



*Module 2 for LL2, Agroforestry for Grazed Woodlands  
Course 3 – Advantages of agroforestry for grazed woodlands*

## ***Chapter 5 - Socio-Economic Consideration of Agroforestry for Grazed Woodlands***

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## 1.Introduction: Definition of Grazed Woodlands

- Woodlands grazing is a management which develops the necessary facilities (such as perimeters, watering system, fences, shelters and feeders) in the existing woodland, and the suitable animal species in the plots to utilize the understory vegetation
- It is a must that more than 50% of vegetation are available to let the animals move from one plot to another one. It involves controlling the unwanted understory vegetation, pruning, thinning, and minimizing fuel build-up to reduce possible fire hazards
- Using small ruminants, as grazing animals, can be a sustainable way of managing understory vegetation in woodlands, and at the same time generating regular short-term incomes from the animal component (Gitonga, 2012)



Credit to: Peter Moubarak



## 2.Natural Resource Tenure

### 2.1.Categories of land tenure

- Private: the assignment of rights to a private party who may be an individual, a married couple, a group of people, or a corporate body such as a commercial entity or non-profit organization. For example, within a community, individual families may have exclusive rights to agricultural parcels and certain trees. Other members of the community can be excluded from using these resources without the consent of those who hold the rights
- Communal: a right of commons may exist within a community where each member has a right to use independently the holdings of the community. For example, members of a community may have the right to graze cattle on a common
- Open access: specific rights are not assigned to anyone and no-one can be excluded. For example, in some countries, forest lands may fall under the mandate of the state, whether at a central or decentralized level of government (Pykälä, 2007)





## 2.2.Rights to land and trees

- Sometimes, different tenure regimes can co-exist in the same landscape, and even within some tenure regimes two or more individuals or groups can have different rights to a specific area of land or related natural resources (such as trees), either simultaneously or in different seasons
- The international used classification are (“Economic-Considerations-of-Silvopastoralism.pdf,” 2004) :
  - **Access rights** enable entry to the land, such as the right to walk in a forest
  - **Withdrawal rights** include the right to take something from the land, such as forest foods, firewood, timber, etc.
  - **Management rights** cover the right to use or change the land, such as to plant trees or crops or to graze animals, or to make improvements to the land, such as better water management
  - **Exclusion rights** prevent others from using the land or resource
  - **Alienation rights** enable the transfer of land to others, by sale, lease or bequest







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### 2.2. Rights to land and trees

Multiple rights to a specific parcel of land or to specific natural resources on it can be held simultaneously or successively by several people or groups. These complex rights mean that even a single landscape that might contain forests, agroforestry with trees, crops, pastures and animals, and lakes/rivers, would be subject to a web of different property rights regimes or tenure niches. For food security and livelihoods, it is important to recognize that these bundles of rights can be further broken down, with different individuals, families, kinship and other groups accessing different right” to the same resources (Africa, 2011)



Credit to: Peter Moubarak

Forest and agriculture mosaic landscape, Cat Ba, Vietnam



Food and Agriculture  
Organization of the  
United Nations

### 2.3. Food Security

- In 2001 the FAO report shows that forest and tree resources help reduce poverty and contribute to rural food security
- Most the very poor families, with few resources except their labor, are highly dependent on forest products for their food security and livelihoods
- Forests, tree-based and animal systems have historically played a major role in supporting livelihoods as well as meeting the food security and nutritional needs of people worldwide
- Gender differences in the types and relative sizes of productive assets and control of income are critical for food security as a large body of evidence shows that women are more likely to spend their income (from their own production or wage labor) on food, healthcare and education of their children (Ministry of Agriculture, 2015)

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## 3. Demographic Characteristics

### 3.1. Gender

- Unfortunately, in third world countries, women are still suffering for their rights even in accessing or using or managing grazed woodlands and forests
- Latest statistics and a large number of field studies show that most land tenure systems are gender-biased, allocating primary rights to land to male members of the community and family
- Gender differences in ownership or use rights to trees are particularly complex and vary by culture. In many countries, trees on state, community or open access land belong to the state. Women in matrilineal systems often have stronger rights, though sometimes these are controlled by their brothers or maternal uncles
- Gender differences in the way land is accessed also contribute to differences in tenure security. i.e: In sub-Saharan Africa, men often acquire use and management rights to land through inheritance or allocation by their clan or lineage, while women more commonly acquire temporary use rights (and occasionally permanent rights) through marriage and to a considerably lesser extent through fathers and brothers



