
SUSTAINABLE MANAGEMENT IN COMMUNITY FORESTRY

(A term Paper of SFM 708, Community Forestry)

Submitted By

Manij Upadhyay

Master of Science in Forestry

Enrollment no: 1 (2007-2009)

Institute of Forestry, Pokhara



Submitted To

Ridish Pokharel , Ph.D.

Associate Professor

Module Coordinator, Community Forestry,

Tribuvan University, Institute of Forestry

Office of Dean, Pokhara



2008, November

Contents

Abstract	1
1. Introduction	2
2. Basic principles of SFM.....	3
2.1 Ecological integrity:	3
2.2 Social acceptability:	3
2.3 Economic viability:	3
3. Criteria and indicators of Sustainable Forest Management	4
3.1 Why are criteria and indicators important?	4
4. Sustainable Forest Management framework for community forestry	5
4.1 Criteria and Indicator of Sustainable Forest Management.....	5
5. Opportunities of sustainable forest management.....	6
6. Issues and challenges in Sustainable Community Forestry management.....	7
7. Lessons learned.....	8
8. Ways forward.....	8
9. Conclusions.....	11
10. References.....	12

Abstract

This term Paper gives an overview of sustainable management in community forestry. Sustainable managements in community forestry is defines as management and use of forest resource in such way that productivity and biodiversity of the forest are maintained and people's economic and social well-being are met without diminishing the ecosystem and future capacity.

To gain its objectives CF must be management in a sustainable way. This term paper explores the existing practice of Sustainable Forest Management in CF of Nepal its current issues and suggested the future way to make it more effective.

Key Words: Community Forest, Sustainable Forest Management, Criteria and Indicators

1. Introduction

Sustainable development can be defined as development that meets the needs of the present generation without compromising the ability of future generation to meet their own needs (Shrestha and Sharma, 2004). The concept is based on the recognition that the well-being of human society is closely related to the well-being of natural ecosystems (Pandey 1998).

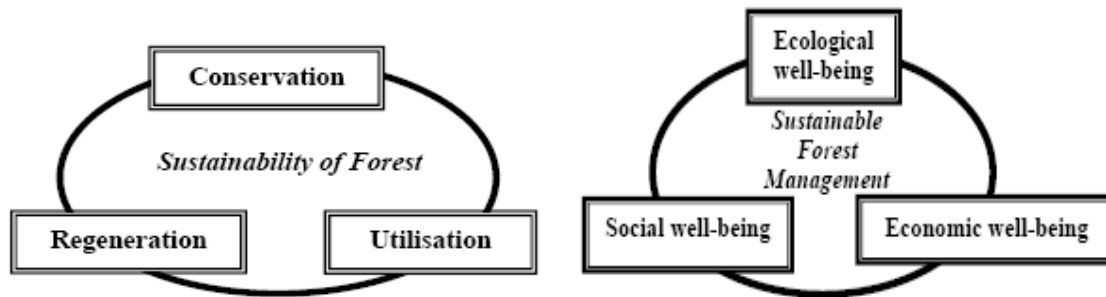


Figure 1. Traditional Concept of Sustainability of forest

Figure 2. Conceptual framework of sustainable community forest management (Pandey, 1998 with some revision)

Traditional sustained yield, a concept, focused mainly on the production of commodities, but has proven inadequate to meet the requirements of the present day society for various products and services and other non-material benefits (FAO, 2000). This concept was broadened in 1970s and consequently revised with a new concept of sustainable forest management (SFM).

Sustainable forest management encompasses the wider issues and values of ecological and social functions in addition to the earlier practices of sustainable timber production. It is seen as multipurpose management of the forest without diminishing the capacity of providing the products and services to those living in and around the forest in perpetual basis (Prasad, 2001).

ITTO (1992) define, SFM is the process of managing permanent forestland to achieve one or more clearly specified objectives of forest management with regard to the production of a continuous flow of desired forest products and services without undue reduction of its inherent

values and future productivity and without undue undesirable effects on the physical and social environment.

However, sustainable forest management is still being narrowly visualized as "management of forests only for sustained timber yield". Therefore, the approach of Sustainable Forest Management should be of holistic nature. Sustainable forest management will:

- Secure livelihood for the present generation and maintaining the potential requirements for the future generation;
- Provide inputs to develop rural areas by balancing between forests and other land uses;
- Involve all stakeholders with participatory process and Contribute to micro and macro-level economy; and
- Maintain a continuous flow of goods and services to the people without compromising ecological balance. Besides, it also incorporates natural forests, plantations, animals, flora and fauna, water and soil, and traditional knowledge and heritage.

