

**The Republic of the Union of Myanmar
Ministry of Environmental Conservation and Forestry
Forest Department**



**Study on Criteria and Indicators of International Standards for Certification
Contributing Sustainable Forest Management
in Natural and Planted Forests in Myanmar**



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မြန်မာနိုင်ငံရှိသဘာဝတောနှင့်စိုက်ခင်းများအတွက်သစ်တောထောက်ခံချက်ပြုရေးနှင့်ထာဝစဉ်သစ်တောစီမံအုပ်ချုပ်မှုအတွက်အပြည်ပြည်ဆိုင်ရာတွင်အသုံးပြုသောစံနှင့်အညွှန်းများကိုလေ့လာခြင်း

ပါမောက္ခဦးအုန်းလွင်၊ သစ်တောထွက်ပစ္စည်းပညာဌာန
သစ်တောတက္ကသိုလ်၊ ရေဆင်း

စာတမ်းအကျဉ်း

အပူပိုင်းဒေသတွင် ဇီဝမျိုးစုံမျိုးကွဲထိန်းသိမ်းမှု တိုးတက်စေရန်နှင့် သစ်တောပြုန်းတီးခြင်း၊ သစ်တောအဆင့်အတန်းကျဆင်းခြင်းများကို ဖြေရှင်းရန်အတွက် သစ်တောထောက်ခံချက်ပေးခြင်းလုပ်ငန်းကို (၁၉၉၀)ခုနှစ် အစောပိုင်းကာလများမှ စတင်ဆောင်ရွက်ခဲ့ပါသည်။ သစ်တောထောက်ခံချက်ပေးခြင်းသည် ထာဝစဉ်တည်တံ့စေမည့် သစ်တောအုပ်ချုပ်မှုကို ကောင်းမွန်စွာ အထောက်အပံ့ ပေးနိုင်သောလုပ်ငန်းစဉ်တစ်ခုအဖြစ် မှတ်ယူနိုင်ပါသည်။ ၎င်းသည်သစ်တောထွက်ပစ္စည်းဝယ်ယူသူများအတွက်အာမခံချက်တစ်ခုလည်းဖြစ်ပါသည်။

ယခုလေ့လာမှုရည်ရွယ်ချက်မှာ(၁၉၉၆)ခုနှစ်မှ ယနေ့အထိ (၁၈)နှစ်တာကာလ အတွေ့အကြုံများကို အခြေခံကာ လက်ရှိစံနှုန်းများကို ပြန်လည်စိစစ်ရာတွင် အထောက်အကူပြုရန်ဖြစ်ပါသည်။ စာတမ်းတွင်သစ်တောထောက်ခံချက် ပေးသော နိုင်ငံတကာစံနှုန်း သတ်မှတ်ချက်များ၊ မြန်မာနိုင်ငံ၏လက်ရှိစံနှင့် အညွှန်းများနှင့် ယခင်အကောင်အထည်ဖော်ဆောင်ရွက်မှု၏ အတွေ့အကြုံများကို စုစည်းတင်ပြထားပါသည်။ နိုင်ငံ၏သစ်တောကဏ္ဍ၊ မူဝါဒနှင့်အညီ ဖော်ဆောင်နိုင်ရန် စိုက်ခင်းအုပ်ချုပ်လုပ်ကိုင်မှု စံနှုန်းမူကြမ်းအတွက် အကြံပြုတင်ပြထားပါသည်။

သစ်ထောက်ခံချက် အကောင်အထည်ဖော် ဆောင်ရွက်ရာတွင် မြန်မာနိုင်ငံ သစ်တောထောက်ခံချက်ပြုရေး ကော်မတီ၏ အခန်းကဏ္ဍကိုထည့်သွင်း လေ့လာခဲ့သည့်အပြင် သစ်တောထောက်ခံချက် ပြုရေးလုပ်ငန်းစဉ်တွင် အစိုးရ မဟုတ်သော အဖွဲ့အစည်းများ၊ ပုဂ္ဂလိကနှင့် ဒေသခံအဖွဲ့အစည်းများ၏ ပူးပေါင်းပါဝင်ဆောင်ရွက်မှု အခန်းကဏ္ဍသည် သစ်တောအုပ်ချုပ်မှုတွင် အရေးကြီးပုံကို လေ့လာထားပါသည်။ မြန်မာနိုင်ငံတွင် သစ်တောထောက်ခံချက် အကောင်အထည်ဖော် အားထုတ်မှုများကို အကောင်းဆုံးမြှင့်တင်ရန်အောက်ပါအတိုင်းလေ့လာထားပါသည်။