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### 3.1. Gender

- At opposite, in Latin America, women are more likely to acquire land through inheritance (so their rights are not affected if their marriages dissolve) and men through purchases in land markets
- Rural men and women often acquire different types of assets. Men are more likely to own large livestock such as cattle and buffaloes and women small livestock such as poultry and goats
- The interrelationships between women's rights to trees and their products and household food security and nutrition raise two major issues:
  - The first is the need for women's security of tenure. However, both men and women were equally likely to plant trees on community woodlots where the duration of their rights to the trees was secure as long as they remained village residents
  - The second issue is the complementarity between men's and women's access to different products from the same trees, sometimes in different seasons, and from different tenure systems





### 3.1. Gender

Land ownership or use rights may not be sufficient to exercise control over the use, management and the products of trees on their land:

- Even where women have land ownership rights, research in the Gender Asset Gap Project in Ecuador, Ghana and the state of Karnataka in India found that land did not automatically translate into decision-making on what to grow, how much of the crop to sell, and over the use of the income generated from crop sales.
- Case studies in seven Asian countries showed that indigenous women perform about 70 percent of the work in shifting cultivation. Men identify suitable land and do the hard physical work in land preparation. Women also help in clearing the land, selecting seeds and weeding, while both men and women harvest and conduct the rituals during the cultivation cycle together (Meinzen-Dick et al., 2014)





### 3.2.Education

- Due to the difference in education levels between the farmers of first and third world, a difference in managing the forests and in showing the importance of increasing the area of grazed woodlands is identified. For example, many farmers in UK and Germany considered that agroforestry offers wider community involvement and more interaction with the public through educational programs in schools and kindergartens, planting days with children in association with ‘one tree per child’ movement, interacting socially with each other because of the need for the liaison with other farmers, improving relationships in the village, etc.
- In Opposite, in Malawi, India and Nepal, the forest income declined with the household head’s level of education (Pisanelli et al., 2016)



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### 3.3.Ethnic origin

- Such factor determine social and gender relations and their interaction within production systems, and shape the cultural identities and social groups and communities and indigenous peoples, and their food and livelihood preferences and choices
- It also embody power relations which determine access to land, trees and other productive resources, and participation by different stakeholders in forest and natural resource governance mechanisms and the resulting outcomes in terms of resource appropriation or sharing and conflict resolution
- Sometimes, even a single landscape often comprises peoples or social groups of different ethnic or religious affiliation, class, caste, political ideology or agricultural profession (pastoralists, sedentary farmers, foresters, plantation managers, hunters and gatherers) who may have overlapping, complementary or quite distinct production systems (Meinzen-Dick et al., 2014)





### 3.4. Household size

- Household size can determine the size of the woodland, the diversities of plants and animals, the productivity in quality and quantity. Forestry employment, collection and sale of forest products and small forest-based enterprises provide income which is important for meeting household needs and for rural investment. Various studies show that the creation of employment and business opportunities within the forestry sector is probably the most significant contribution that forestry could make towards provision of household food security of rural people's livelihoods
- It is frequently argued that poor households (even if the size of the family is bigger and especially those headed by women) are more dependent on forest resources for food and income than richer households although the evidence is mixed. Richer households with more assets (including livestock) are able to claim or make greater use of forest common property resources. However, poorer households often have a higher dependence, as a proportion of their total income, on forest resources for food security and livelihoods (Reports, 2016)





### 3.4. Household size

- Some examples worldwide of growing body of evidence suggests that the role of capital and/or credit is critical in enabling households or individuals to exploit forest resources
- For example, in Nepal, the households with land and livestock assets gained more from community forests because they were able to make greater use of intermediate forest products such as leaf litter, fodder and grass products. For the majority of smallholders in local or indigenous communities, forest income is often insufficient to support investment in forest and tree resources
- Some other countries have introduced small grants and microcredit schemes for smallholders, sometimes through the mechanisms of producer cooperatives or, particularly in Latin America, by facilitating relations between banks and small forestry producers (Reports, 2016)



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### 3.5. Years of Experience

- One of most important factor that affect the economic returns of the grazed woodlands is the experience of the farmer and his labors
- The agroforestry practices depend on the personal vision for the land, experiences and knowledge about land-use options and especially on the economic benefits from these practices
- This means that the experiences and financial capacities as well as the temporal and spatial scale of the farmer or landowner highly determine the economic impacts of agroforestry practices
- It is obvious that the long term contract between the government and the farmers play a key role in getting good practices for grazed woodland. The experience will be delivered easily from generation to generation and will increase the socio-economical benefits (Group & Preparation, 1985)