2. Basic principles of SFM

According to [FAO \(2000\)](#), the components of sustainable forest management depend on ecological, social, and economic conditions. The three underlying principles of SFM are the cornerstones for defining silvicultural approaches in general and in particular in community forestry ([Dhital et al. 2004](#)).

2.1 Ecological integrity: Forest management can crucially contribute to preserve biodiversity and needs to shift the management axiom to ecological integrity ([Seymour and Hunter, 1999](#)). A primary focus of ecological integrity is restoring and maintaining native biological diversity. This can be achieved if the vertical structure is kept in a diverse form ([Brokaw and Lent, 1999](#)).

2.2 Social acceptability: CFUG generally comprises of different social, economic and interest groups. A forest usually can provide a range of forest products essential for the daily life of users. Obviously, the more requirements can be satisfied through forest management, the higher the social acceptance for community forestry will be. Multi-layered and uneven aged forests offer the highest possible diversity ([Dhital et al. 2004](#)).

2.3 Economic viability: Where a forest sustainably supplies the required forest products to the users the basic level of economic viability is safeguarded. Where suitable silvicultural approaches are adopted, productivity can be enhanced. In other words, the annual harvest amount can be increased and the economic value of forest products can be enhanced. This contributes to strengthen economic viability either directly through the forest system or

indirectly through the impact by the manner in which a forest is managed on dependent productions systems like agriculture.

3. Criteria and indicators of Sustainable Forest Management

Sustainable forest management is considered as one of the most important contributions which the forestry sector can make to the sustainable development objectives of any nation, particularly those richly endowed with forest (FAO, 2000).

ITTO first adopted a definition of criteria and indicators for sustainable forest management in May 1992. Since then, several countries are actively participating in one or more ongoing initiatives for the development and implementation of criteria and indicators. Some of these initiatives are: ITTO, IUFRO, CIFOR, Pan-European Forest Process and Montreal Process.

Three main conceptual tools constituting the important components of the C&I framework are namely: Principles, Criteria and Indicators (Paudel, 2002).

Principles: A fundamental truth or law as the basis of reasoning or action. Principles in the context of SFM are seen as providing the primary framework for managing forests in a sustainable fashion (Mendoza et al., 1999).

Criterion: “An aspect that is considered important by which SFM may be assessed” (ITTO, 1998). The criteria constitute a set of key elements; define the scope of the concept of SFM. “They are standards by which our progress towards meeting the principles can be judged”

Indicator: “A quantitative, qualitative or descriptive attribute that, when periodically measured, indicates the direction of the change” (ITTO, 1998). Indicators are the components or variables of the forest or management system that imply or indicate the state or condition required by criterion (Ritchie et al, 2000).

Verifiers: Verifiers are the data or information needed for assessing an indicator (Ritchie et al., 2000). They define the specific details that would show whether an indicator is met.

Seven common thematic areas of sustainable forest management have emerged based on the criteria of the ten ongoing regional and international criteria and indicators initiatives. The seven thematic areas are (Paudyal, 2008):

- | | |
|--|---|
| 1. Extent of forest resources | 5. Protective functions of forest resources |
| 2. Biological diversity | 6. Socio-economic functions |
| 3. Forest health and vitality | 7. Legal, policy and institutional framework. |
| 4. Productive functions and forest resources | |

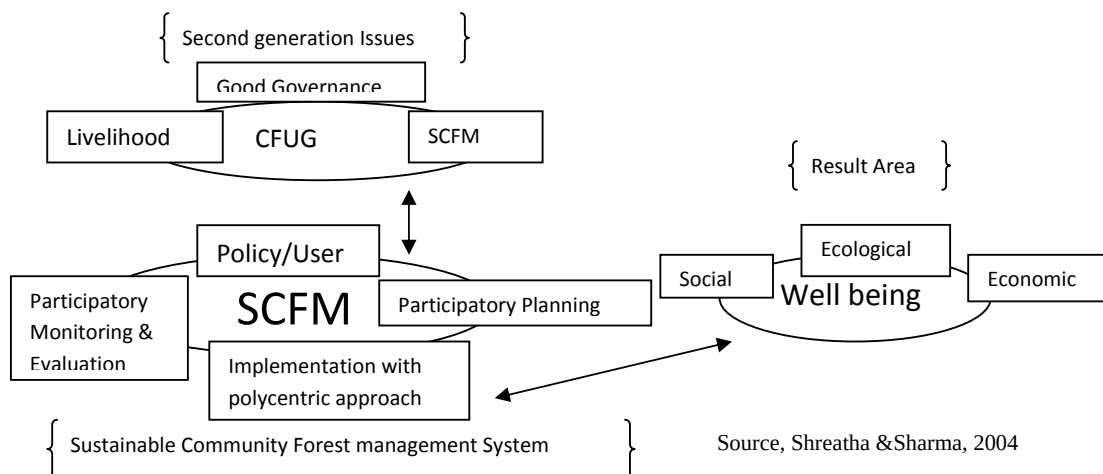
3.1 Why are criteria and indicators important?