- ထာဝစဉ်တည်တံ့စေမည့်သစ်တောအုပ်ချုပ်မှုအတွက် နိုင်ငံတကာနှင့်အမျိုးသားအဆင့်စံနှုန်းများကိုရှာဖွေနှိုင်းယှဉ်ခြင်း၊
- ထာဝစဉ်တည်တံ့စေမည့်သစ်တောအုပ်ချုပ်မှုအကောင်အထည်ဖော်ဆောင်ရွက်မှု၏ ယခင်အတွေ့အကြုံများစိန်ခေါ်မှုများနှင့်အကြံပြုထောက်ခံချက်များစုဆောင်းခြင်း၊
- တစ်နိုင်တစ်ပိုင် လုပ်ကိုင်သူများနှင့် ဒေသခံအဖွဲ့အစည်းများမှ ထွက်ရှိသောသစ်များအတွက် အုပ်စုလိုက် ထောက်ခံချက်ပြုပေးနိုင်ရန် လိုအပ်သောမူဝါဒနှင့်ဥပဒေ ဆိုင်ရာများနှင့် တွေ့ဆုံမေးမြန်းမှုများမှ ရရှိလာသော အကြံပြုချက်များကိုထပ်မံဖြည့်စွက်ခြင်း

နိဂုံးချုပ်အနေဖြင့် မြန်မာနိုင်ငံသည် သဘာဝတောနှင့် စိုက်ခင်းများ၏ သစ်တောထောက်ခံချက်ပြုရေး လုပ်ငန်းတိုးမြှင့် အကောင်အထည်ဖော် ဆောင်ရွက်ခြင်းအားဖြင့် ကမ္ဘာလုံး ရည်ရွယ်ချက်ဖြစ်သော ထာဝစဉ်တည်တံ့စေမည့် သစ်တောစီမံအုပ်ချုပ်မှုဆိုင်ရာများတွင်တက်ကြွစွာပါဝင်ဆောင်ရွက်သွားမည်ဖြစ်ကြောင်း တင်ပြထားပါသည်။

Study on Criteria and Indicators of International Standards for Certification Contributing Sustainable Forest Management of Natural and Plantation Forests in Myanmar

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Abstract

Forest certification was introduced in the early 1990s to address concerns of deforestation and forest degradation and to promote the maintenance of biological diversity, especially in the tropics. It is therefore forest certification is increasingly recognized as a practical tool to encourage and recognize efforts to achieve sustainable forest management (SFM) simultaneously maintain biological diversity, as well as in assuring buyers of wood products that they purchase are sourced from the sustainably managed forests.

The aim of this study, at the same time, helped assist to revise existing standard which functions forest certification can play as an instrument to promote SFM and biodiversity maintenance in Myanmar, how far the main concepts have been developed, and what lessons we can learn after about 18 years experience of implementation since 1996.

The paper identified main features of international standards of forest certification and compiled the previous experience on implementing existing standard of forest certification in Myanmar together with issues and options as well as to draft the standard for plantation management which hasn't been developed consistent to progress in policy and governance of forestry sector in the country.

The study extended the role of Myanmar Forest Certification Committee (MFCC) in forest certification implementation, while recognizing that there is an important role for non-government sectors, private and local community in making certification work which are internationally acceptable and enable to put into action by forest management units (FMUs). The study concludes to determine how best to update forest certification efforts in Myanmar by;

- exploring and comparing international and national standards for SFM,
- compiling past experience of issues, challenges and recommendation while implementing sustainable forest management (SFM), and
- in addition to group certification for timber from small holders and CF, with updated policy and legal instruments and comments from interviewers for further consideration.

In conclusion, with the aim of strengthening engagement in forest certifications both natural forest and plantation management, Myanmar will make commitment and actively participate in sustainable forest management to achieve global goals.

Key words: Certification, criteria and indicators, international, natural forest, plantation, standard, sustainable forest management.