#### 4. Investing in forest grazed woodlands

- Grazed Woodlands depend on the land use investment starting by the farmer who should have the necessary experience to manage the forest and to have a quite atmosphere in order to insure the quantity and the quality of the production
- The investment of machineries and infrastructure can come from government or non government organization or from a collaboration from the both sides.
- Investments play a major role for the establishment of grazed woodlands systems; the initial investments might be higher. On the other hand, the time of maturity of the investment requires flexibility of the farmer as financial returns of woodlands systems generally require more time than conventional agricultural practices



Credit to: Peter Moubarak



## 4.1. Human capital

- In forests, and specially grazed woodlands and communal forest systems, the availability of human capital, commonly recognized as labor and education though also covering traditional knowledge and skills and health that are less easily quantified, is one of the main factors affecting the ability of an individual, household or community to clear, maintain, and use forests and tree products
- Without any doubt the main key factor is the labor, his specialized knowledge and skills that are often gender- and age-specific are also critical. For example, women often specialize in forest medicinal plants and fuel wood, and men in hunting wild animals for food, while either may have rich knowledge of other foods and fodder, depending on their cultures





## 4.1.Human capital

- In many countries, grazed woodlands are becoming an increasingly important smallholder livelihood strategy for a variety of reasons of which a critical one is labor
- Shortages of labor (especially male labor) as well as land are leading to shorter fallows and longer cultivation periods in many shifting cultivation systems
- Land shortages, for example, in the uplands of Southeast Asia, are the result of increasing population densities from endogenous growth and in-migration by large numbers of lowlanders, as well as loss of access to land taken over by the governments (Ii, 2014)

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## 4.2 Governmental investments

- The role of capital in investing in grazed woodlands is critical in enabling households or individuals to exploit forest resources
- The government should play a key role in order to provide the necessary capital to keep the grazed woodland in operation. Some times, they will provide the capital from the national budget or from auto-self financing model for each woodland
- They just invest the first years in the woodlands without any income and than the income of the production can be divided between salaries for the farmers and maintenance for the woodlands to continue operating

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## 4.2 Governmental investments

- A number of countries have introduced small grants and microcredit schemes for smallholders, sometimes through the mechanisms of producer cooperatives or, particularly in Latin America, by facilitating relations between banks and small forestry producers
- Nowadays, the governments are encouraging farmers for starting grazed woodlands more than forests because of their higher income
- A study in Nepal found that households with land and livestock assets gained more from community forests because they were able to make greater use of intermediate forest products such as leaf litter, fodder and grass products (Gitonga, 2012)







### 4.3. Non-Governmental organizations investments

- Due to the absence of support from the local governments, NGOs play a key role in providing the right capital to start a grazed woodland by:
  - Donations
  - Facilitating of providing a long term credits from banks and organizations with zero interests
  - Providing the necessary training for farmers
  - Support all the way for the operation until the system starts to have an auto-satisfaction cycle

(Group & Preparation, 1985)





## 5. Socio-Economic benefits of Agroforestry for grazed woodlands

- A main goal of implementing agroforestry for grazed woodlands systems is improving livelihoods of poor rural small holders. However, the societal benefits of temperate agroforestry for grazed woodlands have received less attention with the focus limited primarily to economics, and, there is a pressing need for more socio-economic research in temperate systems
- Integrating trees and animals into the agricultural landscape has the potential to impact the local economy through increasing economic stability, diversification of local products and economies, diversification of rural skills, improved food and fuel security, improvements to the environment (both cultural and biological), and landscape diversification





## 5.1.National financial benefits

- Many economic studies of agroforestry for grazed woodlands have shown that financial benefits are a consequence of increasing the diversity and productivity of the systems which are influenced by market and price fluctuations of timber, livestock and crops
- In addition to higher yield potentials of agroforestry, product diversification increases the potential for economic profits by providing annual and periodic revenues from multiple outputs throughout the rotation and reducing the risks associated with farming single commodity
- Agroforestry for grazed woodlands practices, compared with exclusive forestry land use, are able to recover initial costs more quickly due to the income generated from the agricultural component
- Other studies have shown increased profitability of silvoarable and silvopastoral systems compared to agricultural monoculture systems

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## 5.1.National financial benefits

- Direct economic benefits are through creating and sustaining of jobs and contribution to the Gross Domestic Product (GDP). Various studies show that the creation of employment and business opportunities within the forestry sector is probably the most significant contribution that forestry could make towards provision of household food security and up liftment of rural people’s livelihoods (FAO 1997; DWAF 2005; Ofoegbu 2010). The level of employment in the forestry sector is thus an indicator of both the social and economic value of the sector to the society
- A case study in Denmark shows that there has been considerable interest in placing a monetary value on the delivery of ecosystem services such as soil protection and carbon sequestration; and thus, calculated the values of market and non-market ecosystem services of a novel combined food and energy agroforestry system (“Agroforestry : Reconciling Production with Protection of the Environment A Synopsis of Research Literature” 2010.)