Criteria and indicators help building bridges between stakeholders in the forestry domain; they are useful in informing policy makers and in communicating with the public. In turn, this information is a means to influence policies and decisions to achieve SFM (FAO, 2008).

At the international level, criteria and indicators help countries to prepare consistent and solid national reports for international organisations, UN conventions and legally-binding agreements related to forests such as: The Convention on Biological Diversity, The Convention on International Trade in Endangered Species of Wild Fauna and Flora etc.

At the national level, criteria and indicators are useful tools for; monitoring the efficiency and effectiveness of National Forest Programs and other related policy processes, they serve as a framework for assisting strategic planning, setting goals and monitoring sustainable forest management plans and certification schemes. Therefore, their inclusion in the National forest resources assessments is crucial.

4. Sustainable Forest Management framework for community forestry



Community forestry (CF), is defined as a process through which government transfers the responsibility of managing forests to the communities and recognizes latter's right to use on sustainable basis (Kanel, 2004). Rural communities directly rely on the CF for fuelwood, fodder, and livelihood. These people need regular supply of forest products and income from the forest in order to maintain their life perpetually. Therefore, the sustainability of community forest management has turned out to be indispensable.

Importance of sustainable community forest management (SCFM) is not only confined within local and national level, but also a matter of great concern at regional and global level. At global context, the environmental problem of carbon emission is the concern to the world habitants, and community forests have directly or indirectly helped to sequesterate carbon. To continue this process, in this regard, the sustainability of community forests might be a matter of concern for the world.

4.1 Criteria and Indicator of Sustainable Forest Management

Formulation of national standard started by setting out broad principles and criterias to fulfill SFM principles and identify of indicators to make sure that these criterias of SFM are fulfilled. The criteria have to contribute to fulfill the principles, whereas indicators make sure that criteria are achieved. Standards cannot be developed based on hypothetical situations. It is equally important to incorporate practical issues during the formulation of standards. Since, Nepal has various ecological diversities, it is necessary that experiences are gathered from all ecological In the context of community forestry in Nepal, a forest is considered sustainably managed if it fulfils criteria such as (Kanel, 2008):

- a. Compliance with Laws and FSC Principles:** Forest management must abide by all applicable laws of the country in which they occur.
- b. Tenure and Use Rights and Responsibilities:** Rights to the land are clearly defined and clearly established.
- c. Indigenous Peoples' Rights:** Indigenous peoples' rights to own, use, and manage their lands are recognized and respected.
- d. Community Relations and Worker's Rights:** Maintain and/or enhance the long-term social and economic well being of forest workers and local communities.
- e. Benefits from the Forest:** Encourage the efficient use of the forest's resources and services to ensure economic viability, and environmental and social benefits.
- f. Environmental Impact:** Conserve biological diversity, water resources, soils, and unique and fragile ecosystems and landscapes, maintaining the ecological functions and integrity of the forest.
- g. Management Plan:** A plan is written, implemented, and kept up to date, including statements of long-term objectives.
- h. Monitoring and Assessment:** Monitoring is conducted to assess the condition of the forest, yields of forest products, chain-of-custody, management activities, and their social and environmental impacts.
- i. Maintenance of High Conservation Value Forests:** Management activities enhance the attributes of high conservation value forests.
- j. Plantations:** Plantations should complement the management of, reduce pressures on, and promote the restoration and conservation of natural forests.

5. Opportunities of sustainable forest management

Sustainable forest management helps to gradual increase in awareness and willingness among users to participate in forest management activities. It also helps to capacity development of the users to undertake silvicultural operations. Sustainable forest management may create following opportunities.

