The Restoration Initiative (TRI) Myanmar

Report on Identification of Important Non-Timber Forest Products (NTFPs) through a Participatory Approach in Six Townships ROAM Workshops, Sagaing Region, Myanmar

NTFP conversations with Kyuntaw villagers in ROAM Workshop, Kawlin Township

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Identification of important non-timber forest products (NTFPs) through a participatory approach in six TRI Myanmar townships, Sagaing Region, Myanmar

1. Introduction

The Restoration Initiative (TRI) Myanmar is a sub-project (or "child project") of the global programme '*The Restoration Initiative (TRI) – Fostering innovation and integration in support of the Bonn Challenge'*. Its goal is to reverse forest degradation and deforestation and restore forested landscapes through local multi-stakeholder management. TRI Myanmar is implemented in Katha, Inndaw, Tigyaing, Kawlin, Kanbalu and Kyunhla Townships in Sagaing Region. It aims to improve the sustainability of forest landscapes, enhance livelihoods, help conserve biodiversity, and reduce greenhouse gas emissions by restoring ecosystem functionality (habitat and ecological processes) and generating flows of ecosystem services for local and national needs. TRI supports the policy and regulatory frameworks for forest landscape restoration (FLR) at national and sub-national levels. FLR is a long-term process of restoring ecological functionality and enhancing human well-being in deforested or degraded forest landscapes. TRI demonstrates the effectiveness, impacts and relevance of FLR in Myanmar through participatory Restoration Opportunity Assessment Methodology (ROAM).

TRI Myanmar was launched in Nay Pyi Taw in March 2019, a regional ROAM workshop was held in Monywa in May 2019, and 3-day ROAM workshops were held in each of the six townships in September-October 2019. The township ROAM workshops included six sessions: introduction to FLR and ROAM; mapping FLR sites and FLR options; policy analysis using SWOT, particularly in relation to land tenure, community forestry and illegal logging; division of FLR sites into management units with specific FLR options; cost-benefit analysis of FLR options; and discussion of NTFPs with community members through a ranking and scoring exercise and SWOT analysis (see annex).

Of these six sessions, this report covers NTFPs. NTFPs are termed as non-wood, minor and secondary forest products (FAO, 1992) and they provide subsistence, income and employment to the people everywhere there are forests (Rai, R. K., Neupane, B. K., & Sapkota, K. 2019). In many parts of the world, NTFPs are critical, especially for the rural poor and women, in helping to satisfy everyday needs. Of particular note is the importance of these resources in times of hardship and in emergencies when quick cash is required. (Falconer and Arnold 1989; Falconer 1990).

The NTFP discussions took a whole day as part of the township ROAM workshops with five men and five women from one village in each township. Interesting and enjoyable conversations were conducted on the importance of NTFPs to their daily lives, how they collect NTFPs, and which NTFPs are best in terms of food and income.

2. Methodology

NTFPs are divided into two groups: flora and fauna (since wildlife is considered as a basic food). Price range, collector, and time of collection were noted. A **paired comparison analysis** and **SWOT analysis** were done.

