively non-poor section of the society to support the pro-poor initiatives and need of inter and intra-group negotiation are linked with the first generation issues discussed in the following sub-sections.

The scale of the emerging commons

How to meet the basic forest product needs of those not having access to existing forests is a big issue. In Nawalparasi district, 38 percent of the district population has no access to national forests at all for the direct benefits such as timber and fuel-wood

(DFON, 2008). The problem is further aggravated for the landless and marginal landholders, for they are not able to use private land for forestry practices to meet basic forest products. Mass scale afforestation of the public land seems one of the options to ensure forest product supply in future while increasing greenery at the same time. By managing plantation in the total available public land covering 20,000 ha in the three districts with fast growing species it is expected to generate more than hundred thousand tonnes of fuelwood per year only in 10 to 15 years on a sustained yield basis. The above amount of fuel-wood is sufficient to meet fuelwood demand of about 30,000 households at the current rate. However, the current scale of agro-forestry commons is not substantial in comparison with the available land and demand of the people. How to generate significant supports to create more agro-forestry commons at substantially larger scale is a pressing issue.

Conflicts and negotiation with the local elites

The public land as usual is a highly contested resource between the poor and non-poor sections in the southern parts of the Terai. To the poor and landless households, the unused public lands are simply waste-lands. To the relatively well-off households, the public lands are meant for grazing cattle or grave yard or playing ground. In some cases, the public lands are used by local elites for farming, either legitimately in the form of lease taken from local governments or illegitimately encroached. Taking the land back from such elites for the exclusive use right of the poor and disadvantaged or altering the regime from relatively open access resource to group's property (common property) is a challenge. The political economy of the southern Terai provides a foundation for the conflict especially when the elite and middle class households want to use the public land as usual, that means for their cattle to graze or an open ground for their children to play. In extreme cases, the elites simply deny to leave the public lands illegitimately included within their private lands. The poorer section comprising often landless households, on the other hand, wants to convert these lands to agro-forestry commons for their own livelihoods. The competing demands on the public land between two economic classes suggest a challenging contexts, processes and outcomes of the emerging commons. With proper negotiation and facilitation from social mobilizers coupled with the organized voice of the landless, use right have been successfully created and transferred in some cases to poor and disadvantaged section of the society. However, there are also examples where such negotiations have failed. In Sukrauli village of Nawalparasi district, for instance, the local elites, entirely males from mostly rich and middle class farmers, destroyed tree seedlings and vegetables in a new commons covering about five hectares managed by a group of 30 marginalized local women. The elites also took all the fish from ponds lying at the mid of the commons claiming that the land including the pond belonged to the whole community rather than a small group of women (source: group discussion in Sukrauli).

ad hoc legitimization

Unlike in other participatory forestry cases such as community forestry, strong policy provision is lacking in public land management. In practice, varied process has been adopted case-wise in order to formalize the groups willing to manage public lands for

agro-forestry commons. Such lands and groups are first identified in respective villages mobilizing local NGOs. The groups are facilitated to get formal authority from the respective village development committee. In some cases such use right is limited for fixed term, e.g. 20 years while in other cases it is not defined. Some of the groups are also registered in District Agricultural Office and District Forest Office (DFO) while in other cases registered as NGOs in District Administration office. In the newly drafted public land guideline of the Department of Forests (DOF), a tripartite agreement of group, land authority institution and DFO has been proposed to formalize the lease agreement (DOF, 2008). However, the guideline has not been approved. So far, the formalization process has been *ad hoc* resulting in the weak incentives for the people to be organized to create agro-forestry commons for their exclusive use rights.

Choice of management models and species

Once the land is claimed by the PLMG, modalities for how to manage the land becomes an issue. The interests of the people involved in the group vary depending on their needs and local situation. Some people using the land for grazing their cattle want to manage the land in silvo-pasture model while the ultra-poor want to supplement their income by production of short rotation agriculture crops such as vegetables and cash crops in the land. The marginal landholders have been found to claim for supplying forest products like fuel wood by planting fast growing species. In some other cases, people wanted to manage the land to raise long rotation valuable timber species such as teak (*Tectona grandis*). In public ponds, several clashing modalities, such as fishery only, silvo-fishery, irrigation only or pond for buffalos to wallow have been the interests of the individual households in the same PLMG. Balancing interests of group members considering livelihood needs of the people is an issue. Conflicts have been found in places where such interests have not been balanced leading to failure of the agro-forestry commons.