- SFM increasing the productivity of forest by developing and using tools and techniques in collaboration with CFUGs
- It helps to establish and run Forest based enterprise sustainably.
- CFUGs are evolving as service provider and entry point for holistic development. FUGs mobilize their fund for livelihood improvement of *poor, women and Dalit*
- It develops to develop local resource person and CFUGs have the potential of contributing to national GDP.
- SFM increase potential for carbon trading, gene pool conservation, ecotourism, game farming etc in community forestry and helps to establish and run forest based enterprise

6. Issues and challenges in Sustainable Community Forestry management

- 1) **Protection oriented management system:** many community forests are still protection-oriented, the community forestry program has been challenged and its success questioned by commentators due to passive, protection-oriented management (Nurse et al., 2004).
- 2) **Social inclusion:** In CF, program equitable distribution of forest products has not been practiced yet because of less involvement of *poor, women, and Dalit* in decision-making. There are lack of gender sensitive organization, programs and budget at all levels of forestry sector (Shreshta & Sharma, 2004).
- 3) **Exclusion of Traditional User:** some households are excluded from membership though they have been traditional users, e.g. transhumance livestock owners and MAPS collectors.
- 4) **Government Tax, Impractical laws and policies:** Policy of the government to tax the sale of some major commercial species from the community forests has created confusion among the users. It can create negative externalities in developing county like Nepal. Similarly, Lack of price differentiation according to the quality of timber/forest products and economic class of people is another issue.
- 5) **Lack of coordination in research, extension, and implementation.** Users and forestry staff reluctant (not motivated) to apply improved forest management techniques.
- 6) **Operational Guidelines is inadequate:** The contents of the Operational Plan are not specific. Most of the OPs are a blue print.
- 7) **Lack of proper forest management model for Terai and high mountain.**
- 8) **Lack of baseline information** on resources; and lack of biodiversity related data and Management of increasing population of wildlife in community forest areas.
- 9) **There is a huge backlog of Operational Plans** for revision; Dependency of CFUGs on DFO and other organizations for Operational Plan preparation and revision (LFP, 2008).
- 10) **Illegal trading** of Non Timber Forest Products (NTFPs) and lack of adequately trained manpower with regard to NTFP inventory, cultivation and management.

7. Lessons learned

Forest improvement is an indicator to measure the success of Nepal's community forestry program (Pokharal, 2005). Kanel et. al. (2004) reports that forest condition in terms of biomass and species diversity has increased after the hand over to CF. This has resulted safe habitat for birds and wildlife. However, full potential of the forests has not been utilized. This gap necessitates a clear policy regarding optimum harvesting and utilization. CFUGs are indebted to carryout inventory of community forest for prescribing allowable cut in the operational plans. However, it has raised some unintended consequences including delay in forest hand over and revision of operational plan due to the limited availability of technical supports.

CFUGs have also started farming NTFP-species in their forests. However, sustainability of income from the collection of NTFPs and willingness of farming might be questioned due to lack of proper management and harvesting guideline. Community forestry has not only enhanced micro-economy but also has indirectly supported national economy, in community development works, and paying taxes to the government. However, poor, woman, and Dalit are not being paid enough attention to improve their livelihood. Instead, the major part of the fund is being used in school, road, and other community development activities.

Forest fire caused damages to the quality of the ground and crown cover. However, recently the intensity of forest fires in the Mid-hills has decreased considerably due to awareness among the CFUG-members and their efforts in putting out the fire. Illegal felling, grazing and forest fire in many community forests are under control once the management responsibility shifted from the District Forest Office to the local community (Pokharel, 2005).

8. Ways forward

- 1) **Sustainable Non-Timber Forest Product Management:** The role of private sector and civil society organizations is essential to promote sustainable NTFP management. Establishment of more dynamic and facilitative institutions and processes and formulation of enabling policies with the participation of all stakeholders should be necessary for the SFM (Luintel et al. 2004). Similarly, resource assessment of the medicinal plants should be done to know the status and accordingly manage them sustainable. Thus, an inventory guideline especially for NTFP should be developed for major commercial species.
- 2) **Integrating Total Economic Value for Enhancing Sustainable Management of Community Forests:** Community forest (CF) provides multiple goods and services, though the total value has never been properly reflected in forest policies and practices. The planners and decision-makers mostly consider tangible forest benefits that are traded in the market. Environmental benefits remain ignored mainly because of the difficulty

associated with their valuation. As a result, forestry sector continues to be under-valued and consequently the importance of sustainable forest management remains ignored. A study shows that on average CF provides forest products worth Rs 1,865/ha/year, which amounts to around Rs 1.83 billion/year and is equivalent to Rs 1,346/household/year. (Niraula, 2004).