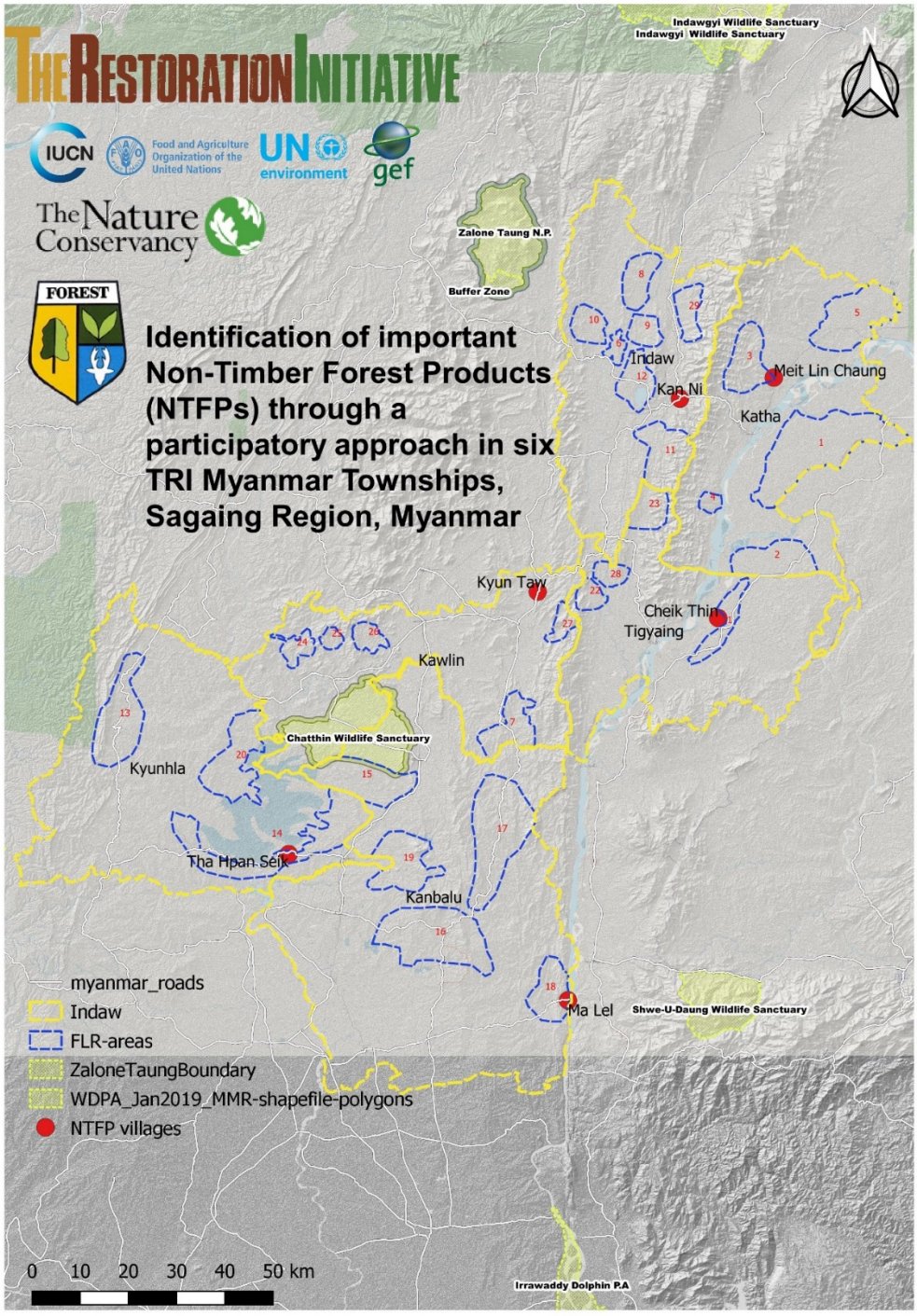

Figure 1. Map of the villages from which five men and five women participated in township ROAM workshops and discussed about NTFPs

3. Findings

3.1. Ranking and Scoring of important NTFPs

It was found that NTFPs play a vital role in their lives as food, firewood, fodder, agricultural tools, medicine, and construction material. Because of the time limitation, not all NTFPs were documented. Twenty NTFPs that are commonly collected were listed and ranked. This showed that bamboo, fuelwood and charcoal were the most beneficial in Kawlin, Kyunhla and Kanbalu Townships whereas fuelwood, bamboo and nipa thatch were the most beneficial in Inndaw, Tigyaing and Katha Townships (Table 1). Prices ranged from 35,000-40,000 MMK per ton of fuelwood, 150-500 MMK per bamboo pole, 250-2,000 MMK per thatch and 2,000-10,000 MMK per bag of charcoal. The detailed list of NTFPs is in Annex 1-6.