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List of Abbreviation

AAC	Annual Allowable cut
ASEAN	Association of South East Asia Nations
C&I	Criteria and Indicators
CFCC	China Forest Certification Council
CSA	Canadian Standards Association
FD	Forest Department
FMP	Forest Management Plans
FMU	forest management unit level (FMU)
FSC	Forest Stewardship Council
GAP-CC	ASEAN-German Programme on Response to Climate Change
ITTO	International Tropical Timber Organization
LEI	Eco-labeling Institute of Indonesia
MFCC	Myanmar Forest Certification Committee
MFCS	Myanmar Forest Certification Scheme
MOECAF	Ministry of Environmental Conservation and Forestry
MSS	Myanma Selection System
MTCC	Malaysian Timber Certification Council
MTLAS	Myanmar Timber Legality Assurance System
NGO	Non Governmental Organization
PEFC	Programme for Endorsement of Forest Certification (2003)
SFI	Sustainable Forest Initiative
SFM	Sustainable Forest Management
UNCED	United Nations Conference on Environment and Development

Study on Criteria and Indicators of International Standards for Certification Contributing Sustainable Forest Management of Natural and Plantation Forests in Myanmar

1. Introduction

Myanmar became a producer member of International Tropical Timber Organization (ITTO) in 1995 and is fully committed to achieve sustainable forest management (SFM) in the overall context of sustainable development. It is therefore identification of criteria and indicators (C&I) for SFM at national and forest management unit (FMU) levels were initiated in 1996 based on ITTO's "Criteria for the measurement of Sustainable Tropical Forest Management" published in 1992. With the publication of ITTO's revised set of C&I for Sustainable Management of Natural Tropical Forests in 1998, Myanmar again revised its C&I for SFM in late 1998. Both the initial development and subsequent revisions of Myanmar C&I had involved all the institutions under the MOECAF and FRENDA, a forest-related non-governmental organization, has also formulated a set of C&I for SFM. The final document, a merger of the two sets of C&I developed was completed and approved by Ministry of Forestry (MOF) (now changed into Ministry of Environmental Conservation and Forestry, MOECAF) in October 1999. In order to improve the standard the Timber Certification Committee Myanmar (TCCM) was formed in August 1998 by MOF, and since then, it has been linked with other timber certification bodies on a bilateral basis.

Based on revised ITTO C&I (2005), over again the standards for forest management (Natural Forest) and timber legality certification were lastly developed in Myanmar in 2007 and 2009 respectively. Myanmar's C&I is the basis for developing timber certification checklist at the FMU level. Forest department (FD) has been testing the adequacy and application of Myanmar's C&I at FMU level for further improvement. Based on experiences after initiating C&I for forest certification in Myanmar, challenges and suggestions were encountered from a number of meetings, and workshop discussion among stakeholders in the country.

In 2013, TCCM was renamed into Myanmar Forest Certification Committee (MFCC) which covers all round aspects of forest certification process. MFCC develops and operates an independent timber certification scheme such as Myanmar Forest Certification Scheme (MFCS) which is the semi-government body and is constituted with the representatives from environmental NGOs, research and academic institutions, private enterprises, government departments and individuals.

Until now, Myanmar hasn't developed any internationally recognized certification standard for natural forest and plantation such as Forest Stewardship Council (FSC) or Programme for Endorsement of Forest Certification (PEFC) as experienced in neighboring countries such as Thailand, Lao's PDR, Indonesia, Malaysia although the country has had a long history of scientific forest management and has engaged in several domestic and regional initiatives that could serve as a positive foundation to those seeking to establish certification programme in Myanmar.

This study is based on the report of the consultancy for revising existing C&I for natural forest management certification, and drafting C&I for plantation forest management certification under the management of MFCC by the financial assistance ASEAN-German Programme on Response to Climate Change (GAP-CC).

2. Literature Review

2.1 Managing Natural Forest

Myanmar Selection System or MSS in short, has been the principle forest management system applied in managing the natural forests in Myanmar since 1856. It involves formation of felling series, each of which is divided into 30 annual coupes based on equal productivity and more or less the same size and worked over a period of 30- year felling cycle, and systematic planning for 13 major forest operations. Felling of exploitable trees is within the bounds of carefully calculated Annual Allowable Cut (AAC) which constitutes 48,897 trees for teak and 817,343 trees for hardwood (non-teak) for upcoming 5 years plan.

2.2 Managing Plantation Forest

Myanmar initiated the formation of teak plantation as early as 1856 on a small scale using *taungya* method. With the decreasing availability of logs from natural forests, plantations are the importance source of timber to meet the demand in near future. Plantation forestry has always been the supplement to the natural forest management. It is asserted in the 1995 Myanmar Forest Policy that existing natural forests will not be substituted with forest plantations.