3) Need of Operational Guidelines Improvement in Community Forestry: Operational Guidelines (OGs) have been prepared and revised as per need. However, the real issues and steps are not adequately addressed in the present OGs. There is scope for further improvement of guidelines in the context of present needs and concerns mainly focusing on second-generation issues. A number of additional guidelines are needed to complete the process envisioned by the Operational Guidelines. Similarly, a number of important contents and procedures are identified which needs immediate improvements (Paudyal et al. 2004).

4) Bringing Community Forestry under Kyoto Protocol's Carbon Trading Regime: Development of community forestry in Nepal has had affirmative results in addressing rural livelihood conditions and sustainable maintenance of environmental services. Such attributes are definitely beneficial locally, and, simultaneously globally valuable as they stabilize climate change by sinking carbon from the atmosphere.

CFs in Nepal has the potential for development as a climate change project and can attract foreign investment under the Kyoto Protocol framework. However, due to the stringent conditions for qualifying CFs in CDM, rehabilitated natural forests which are the most common in Nepal, do not qualify or don't attract CDM funding. CF meets both the objectives of the CDM for promoting sustainable development and efficient emission reduction. Yet much needs to be done to include community forestry under the CDM regulations (Sharma, et al 2004). There is scope for additional research to be conducted in this area for the future sustainability of community forests.

5) Thoughts on Initiating Forest Certification: Forest certification process in Nepal, can pay additional advantages to the country in the long run by improving quality of management, conserving local ecosystem and socio-cultural practices. Similarly, it blends local needs and promotes good governance in local forest management system. If initiated, forest certification, can result in better management and optimum harvest (Shrestha, K. 2004).

If we initiate our own certification process, in-country capability will be enhanced and forest certification will be cheap and affordable to Nepalese proponents. At the same time

this experience will give enough basis even if Nepal has to adopt one of the international forest certification systems for marketing its products internationally.

- 6) Appropriate Harvesting Technology for Sustainable Community Forest Management:** If present trend continues, wastage of wood, more time consumption, risk, and damage will continue along with low productivity. This will create low quality of timber and ultimately users will get low price. Low productivity means high input and high cost. So, to avoid all these disadvantages, bow saw and two men cross cut-saw should be used. However, it is not easy to replace traditional technology by improved one. It needs extension and education program. Harvesting guideline can be one option to make the CFUG-members aware of improved technology (Shrestha, R.B. 2004).
- 7) Promotion of Community-Based Silviculture Demonstration Plots:** The main problem in hill community forests is underutilization of the resource at the cost of the livelihood of the local population, the national forests and the national economy. Silviculture demonstration plot is one approach that acts as laboratory where both the traditional and scientific silvicultural practices are intervened in smaller scale as a learning process. Silviculture demonstration plot will develop confidence and capacity of CFUGs in silviculture management of community forests (Suwal, 2004).
- 8) Media:** Media can play a vital role in the promotion of sustainable community forest management by disseminating the information from one CFUG to another. However, information regarding good examples and issues are getting blurred in public media due to disproportionate coverage of the news (Shrestha and Sharma, 2004).
- 9) Pro Poor Based activities:** Leasing small part of CF area to the poorest households for NTFP cultivation or fodder production can be one solution to reduce the poverty. Another option might be to use part of the CFUG income for activities that in particular favour the poor or generate employment opportunities for this group.
- 10) Establishment of Forest based enterprises:** Government, community or individual forest based entrepreneur should be established in the local as well as national level. The current provision of distance limit in establishing forest-based enterprises could be a constraint in the development of CFUG enterprise as it increase the cost of transportation. Forming cooperatives of CFUGs may enable them to access market directly and also enhance their bargaining capacity.
- 11) Provision of alternatives energy:** Rural communities still consume 69% of energy from fuelwood and this percentage has not decreased (Shrestha and Sharma, 2004), due to simultaneous increase of population each year. It has resulted in the risk of more exploitation of forests for fuelwood. To avoid more exploitation of forests, alternative

energy sources and improved cooking stoves should be intensively promoted among the CFUG-members.