According to the participants, the collection of NTFPs is not their main livelihood, which is farming, but a seasonal activity. They collect NTFPs from Reserved Forests, Protected Public Forests, and Protected Areas. U Myo Naing, chief of Thaphanzeik village, Kyun Hla Township said "because of late rains this year, we all suffer and have to rely on the forest. At such times, NTFPs are very important for us." U Nyo Oo from Kani village, Inndaw Township said "All our villagers collect everything that are edible in the forest and villagers collect NTFPs all year round." Villagers often enter forests to collect NTFPs for sale. Farm products, e.g. rice that exceed household consumption, are also sold. So household cash income comes from various sources including NTFPs and farm products (rice, cash crops, etc.).

Other than fuelwood, bamboo, charcoal and thatch, various kinds of mushroom, orchids, bamboo shoot, honey, truffle, elephant yam, medicinal plants are common NTFPs. Some are seasonally collected while others can be collected all year round (see Annexes 1 to 6).

Table 1. Top three ranked NTFPs (flora) in six townships

Rank	Township					
	KawLin	**KyunHla**	**Kanbalu**	**Inndaw**	**Tigyaing**	**Katha**
1	Fuel wood	Bamboo	Fuel wood	Fuel wood	Fuel wood	Fuel wood
2	Charcoal	Fuel wood	Bamboo	Bamboo	Bamboo	Bamboo/bamboo shoot
3	Bamboo	Charcoal	Charcoal	Nipa Thatch	Nipa Thatch	Nipa Thatch

NTFPs include wildlife and its role is prominent. Bush meat is an important source of meat for both urban and rural diets despite being generally consumed in small quantities. The top three wildlife NTFPs that were ranked by the villagers are shown in Table 2 and details are in Annexes 7 to 12.

Table 2. Top three ranked NTFPs (fauna) in six townships

Rank	Township					
	KawLin	**KyunHla**	**Kanbalu**	**Inndaw**	**Tigyaing**	**Katha**
1	Barking deer, pangolin, beehive	Gaur	Sambar deer	Fish, crab, snail	Fish	Fish
2	Wild boar	Banteng	Serow	Birds	Frogs	Crickets
3	Jungle fowl	Sambar deer	Wild boar	Frogs	Jungle fowl	Pangolin

The price ranges are 10,000-15,000 MMK per viz for barking deer, 10,000-15,000 MMK per viz for wild boar, 8,000-10,000 MMK per viz for jungle fowl, 10,000-15,000 MMK per viz for sambar deer, 150,000-180,000 MMK per viz for pangolin. U Ohn Shwe, the Kyun Taw villager, said “We all eat or sell if we get better price; however, we rarely find valuable animal species such as boar, barking deer, or pangolins nowadays.” The price of other important wildlife like fish, crickets, frogs fluctuates considerably by season.