With the change of national policy, government is now actively encouraging to private investment in plantation with the aim to development of private sector and national economy, and also sustainable natural forest. Current forestry profile in Myanmar is shortly synopsized in following table 1.

Table 1. Facts and figures of forest resources

Total Area		676,577km ²	
Forest cover		304,730km ²	45.03%
Forest Types	Mangrove Forest		4%
	Tropical Evergreen Forest		16%
	Mixed Deciduous forest		37%
	Dry Forest		10%
	Deciduous <i>Indaing (Dipterocarpus)</i> Forest		5%
	Hill and Temperate Evergreen Forest		25%
	Scrub land		3%
Permanent Forest Estate	Forest Policy's Target	197,899.36km ²	30.73%
Reserved Forests	Forest Policy's Target	121,842.91 km ²	18%
Protected Public Forests		40,949.60 km ²	6.05%
Protected Areas System	Forest Policy's Target	35,106.85 km ²	6.67%
			10%

Plantation	Teak(<i>Tectonagrandis</i>)	1,049,115 Acre	43.9%
	Pyinkado(<i>Xyliaxylocarpa</i>)	165,739 Acre	6.96%
	Padauk (<i>Pterocarpusmacrocarpus</i>)	41,113 Acre	1.72%
	Pine (<i>Pinusspps</i>)	57,630 Acre	2.41%
	Eucalyptus	194,387 Acre	8.13%
	Others	889,094 Acre	36.90%
Private plantation	Teak	43464 ha	67%
	Hardwood	21221ha	33%
	other industrial species	430,873 Acre	
Community Forest	15 States and Regions User Group Members	208,010 Acre 840 Groups 33,512 Person	as of September 2015
AAC	Teak	48,897 tree	
	Non-teak hardwood	817,343 tree	
Biodiversity	Vascular plants of gymnosperms and angiosperms		11,800
	Mammals		251
	Bird species		1,056
	Reptiles		272
	Amphibian		82
	Fresh water fish species		310
	Marine water fish		465
	Medicinal plants		841
	Bamboo		96
	Rattan		37

Source: FRA 2015, MOECA, 2012.

3. Objective

The study was intended to review past and present achievement of forest certification in Myanmar to inform forestry sector through MFCC while drafting and revising forest management to meet international requirement and enable to implement by FMUs throughout the country. Specific objectives of the study were as follows.

- (i) to study existing standard for certification of natural forest management "The Myanmar Criteria and Indicators for Forest Management Certification (2007)" together with international standards,
- (ii) to identify the principle elements, criteria and indicators for standard of certification to fulfil the international requirements and enable to implement by FMUs, and
- (iii) to inform public and private sector in managing natural and planted forests in the country.

4. Methods

To support the needs of the forestry sector in the country, the paper was carried out for following four major desk studies combined with practical experience of informal interviews.

- (1) Studying on currently available "Policy, Legal framework, Strategy and Actions" supporting SFM and certification in Myanmar,
- (2) Reviewing existing C&I for SFM and compiling experiences in implementation,
- (3) Screening and analyzing international standards of C&I for SFM, and
- (4) Comparing 10 major C&I sets for SFM and Certification.

5. Results and Discussion

5.1. Studying on currently available "Policy, Legal framework, Strategy and Actions" supporting SFM and certification in Myanmar

The study reviewed forest policy (1995), environmental policy (1994), forest law (1992) and forest rule (1995). Myanmar Forest Policy has been formulated keeping in view of the forestry principles adopted at the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro which suggest a holistic and balanced approach within the context of the environment and development indicating that the three pillars such as social, economic and environmental are essential and should be in balanced manner. The study reviewed the related laws, and compiled the strategies and actions of the government sector support to SFM in the country such as (i) Developing 30 years National Forest Master Plan, (ii) District Forest management plan (FMP), (iii) development of model forest, (iv) National Code of Harvesting Practices (NOCHP) in 1999, (v) inviting private sector to invest in establishment of forest plantation, (vi) Reduce Impact Logging (RIL) in 2008, (vii) participating in Pan ASEAN Timber Certification Initiative (PATCI), (viii) Myanmar Timber Legal Assurance System (MTLAS), and (ix) introducing log export ban, etc.