Equitable benefit sharing among members

Agro-forestry commons under discussion has been regarded as a new commons especially following Netting (in Dietz et al. 2001). Netting provides a number of land conditions including low value of per unit production, low frequency and dependability of yield and low possibility of improvement for people to choose for common property as opposed to private property (in Dietz et al. 2001). The new commons discussed in this study follows the shift from open access to common property (rather than from private to common) resulting in higher per unit production, higher frequency and dependability of yield and higher possibility of improvement of the land through labor inputs. The high dependency of the group members on the agro-forestry commons for their livelihoods has implication in sharing benefits of the commons. In this connection, how to distribute the benefits generated from the commons equitably among the individual households has been a serious issue. In the case of tree management and public ponds, there is an understanding to equally distribute the products among the members. For the agricultural crops, however, the lands are equally divided by the group into parcels equaling the number of households to practice crops under the trees in order that the individual household invests cost and reaps benefits from the allotted parcel. However,

the division is not easy given the site-specific productivity of the same public lands, thus bringing conflicts among the members.

5.2 Second-generation issues

In the cases where the afore-mentioned issues have been resolved and at least temporary institutions are established, a number of other issues have emerged challenging long term livelihoods and ecological sustainability from the commons under discussion. We have termed these issues as second generation issues and discussed in the following points.

Tenure security/policy issue

Lack of legislation or explicit policy for public land management under common property regime results in insecure tenure for the poor to sustain their rights over the resources. This is specially relevant when no common management systems existed in these public lands prior to agro-forestry commons. Wherever the public lands have been brought under management, village or municipal secretaries were persuaded to make a contract with the PLMG to manage the given public lands for a given period of time. However, the validity of the contract can be questioned given the authority of the secretaries (who are only civil servants) in the absence of elected village councils. It has created disincentives for the group members to practice long-rotation crops such as trees considering the insecurity of their long term entitlements.

Lack of a clear policy framework and legislation for handover of public land to communities has implication in the long run for the poor and marginalized households to claim the resources they have generated over time ultimately resulting in their further marginalization. As most of the public land is uncultivated requiring significant investment (labour and other resources) to make it productive, larger communities (including elites) have not aggressively opposed (barring some exceptions) the poor and landless to invest resources and to earn livelihoods. But once the land becomes more productive and starts generating higher yields, there is likelihood that conflict and competition will be aggravated from within and outside communities to claim the resources. The extreme example is in the case of Sukrauli village as mentioned above. Similarly, village councils themselves might be interested in future to generate revenue from the land once it becomes more productive. In both situations, the PLMGs, which have been investing labour and resources to make the land productive, can be excluded from longer-term utilization of the public lands.

Unpaid ecosystem services

The public lands are managed by the landless and marginalized households regenerating forest resources that provide a number of ecosystem services including biodiversity, carbon sequestration and landscape beauty by greenery. Although the poor people managing public lands have exclusive use rights over the tangible benefits, such as fuelwood, grasses and agricultural crops at least under contractual conditions, the ecosystem services are free ridden by the society at large. Out of the managed public

land, 592 ha are solely under tree plantation while the additional 134 ha of land is under agro-forestry with at least 20-40 percent tree cover. The agro-forestry commons in Mexico, for example, are paid at a rate of \$90 per hectare per year for their contribution to generating ecosystem services (McAfee and Shapiro 2010). The concept of recognizing ecosystem services is likely to be increased in the future once the poor and excluded are aware of their contribution to generating the supply of such services to the larger community. At certain level, voices for the Payment for Ecosystem Services are likely to be intensified in the future due to growing awareness of payment for ecosystem services at both global and national level (Dhungana et al. 2008).

Forest regeneration versus livelihood needs of the poor

The majority of the households involved in the agro-forestry commons come from ultra poor identified from well being ranking. In the beginning, the public lands are normally less productive requiring heavy inputs to cultivate in comparison with nearby private agriculture lands. Increasing people's participation in managing public lands with forest regeneration is thereby a complicated task. With token contribution of financial, technical and social mobilization support from development agencies such as LFP, the landless and marginalized households have been willing to manage the public lands. However, given their vulnerability in terms of livelihoods assets, they are compelled to prefer short term benefits such as vegetable and cash crops to forest crops. The agro-forestry has been a reconciling point but there is a conflict between the poor and relatively non-poor households over the ratio of tree and agricultural crops. Likewise, the supporting agencies such as District Forest Office, village development councils and LFP have set some conditions for the PLMGs to maintain tree cover in the land, albeit without any prescribed percentage. After some years the trees start growing rapidly casting shades over the understory, which some households reported, would result in decreased agricultural yield. In many cases where trees grew to a stage of closed canopy, the farmers voluntarily started managing the land as 'forests' instead of 'agro-forests'. When asked the poorer households, they were found unhappy with the 'forest only' practice but they just followed the decision made by the majority of the group. Some compensation mechanism would be desirable to the poorer households to meet their immediate needs of the livelihoods in cases where 'forest only' practices are encouraged.