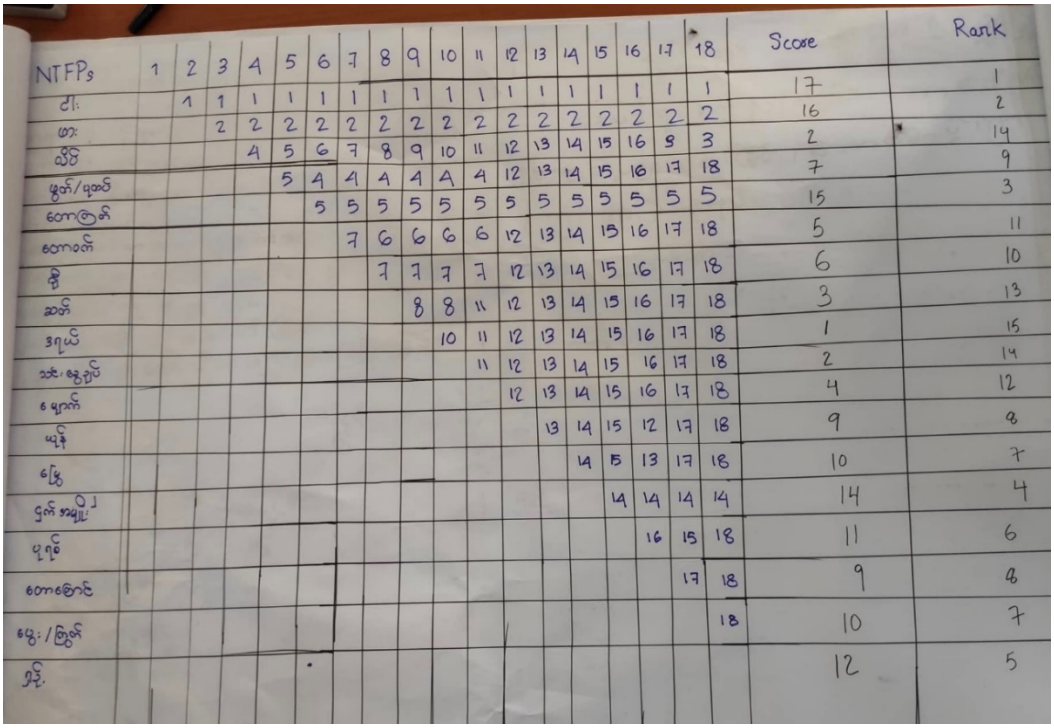

Figure 3. Ranking of NTFPs (fauna)

Figure 2. Making Bamboo basket for sell in Maelinchaung village, Katha

3.2. NTFPs Collectors and Availability of NTFPs

NTFPs are collected by men, women, and children. Although most NTFPs are collected by men, women also spend major part of their time and walk long distances to collect NTFPs from the forest. Among children, boys are more involved than girls, which probably comes from social disapproval of young girls going to the forest. The collection of NTFPs that involve climbing trees usually has greater participation of men and children. Women identified fuel wood, bamboo and mushrooms as important NTFPs for daily subsistence and charcoal, bamboo, fuelwood and nipa thatch as important NTFPs for income. "After men cut bamboo from the forest, we made bamboo baskets to sell. Women in our village spend most of their free time or spare time to make bamboo baskets" said Daw Ohnmar Win from Maelinchaung village of Katha Township.

Although the importance of NTFPs to rural livelihoods is widely acknowledged, there is considerable concern about their unstainable extraction. The township ROAM workshops included discussions with villagers about the availability of NTFPs. "Most NTFPs are for household consumption and we rarely sell NTFPs because we can't find enough to sell" said U Tin Myint from Kanbalu Township. According to U Maung Myint, chief of Kyun Taw Village, Kawlin Township, "NTFPs were abundant near our village 20 years ago but it is difficult to find some species of NTFPs nowadays. So collection of NTFPs is mainly for our household consumption and we get less income compared with the past."

Villagers are aware of the need for the sustainable use of forest resources including NTFPs. U Than Aung, chief of Maelinchaung village of Katha Township said "Bamboo is a natural forest resource and important for our village. We don't cut all the bamboo in the forest. We leave bamboo shoots for the next harvest as much as we can since we are making bamboo baskets and generating income from selling these bamboo baskets." NTFPs provided a safety net in times of hardship.

3.3. SWOT analysis of NTFPs

The SWOT analysis results showed that free collecting NTFPs and alternative income for households are the common strength for the villagers whereas the most common weakness is that NTFPs cannot be find easily and are not plenty enough to collect as before. Moreover, the establishment of village fuel wood plantations and technical assistance with NTFP development were identified as support that TRI can provide. Major threats NTFPs included limited livelihood activities, forest degradation, and excessive extraction. These threats varied by township (Annexes 13 to 18).