Accordingly, the study reviewed policy, laws, and administrative regulations in the country related to SFM and standard of certification systems both inside and outside the country. For the time being in Myanmar, with the introduction of decentralization, democracy, transparency and accountability, and enhancing the role of civil societies and stakeholders through people centred approach under the change of government policy. The study pointed out that this change is expected to result in effective and efficient management of the country's forests, and brought about sustainable national economic development in an ecologically and socially acceptable manner.

The study suggested that those situations favored the existing C&I for forest management need to update and align with international requirement as well as enable to practice the C&I by FMUs. At the same time, to fulfill the ultimate goal of forest policy, to overcome the constraints while practicing C&I in the country for more than one decade, the study summarized the suggestions to overcome challenges and constraints from a number of national level stakeholder workshops and meetings.

5.2. Reviewing existing C&I for SFM and compiling experiences in implementation

The study looked over current C&I (2007) for SFM and certification, and experiences while implementing C&I for more than one decade in forestry sector. With respect to comments from managers of FMUs and requirements of international context, Myanmar C&I for SFM has been lastly revised in 2007 with consisting 7 criteria and 51 indicators. They are;

- Criterion 1: Enabling condition for Sustainable Forest Management,
- Criterion 2: Extent and condition of forests,

- Criterion 3: Forests ecosystem health,
- Criterion 4: Forests production,
- Criterion 5: Biological diversity,
- Criterion 6: Soil and water protection, and
- Criterion 7: Economic, social and cultural aspects.

While applying final version of C&I (2007) for forest management in FMU level, following challenges and suggestions expressed by forest managers from FMUs were compiled from a number of meetings and discussion among stakeholders in the country as follows.

Major issues on implementing C&I in national and FMU levels in Myanmar

- (i) Inflexibility of standards to be applicable in diverse local conditions,
- (ii) Lack of recognition of broader local land use issues,
- (iii) Conflicts and/or incompatibility between legal settings and certification standards,
- (iv) Legitimizing forest harvesting which may conflict with traditional rights,
- (v) Uncertain benefits for primary producers,
- (vi) Cost burden in certification process heaviest for developing countries and small-scale forest owners,
- (vii) Equitable sharing of benefits is uneven,
- (viii) Unsure market demand for certified products,
- (ix) Wide gap between reality of management and certification standards, and
- (x) Weak ability in enforcing policies, laws and regulations.

Suggestions and recommendations to overcome issues

- (i) To strengthen human resource, capacity building, technology and budget allotment,
- (ii) To support FMU's requirement for implementing C&I,
- (iii) To review C&I through the multi-stakeholder consultative process for every 5 year,
- (iv) To conduct biodiversity inventory, to list CITE appendix, endanger species,
- (v) To estimate value of carbon storage and timber production,
- (vi) To build database system for up to date information and its availability publicly,
- (vii) To set up target for natural forest certification in 2015,
- (viii) To translate C&I with both languages,
- (ix) To estimate valuation of environmental service,
- (x) To assess the impact of applying NCOHP,
- (xi) To draw up action plan for each FMU to undertake actions and activities which were identified in assessment,

5.3. Screening and Analyzing international standards of C&I for SFM

The timber producing countries throughout the world are being developing C&I for SFM for different types of natural forest and plantation in addition to small land holders in order to get their products premier price. The study reviewed available documents of the national, regional and international sets of C&I for SFM. Based on desk reviews, the principles, guidelines, criteria and

indicators for SFM formulated by following 14 organizations (FAO, 2001) and another 2 organizations in the region namely ASEAN C&I and Eco-labelling Institute of Indonesia (LEI) were collectively studied the principles and criteria to suit forest management certification in Myanmar. These are (i) African Timber Organization (ATO), (ii) C&I for Sustainable Management of Dry Forest in Asia, (iii) The Dry-zone Africa Process on C&I for SFM, (iv) International Tropical Timber Organization (ITTO), (v) Lepaterique Process of Central America on C&I, (vi) Montreal Process on C&I (Temperate and Boreal Forest), (vii) The Pan-European Forest Process on C&I for SFM (PEFC), (viii) The Tarapoto Proposal of C&I (Amazon forest), (ix) The Near East Process on C&I, (x) Center for International Forestry Research (CIFOR), (xi) Forest Stewardship Council (FSC), (xii) Generic Guidelines for Assessing FM Smart wood, (xiii) China C&I, (xiv) Malaysian C&I (Natural forest and Plantation) and (xv) ASEAN C&I, and (xvi) Eco-labelling Institute of Indonesia (LEI). Summary of 16 organizations were shown in appendix 1.