## 5.2.Social Benefits

- Social benefits of agroforestry for grazed woodlands are related to the increase of the land value which does not only bring advantages for the farmer or land owner but also for the society as a whole
- As traditional practices and the attractiveness of the countryside are preserved, a higher enjoyment by the public is facilitated. This again is closely connected to economic aspects of agroforestry as rural tourism is often linked to the appreciation of the countryside
- The agroforestry systems have a social content that is not only connected to the social context but also to ecological and economic aspects. It involve the interplay of landscapes, livelihoods and national as well as international political systems
- However, by resorting to pure modernized agricultural practices, a considerable loss in tradition and heritage is evident as particular practices disappear from the production process (Arnold, 1983)





## 5.2-Social Benefits

- Besides maintaining cultural heritage and traditional farming methods, agroforestry also serves as a technique to enhance the landscape amenity for the wider society. Because of the heterogeneity that agroforestry systems create, the attractiveness of the rural landscape increases
- As agroforestry has the potential to reduce the environmental risks, economic risks of agroforestry systems can also potentially be reduced
- In summary, agroforestry includes the maintenance of local cultural heritage, enhancement of the landscape and thus opportunities of recreation, including territory enjoyment (Meinzen-Dick, Kovarik, & Quisumbing, 2014)



Credit to: Peter Moubarak





### 5.3 Diversification of local products and economies

- Agroforestry for grazed woodlands systems support the production of a wide range of products:
  - Food (arable crops, vegetables, animal products, fruit, mushrooms, oils, nuts, and leaves)
  - Fuel (willow or hazel coppice, charcoal, fuelwood)
  - Fodder and forage
  - Fiber (pulp for paper, rubber, cork, bark and woodchip mulch)
  - Timber (construction and furniture making)
  - Gums and resins
    - Thatching and hedging materials (spars, binders and stakes)
    - Gardening materials (pea sticks, bean poles, fencing, hurdles)
    - Medicinal products (ginseng, goldenseal)





### 5.3 Diversification of local products and economies

- Craft products (natural dyes, basketry, floral arrangements)
  - Recreation (agritourism, sport, hunting)
  - Ecological services
- 
- For some products, e.g. wood fuel (either as logs or wood chips) there is a need for production to be in close proximity to end-users to make the business economically viable. This creates important links and business relationships between the end-user and local community businesses so that the money that is paid to obtain these products is spent locally, thus stimulating the local economy
  - Tree products can also be used on the farm (e.g. for fence posts, fodder or bioenergy) and this should reduce inputs and increase the ‘eco-efficiency’ of the farming system as discussed earlier. (“Agroforestry : Reconciling Production with Protection of the Environment A Synopsis of Research Literature,” 2010.)





## 5.4 Rural skills and employment

- Economic agroforestry for grazed woodlands systems show that management of intercropped systems is often intensive with high manual labor input required
- Within wide countries, there has been a decline in opportunities for manual employment in rural areas over the last 20 years, and tree management skills such as coppicing and hedge laying appear to have been lost from the rural workforce
- Establishment of agroforestry for grazed woodlands systems requires a wider skill base, but estimating the impact of agroforestry on rural employment is restricted by the complexity of the system and a lack of formal studies. In addition to diversifying the skills base of the local labor force, there are likely to be positive implications for local industries supplying inputs and processing outputs from both the agricultural and forestry components of the system (Mercker & Forester, 2019)

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## 5.5 Ecotourism

All kind of forests can provide beautiful sites for tourism, recreation, spiritual healing, leisure and religious practices. The beauty of the landscape, species in the forest and waterfalls provide invaluable social benefit to many people. The sector is also crucial for educational purpose, as it attracts local and international students to do their forestry research.

Agroforestry for grazed woodlands systems can provide recreational opportunities that can benefit the general public as well as the landowner. Activities such as hunting, fishing, mountain biking, equestrianism and rural tourism can diversify income for farmers, while the public can benefit from improved health and enjoyment from agroforestry through sports and wildlife watching.