12) Social inclusions: Sustainable community forest management itself needs to be sustained in order to have perpetual system and practices. Without solving the crosscutting issues like gender and social equity, the practices of sustainable community forest management cannot be sustained. So, crosscutting issues should be solved through social mobilisation process.

13) Ecotourism: Proper utilization of community forest should be promoted so that, users can generate optimum benefits. If community forest is appropriate for eco-tourism, CFUG should manage the forest accordingly. This will not only conserve and promote biodiversity but also contribute to livelihood enhancement.

14) Participatory monitoring and Evaluation system: Participatory monitoring and evaluation system is equally important for community forest management. In participatory monitoring and evaluation, the local community members should monitor and evaluate their forest management practices based on the process, criteria and indicators developed by them-selves.

Government of Nepal should be placed the Community Forestry Program in the priority list for national level budget planning. Similarly restructuring in the present administration model and more qualified technician should be mobilized in these sectors.

9. Conclusions

The concept of sustainable community forest management is very crucial for long-term conservation, management and utilization of forestry resources. The people most crucial for implementing sustainability on the spot are those people who live in the vicinity and work in the forest. Thus, when the objective is sustainable managed forestry we must ensure that vocational training in its form and contents can fulfill the achievement of this objective.

The changing nature of forest resources to be managed, that is, from old growth forests to second growth and plantation forests including other non-wood forest products. The different condition of these forests may require highly specialized silvicultural treatments to promote sustainability. Moreover, other forests products not formally managed in the past but are valuable to the local people may now need some form of management to prevent extinction and increase productivity. Intensive forest management; pro-poor focus; gender poverty and social inclusion; NTFP promotion; entrepreneurship development; polycentric approach; involvement of civil societies; participatory monitoring and evaluation are the main strategies that should be adopted for the Sustainable Forest Management.

10. References

- Brokaw, N. V. L. and Lent, R.A., 1999. Vertical Structure. In: Hunter, M. L. Jr. (Ed.) *Maintaining Biodiversity in Forest Ecosystem*. Cambridge University Press. pp. 373–397. Jackson, J. K. (1994) *Manual of Afforestation in Nepal*, Vol. 1, Forest Research and Survey Centre, Kathmandu. p. 260.
- Dhital, R.M., Shrivastab, A.K., Laubmeier, P., Rai, C.B., Regmi, N.P. 2004. Introduction of good silviculture practices in community forests: experience of community forest management demonstration programme. In Kandel et al. (Eds) *Twenty Five Years of Community Forestry Proceeding of the forth national workshop on community forestry*. Community Forest Division, Department of Forest Kathmandu Nepal. Pp 109-117.
- FAO, 2000. Development of National Level Criteria and Indicators for the Sustainable Management of Dry Forests of Asia: Background Papers, Asia and Pacific Forestry Commission, 30 November–3 December 1999, Bhopal, India (RAP Publication 2000/08).
- FAO, 2008. Criteria and Indicator for sustainable forest management; Food and Agriculture Organization of United Nations. cited in <http://www.fao.org/forestry/resources/styles/fao-global> access in 25 October 2008.
- ITTO, 1992. Criteria for measurement of sustainable tropical forest management. ITTO, Yokohama.
- ITTO, 1998. Criteria and indicators for sustainable management of natural tropical forest. ITTO Policy Development Series, no. 7.
- Kanel, K. R and Acharya, K., 1999. The Bharkhore Community Forest: A Case Study from Nepal, a Paper Presented at the International Workshop on Model Forests for Filled Level Application of Sustainable Forest Management, Mie, Japan. 23–27 March 1999.
- Kanel, K. R., 2004. Economic Impacts of Forest Policy Changes: Perspective from Nepal, a Paper Prepared for the Workshop on Community Forestry at Indiana University, Bloomington, USA.
- LFP, 2008. Sustainable Forest Management, Livelihoods and Forestry Programme, P.O. Box 106, Kathmandu, Nepal. Cited in <http://www.lfp.org.np> on 25 October, 2008.
- Luintel, H., Banjade, M.R., Naupane, H.R. and Pandey R.K., 2004. Sustainable Non-Timber Forest Product Management: Issues and Way Forward. In Kandel et al. (Eds), *Twenty Five Years of Community Forestry Proceeding of the forth national workshop on community forestry*. Community Forest Division, Department of Forest Kathmandu Nepal. Pp 42-47.
- Mendoza, G. A., Macoun, P., Prabhu, R., Sukadri, D., Purnomo, H., & Hartanto, H., 1999. Guidelines for applying multi-criteria analysis to the assessment of criteria and indicators (Vol. C&I Tool No. 9). Indonesia: CIFOR.
- Niraula D. R., 2004. Integrating Total Economic Value for Enhancing Sustainable Management of Community Forest: A Forward Looking Approach. In Kandel et al. (Eds) *Twenty Five Years of Community Forestry Proceeding of the forth national workshop on community forestry*. Community Forest Division, Department of Forest Kathmandu Nepal.
- Nurse M., Tembe, H., Paudel, D., and Dahal, U., 2004. From Passive Management to Wealth and Health Creation from Nepal's Community Forest, In Kandel et al. (Eds) *Twenty Five Years of Community Forestry Proceeding of the forth national workshop on community forestry*. Community Forest Division, Department of Forest Kathmandu Nepal.