The descriptions of principles and criteria developed by 16 different sets of C&I were formulated for different purposes, forest types and goods and services. The study found out that there is no single set of C&I to best fit all forest management systems throughout the country for all time, and C&I set must be regularly monitored and evaluated for updating within the appropriate circumstances of the country in certain period.

5.4. Comparing 10 Major C&I sets for SFM and Certification

With the aim of developing C&I set for the country, the study selected 10 major sets of C&I out of 16 sets which consist 7 sets of C&I namely (i) FSC, (ii) ITTO, (iii) PEFC, (iv) Montreal Process, (v) ATO, (vi) CIFOR, (vii) ASEAN which are being regionally and internationally applied in many countries, and another three national standards such as (viii) China Forest Certification Council (CFCC), (ix) Malaysian Timber Certification Council (MTCC) and (x) Eco-labeling Institute of Indonesia (LEI) successfully practicing SFM in the region. The rest of those which are being applied in particular member countries and dissimilarity of nature to the country such as (i) Lepaterique Process of Central America, (ii) The Tarapoto Proposal, (iii) The Near East, and (iv) Generic Guidelines for Assessing FM Smart Wood, and (v) Dry Forest in Asia and (vi) The Dry Zone Africa Process merely focused on dry forest are disregarded in the study even though Myanmar is a member of Dry Forest in Asia.

In order to compare 10 sets of C&I for SFM, how many of themes were comprised, and how they are distributed in each set of C&I were observed in this study. Altogether 19 different themes were extracted from 10 sets of C&I and prioritized each theme based on frequency of their presence for selecting the best sets of C&I for natural forest and plantation management system in Myanmar. Themes prioritized were arranged in table 2.

Table 2. Comparison of 10 sets of C&I for SFM and Certification

Themes of Principle	1 FSC	2 ITTO	3 PEFC	4 Mont -real	5 ATO	6 CIFOR	7 ASEAN	8 CFCC	9 MTCC	10 LEI	Total Count
1. Production, Economic, Benefits	10	10	10	10	10	10	10	10	10	10	100
2. Biodiversity, value	10	10	10	10	10	10	10	10	10	10	100
3. Environment, Protection (soil, water)	10	10	10	10	10	10	10	10	10	10	100
4. Ecosystem, health	9	9	9	9	9	9	9		9	9	81
5. Policy, Law,	8	8		8		8	8	8	8	8	64
6. Social, Culture	8	8	8	8		8	8		8	8	64
7. Management Plan	7	7			7		7	7	7	7	49
8. Community, Indigenous,	6	6					6	6	6	6	36
9. Workers right	6	6			6		6	6	6		36
10. Monitoring, Assessment	6	6					6	6	6	6	36
11. Forest Resource		4	4			4	4				16
12. Institutional		3		3			3				9
13. Silviculture								2		2	4
14. Carbon stock			2	2							4
15. Stakeholder					2	2					4
16. NTFPs					2			2			4
17. Tenure								1			1
18. Political priority					1						1
19. Goods and service						1					1
Sum of scores of themes (1-19)	80**	87*	53	60	57	62	87*	68	80**	76	710
Sum of scores of themes (1-10)	80*	80*	47	55	52	55	80*	63	80*	74	666

Note: (*) show the best followed by (**). Number of scores (1 to 10) for each theme of C&I set were assigned due to the sum of their frequencies of presence.

Comparing total score of each C&I set based 19 on different themes, the result showed that C&I sets of ITTO and ASEAN with the score of 87 were found to be the best followed by FSC and MTCC with 80, and the LEI was found in third position with the score of 76. If scores of each C&I were only summed for top priorities of themes 1 to 10 (Theme 1. production to 10. monitoring, assessment), C&I set of FSC, ITTO, MTCC and ASEAN performed same degree with the score of 80 followed by LEI with 74. Basically the C&I of MTCC, national standard was formulated based on FSC principles, and ASEAN regional standard based on ITTO. To summarize the result, ITTO and FSC were observed covering priorities themes in this study. The LEI was observed as a particular national standard developed based on Indonesian standard.