Figure 4. NTFPs SWOT analysis with Kani villagers, Inndaw Township

4. Conclusions

In general, there is no restriction on the villagers to collect and sell NTFPs. All forest areas are allowed for hunting and harvesting of NTFPs. Without permission from the government, NTFPs can be harvested for household consumption but not for sale. The main strength of NTFPs collection is its availability nearby the village without restriction. As a conclusion, the township ROAM workshops noted that the subsistence value of NTFPs should not be under estimated and the flexible management of NTFPs is needed to support the local economy and livelihoods. FLR interventions should support the sustainable use of NTFPs not only for the sake of the people but also for the environmental conservation.

Annex 1 List, Score and Rank of NTFPs (Flora), Kyuntaw village, Kawlin township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Fuel wood	6'x6'x6' = 30000-40000	√	√		Feb-Mar	14	1
2	Bamboo	1 unit = 250-500	√	√		Whole year	12	3
3	Bamboo shoot	1 vizz = 1000-1500		√	√	Aug-Sep	7	6
4	Bitter Gourd	1kg = 500-700		√	√	Whole year	4	9
5	Ka salt thi	1kg = 500-700		√	√	Whole year	0	12
6	Various kinds of Mushroom	1 vizz = 10000-15000	√	√	√	Jun-Aug	9	5
7	Truffle	1 vizz = 3000- 9000	√	√	√	July	9	5
8	elephant foot yam	1 vizz = 500-700	√	√		July	3	10
9	Various kinds of Orchid	1 vizz = 500-8000	√			Whole year	11	4
10	Taw htan u	1 vizz = 4000		√		Jul-Oct	6	7
11	Taung kyar	1 vizz =4000	√	√		Jul-Oct	5	8
12	Say ta lone u	1 vizz =500		√		Whole year	1	11
13	Bark of *Cassia fistula*	1 vizz =500	√			Nov-Apr	6	7
14	Bark of *Terminalia chebula*	1 vizz =500	√			Nov-Apr	5	8
15	Charcoal	~75lb(1bag)=3000-3500	√	√		Whole Year	13	2

Annex 2 List, Score and Rank of NTFPs (Flora), Male village, Kanbalu township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Fuel Wood	18”x18”x18”=500	√	√	√	Whole year	14	1
2	Bamboo	1 pole= 100-200	√	√		Dec-July	13	2
3	Bamboo shoot	1 vizz = 700-1000	√	√	√	Aug-Nov	3	9
4	Mushroom	1 vizz= 1700-2000	√	√		Aug-Nov	6	8
5	Honey	0.75 Liter = 8000	√			Nov-Dec	8	7
6	Sterculia versicolor gum	1 vizz= 15000-40000	√			Jun-Oct	11	4
7	Charcoal	1 bag= 2000-3000	√	√		Apr-Jul	12	3
8	Orchids	1 vizz= 8000-20000	√	√	√	Whole year	6	8
9	Pwe nyet	1 vizz= 3000	√			Mar-Jun	3	9
10	Truffle	1 vizz= 5000	√	√	√	Jul-Aug	6	8
11	Goose berry	1 vizz= 2000	√	√	√	Aug-Mar	1	11
12	Zi Chin Thi	1 vizz= 1000	√	√	√	Dec-Mar	1	11
13	Buds of *Senna siamea*	1 vizz= 1500	√	√	√	Aug-Dec	2	10
14	Taw Htan Myit	1 vizz= 6000	√	√		Sep-Feb	10	5
15	Tha Myar U	1 vizz= 4000	√	√		Jul-Feb	9	6