6. CONCLUSIONS

The agro-forestry commons in the previously uncultivated public land is a new approach in creating natural resources specially for the landless poor in the southern belt of the Terai. If handled properly resolving its first and second generation issues, it could also contribute to augmenting livelihood assets of the landless poor and socially excluded people. Despite the tremendous potential of public lands to impact positively through new agro-forestry commons on livelihood and ecological opportunities, the programme has not gained its momentum. Creating incentives for the local rural poor to be organized to manage agro-forestry commons has been a difficult task for development programmes due to a number of issues during the formation and post-formation phases.

In order to realize the full potential of uncultivated or underutilized public land to impact on the transformation of ecological and subsequent politico-economic order, at least four paradigms are considered important.

First, policy formulation for public land agro-forestry commons is vital. Although tenure security has not been an issue during the creation of commons, the lack of formal entitlements for the groups to utilize these commons makes them vulnerable to collapse any time. The existence of the commons and their groups at present is dependent on the support of the development projects, local institutions and NGOs. In such circumstances, the long term sustainability of these public land commons is highly questionable due to the lack of strong policy backing. It will also depend on how the district and regional networks of the public land groups continue their grass-root movements to influence various policy and development actors to lobby for policy formulation of the public land management under common property regimes. Similarly, the roles of development agencies (including donors) in pushing the government for policy change have not been uncommon in Nepal over the history (e.g. Kumar 2002). In this precedence, whether the development agencies move forward to support policy formulation through public land interventions for radical ecological and socio-economic transformation also matters. The Government of Nepal, which is the ultimate institution to formulate policy should consider the valid demand of the people living in the south for their access to forest resources including public land policy for agro-forestry commons.

Second, the continuation of converting public land groups into community forestry user groups is better option, if not the best. Evidence from the field has shown that people managing public lands are willing to take over the land as community forests as an immediate remedy for the long term tenure of the lands with the group (396 hectare already turned to community forests). Rule 26(2) of the Forest Regulation (1995) provides authority for the District Forest Officers to recognize community forests in plantation areas in public lands or institutional lands (under the recommendation of the institutions) outside national forests (GON 1995). Once the lands are brought into community forests, the use rights of the groups over the lands are legally secure under Forest Act and Regulation of the country. However, there are some limitations in community forests, such as in the case of public ponds or agro-forestry practices with agricultural crops, which are prohibited by Forest Act. A separate policy and legal provision for agro-forestry commons would be a desirable option to overcome the limitations of CF. However, turning public land to CF should be strengthened in the cases where the groups are voluntarily preferring forestry practices to agro-forestry (from the beginning or after tree crown is too dense to practice agricultural crops) or until the clear and strong policy and legal frameworks are formulated specifically for agro-forestry commons in the public lands.

Third, geographical shift of development programs from 'national north' to the 'national south' in a significant scale is noteworthy. As already stated, collective actions in the southern part of the Terai has been missing due to scarcity of common-pool-resources and programme interventions. Given that external aid is principally accepted as both facilitating and enabling conditions for sustainability of any commons (Agrawal 2008), it is desirable in the agro-forestry commons discussed in this study as well. Since there is

potential to create commons through agro-forestry in the public lands, it would require further programme interventions in the area. The people in the southern Terai during this study reported that development projects such as LFP should scale up its supports in the southern part where other common pool resources, such as forest, is virtually absent (DFON 2008). Through project supports, increased social assets of the landless poor and socially marginalized households can contribute to transforming existing semi-feudal culture and production relations towards equitable and productive relations in the society. The public land groups in the three districts have already federated to district and regional network, which require further support to increase collective voices for changing policy and local rules in their favour. Given that CFUGs in the northern parts have been relatively more robust in terms of different livelihood assets including forest resources in comparison with their counterpart public land groups in the south, it is justifiable that more support of the development projects in natural resource management be channelized towards south.

Finally, social production of ecosystem services is an area of further discussions and negotiation if this emerging neo-liberal paradigm (McAfee and Shapiro 2010) can better benefit the poor and excluded. Agro-forestry commons not only supplement forest and agriculture products but a number of ecosystem services as discussed in the earlier sections. In many cases, the elites and middle-class people have opposed to allocate public lands for agro-forestry commons arguing that the lands belong to the community at large, rather than the small groups. The conflicts arise due to the values the society excessively put on economic benefits of the public land when it is open for grazing or other land-uses for the society at large. The issue can be contested and negotiated if the ecosystem services are taken into account. Indeed, the whole society is benefited from the ecosystem services at a cost of the inputs invested by the landless and marginalized in the public lands under agro-forestry commons. The awareness raising among the people in ecosystem services and the concept of Payment for Ecosystem Services would be an area to discuss. Exploring opportunities for carbon trading of afforested public lands under the Clean Development Mechanism is another option to compensate the livelihood needs of the poor while trading off between the ratio of forestry crops and agricultural crops discussed in the earlier sections.

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