The study found that there is a number of certification system developed around the world namely FSC, Programme for Endorsement of Forest Certification (PEFC), Canadian Standards Association (CSA), and Sustainable Forest Initiative (SFI), particularly MTCC, CFCC and LEI those are of neighboring countries in the region. Among them, FSC certified forests

were already practiced compared to other certification system in the region whereas the ITTO develop C&I for sustainable forest management except certification system. In the region for instance, 67 certifications were certified by FSC in following countries as shown in table 3.

Table 3. FSC certified forest area, number of certification for forest management (FM) and Chain of Custody (CoC) in the region

Countries	Areas (ha)	No. of Certification (FM)	No. of Certification (CoC)
Cambodia	12,746	1	2
India	818,466	12	281
Indonesia	2,069,503	29	208
Laos	132,701	3	2
Malaysia	673,334	12	168
Nepal	17205	-	2
Sri Lanka	14634	3	24
Thailand	44237	12	85
Vietnam	149,966	12	467
Total	3,082,386	67	1239

Source: (FSC, 2015 October)

6. Discussion

- 6.1 The result of comparing 19 themes were extracted and prioritized based on frequencies of each C&I set. It showed that C&I of ITTO and FSC's principles revealed to be accepted by international market as well as highly contribute to social, economic and promising environmental conservation, and to be suitable to practice in line with the all round development of the country meanwhile. Myanmar, in this context, positioned behind other countries in the region years ago. For this reason, the consultancy was assigned to revise the C&Is for natural forest management and to draft forest plantation management towards SFM and to contribute internationally recognized certification system in the country.
- 6.2 In the case of MTCC, it was found out that its C&I was, however, originally based on ITTO's framework for national and FMU levels, and changed and developed own certification system and trade mark under FSC principles for more guarantee their timber in the international market. This trend indicated that the current situation of Myanmar is timed to trace the trend of MTCC in same region.
- 6.3 Moreover the study evaluated that commitment of FSC principles promises social, environmental values and international market requirement than others in the region. In addition to management scale, the principles of FSC standard for certification are merely focussed on FMU level or individual plantation, unlike practicing in ITTO framework to represent the whole country as national level. Moreover the size of forest management unit is not necessarily formed to be large scale.
- 6.4 In conclusion to select the standard for Myanmar based on issues and suggestions while practicing ITTO' C&I (2005) based C&I (2007) in the country, the study shown that ITTO's C&I is confidently developed to support SFM and assessing for the whole country, national level and FMU level, but it has no certification scheme developed to guarantee the timber producers in international market. Beside, the study revealed that the

ITTO based C&I is questioned for long term commitment to cover the whole country as national level which has diverse circumstances in states and regions in Myanmar.

- 6.5 FSC standard based MTCC trend directed as a successful example for revising C&I for forest management and certification in Myanmar. In most cases, FSC framework certification process has been already recognized by PEFC in the region towards more market demand in European countries.
- 6.6 The study indicates that Myanmar may practice C&I and reporting format under ASEAN guideline for national level and regional level, and for private plantation companies and particular FMU, it is optional to exercise either FSC principles or ITTO's C&I for optimal suit to their capacities and policies in each state and region in future.

7 Conclusion

It is therefore current C&I for natural forest management certification needed to revise in line with international requirement, to be precise international standard (e.g. FSC standard), as well as to draft standard for plantation certification in Myanmar. Existing circumstances owing to FSC around the world are taken into consideration while updating and draft standard for natural forest and plantation management certifications. The following realities and evidence encouraged to follow FSC standard for forest management certifications.

- ✓ FSC is considered to be a strong standard for promising social and environmental benefits and market recognition.
- ✓ FSC standard only focuses to certify particular FMU through certification scheme not necessary to consider for certifying national level.
- ✓ FSC standard is already available to apply for both natural forest and plantation in addition to group management certification for small holders as community level.

The study based on desk review and current situation of the country, organized and categorized C&I for forest management certification into Principles, Criterion and Indicators originally set by FSC. In the working drafts, there were made explanations and comments where necessary and appropriate. The study therefore completed the revising and drafting for Myanmar criteria and indicators for natural forest and plantation forest management certification using the framework developed by FSC which will only be available soft copy from authors and FRI as follows.

- (1) Myanmar C&I for Forest Management Certification (Natural Forest) thus revised is presented in Annex I.
- (2) Myanmar C&I for Forest Management Certification (Plantation Forest) drafted is presented in Annex II.

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