- Pandey, D. N., 1998. *Ethnoforestry: Local Knowledge for Sustainable Forestry and Livelihood Security*, Himnashu, New Delhi.
- Paudel, B.K., 2008. *Forest Management, Lecture Note for the Students of Master in Science of Forestry*, Institute of Forestry, Pokhara Nepal.
- Paudel, M. P., 2002. Assessment of sustainability of community forestry through combined analysis of field and remotely sensed indicators (a case study in siraha and saptari districts, Nepal) International Institute for Geo-Information Science and Earth Observation Enschede, The Netherlands.
- Paudyal, B.R., Koirala, J.N., Shahi, B.B. and Sarkar, K., 2004. Need of Operational Guidelines Improvement in Community Forestry. In Kandel et al.(Eds) *Twenty Five Years of Community Forestry Proceeding of the forth national workshop on community forestry*. Community Forest Division, Department of Forest Kathmandu Nepal. Pp 56-63.
- Pokharel, R. 2005 Assessing community forest's condition using variables recommended by local people: a case of Kaski District. In Banko Janakari, A journal of Forest information for Nepal. Vol. 15, No 1. Kathmandu, Nepal.
- Prasad, R.2001. *Forest Management*. International Book distributors, Dehra dun, India.
- Ritchie, B., McDougall, C., Haggith, M., & Oliveira, N. B., (2000). Criteria and indicators of sustainability in community managed forest landscapes: An introductory guide. Bogor, Indonesia: CIFOR.
- Seymour, R. S. and M. L. Hunter Jr. (1999) Principles of Ecological Forestry. In: Hunter, M. L. Jr. (Ed.) *Maintaining Biodiversity in Forest Ecosystem*. Cambridge University Press. pp. 22–6.
- Sharma, B.D., Karky, B.S., Dahal, N., Chapagai, N., and Bhatta, B. 2004. Prospects and Challenges in Bringing Nepal's Community Forestry under Protocol's Carbon Trading Regime. In Kandel et al (Eds) *Twenty-Five Years of Community Forestry Proceeding of the forth national workshop on community forestry*. Community Forest Division, Department of Forest Kathmandu Nepal. Pp 64-71.
- Shrestha, K. 2004. Thoughts on Initiating Forest Certification in Nepal. In Kandel et al. (Eds) *Twenty Five Years of Community Forestry Proceeding of the forth national workshop on community forestry*. Community Forest Division, Department of Forest Kathmandu Nepal. Pp 72-77.
- Shrestha, R.B. 2004. Appropriate Harvesting Technology for Sustainable Community Forest Management. In Kandel et al. (Eds) *Twenty Five Years of Community Forestry Proceeding of the forth national workshop on community forestry*. Community Forest Division, Department of Forest Kathmandu Nepal. Pp 78-86.
- Shrestha, R.B., and Sharma, A.R., 2004. Sustainable Management of Community Forests: Towards Betterment of Rural Communities. In Kandel et al. (Eds) *Twenty Five Years of Community Forestry Proceeding of the forth national workshop on community forestry*. Community Forest Division, Department of Forest Kathmandu Nepal. Pp 34-41.
- Suwal, M.R. 2004. Silviculture Demonstration Plots: Means for Promoting Community-based Silviculture. In Kandel et al. (Eds) *Twenty Five Years of Community Forestry Proceeding of the forth national workshop on community forestry*. Community Forest Division, Department of Forest Kathmandu Nepal. Pp 87-94.