Furthermore, cultural landscapes such as the New Forest in England, the cork oak systems of Spain and Portugal, and the wood pastures of the Alps, can create financial opportunities through eco-tourism.

More than the landscape value per se, many farmers acknowledged directly that agroforestry contributes to increase the tourism in the country (Pisanelli et al., 2016)



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## 5.6 Reduce reliance on fossil fuels

- Today wood remains the single most important source in renewable energy, by providing more than 9 percent of the total energy supply in the world
- More than two billion people depend on wood energy cooking and / or heating, especially in homes in developing countries. With increased attention to climate change and energy security, the wood energy is becoming more important and clear
- In a time of mounting concerns about long-term availability of oil, agroforestry systems have the potential to reduce reliance on fossil fuel consumption in a number of ways. The production of renewable energy, through coppice systems or as a by-product of timber production can reduce the use of fossil fuels for heating and cooking

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## 5.7 Case studies

### Alabama

Area: 23 millions acre

Most dominant tree: Pine (38%)

Forest Fuel: 100-1000\$ per acre

Animals: Ruminants

Understory Vegetation: water oak, blackberry,

Yaupon

(Wise, 2014)





## 5.7 Case studies

### Coed Cymerau Isaf-England

Area: 32 Hectare

Most dominant tree: Oak

Animals: Ruminants

Understory Vegetation: black knapweed, Ribwort

plantain, Rhytidiadelphus squarrosus

(Wise, 2014)

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## 5.7 Case studies

### Marden Park– England

Area: 67Hectare

Most dominant tree: white beam,

Animals: Sheep/Goat

Understory Vegetation: Grass, Wildflowers

(Wise, 2014)

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## 5.7 Case studies

### Marden Park– England

Area: 67 Hectare

Most dominant tree: Oak

Animals: Pig

Understory Vegetation: bracken (*Pteridium*

*Aquilinum*), berries

(Wise, 2014)

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## 6. The future of Agroforestry for grazed woodlands

It is very important to highlight on the multiple benefits of integrating trees, animal and agriculture, and demonstrate the potential for agroforestry for grazed woodlands to reconcile the need for increasing productivity with protection of the environment and delivery of ecosystem services including soil, water and air quality regulation, biodiversity support and cultural services

### 6.1. Research and the potential of Agroforestry for grazed woodlands

Scientific research on agroforestry for grazed woodlands systems started lately, and some international cases focused on the combination of forest with elevating ruminants. The long time scale needed for such research is a limiting factor, with very few examples yet available of complete cycles of the systems through to tree harvest. Research needs range from studies at the fine-scale (species interactions), the farm-scale (economic as well as environmental benefits) right up to the landscape-scale (e.g. watershed impacts on nitrate leaching, biodiversity enhancement), national-scale (e.g. home-grown timber and fuel to reduce imports and increase renewable energy production) and global-scale (climate change mitigation and adaptation) (Forage et al., 2006)

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## 6.2 Awareness of the importance of Agroforestry for grazed woodlands

- The most important obstacle to wider adoption of agroforestry for grazed woodlands is the limited awareness among farmers and landowners of agroforestry practices
- For this kind of agroforestry to be adopted on a wider scale, economic viability and practical management skills need to be demonstrated to farmers and landowners. This relies crucially on effective dissemination, and therefore, outreach support and extension projects are essential
- Lack of public awareness of the importance of biodiversity conservation and the absence of a national government institution for forests would reduce the awareness of the importance of agroforestry for grazed woodlands (Meinzen-Dick et al., 2014)

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### 6.3 Policy and regulations

- It is very obvious that supportive policies are seen as instrumental in providing incentives and removing constraints to wider adoption of agroforestry for grazed woodlands
- This kind of agroforestry systems often fail to qualify for subsidies under either agricultural or forestry policies, although there have been a number of recent developments in policy reforms (e.g. in France) that adopted options for payments to establish new agroforestry systems
- Raising awareness of the potential of agroforestry among policy makers is essential for promoting agroforestry as a mainstream land-use system
- In temperate systems, the general belief seems to be that the high cost of manual labor in Europe necessitates a greater reliance on agrochemical input and intensive management, particularly in the industrialized northern countries. Many temperate agroforestry systems are only one step up from conventional, intensive monocultures; while these systems benefit in a number of ways from integrating trees with crops or livestock, the full potential of agroforestry as a low-input, biodiverse approach to sustainable production and ecosystem service delivery is yet to be realized (Pisanelli et al., 2016)





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