Annex 3 List, Score and Rank of NTFPs (Flora), Thaphanzeik village, KyunHla township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	**Score**	**Rank**
			Male	Women	Child	Month (s)		
1	Bamboo	1 pole= 500-1000	√	√		Whole year	10	1
2	Fuel wood	1 ton= 40000	√	√	√	Whole year	9	2
3	Charcoal	72 lb (one bag)= 6000-10000	√	√		Whole year	8	3
4	Bamboo shoot	1 vizz= 1000-3000	√	√	√	Jun-Oct	1	10
5	Various kinds of mushroom	1 vizz= 4000	√	√	√	Jun-Oct	-	11
6	Bee hive	0.75 liter= 4000	√	√	√	Whole year	3	8
7	Various kinds of orchids	1 vizz= 20000	√	√		Whole year	7	4
8	Pwe nyet	1 vizz= 5000	√			Whole year	4	7
9	*Melanorrhoea usitata*	1 vizz= 20000	√			Whole year	6	5
10	Truffle	1 vizz= 4000-8000		√	√	May-Aug	2	9
11	Taw htan myit	1 vizz= 2000-4000	√	√	√	Whole year	5	6

Annex 4 List, Score and Rank of NTFPs (Flora), Kani village, InnDaw township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Bamboo shoot	1 vizz= 300-1200	√	√	√	Apr-Sep	10	4
2	Fuel Wood	1 ton= 35000-38000	√	√	√	Whole year	13	1
3	Nipa Thatch	1 thatch=2000-3000	√	√	√	Nov-Dec	11	3
4	Mushroom	1 vizz= 4000-7000	√	√	√	May-Aug	7	7
5	Charcoal	4-5lb(1 bag)= 1500-2500	√			Dec-May	9	5
6	Bamboo	1 pole= 300-500	√			Whole year	12	2
7	Elephant Yam	1 vizz= 1000	√	√	√	Sep-Oct	6	8
8	Honey	1 litre= 4500	√			Whole year	8	6
9	Gone Khar	1 vizz= 700	√	√		Whole year	4	9
10	Bark of *Cassia fistula*	1 vizz= 500	√	√		Dec-May	4	9
11	Bark of *Terminalia chebula*	1 vizz=300	√	√		Dec-May	1	11
12	Taw Htan Myit	1 vizz= 4500	√	√		Dec	0	12
13	Various kinds of Orchids	1 vizz= 1200-12000	√			Whole year	3	10
14	*Strychnos nux-vomica* fruit	1 vizz= 1000	√	√	√	Dec	3	10

Annex 5 List, Score and Rank of NTFPs (Flora), Cheiktin village, Tigyaing township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Fuel Wood	1 ton= 300000	√	√	√	Whole year	15	1
2	Charcoal	75lb (1 bag)= 3500	√	√	√	Whole year	12	4
3	Bamboo	1 pole=500	√	√	√	Jan-May and Oct-Dec	14	2
4	Nipa Thatch	1 (6ft)= 200	√	√	√	Oct-Feb	13	3
5	Bamboo shoot	1 vizz= 2000	√	√	√	Jun-Oct	11	5
6	Mushroom	1 vizz= 4000-4500	√	√	√	Jun-Oct	10	6
7	Various kinds of Orchids	1 vizz= 10000	√	√		Mar-May	4	11
8	Elephant Yam	1 vizz= 2000-3000		√		Jun-Oct	2	12
9	Kway U	1 vizz= 4000		√		Jun-Oct	1	13
10	Bark of *Cassia fistula*	1 vizz= 3000	√			Mar-May	0	14
11	Honey	1 litre= 4000	√			Whole year	9	7
12	*Lasia spinosa*	1 vizz= 2000		√	√	Mar-May	8	8
13	Leave of *Syzygium cumini*	1 branch= 100	√	√	√	Oct-Dec	5	10
14	*Schumannianthus dichotomus*	1 tree= 200		√		Nov-Dec	7	9
15	Kin Ma lin	1 vizz= 2000	√	√	√	Jun-Aug	4	11
16	Ka Chin Man Say	1 vizz= 4000	√			Oct-Dec	5	10

Annex 6 List, Score and Rank of NTFPs (Flora), Maelinchaung village, Katha township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Bamboo/ Bamboo shoot	1 culm= 1000/ 1vizz=400-1000	√	√		Whole Year	14	2
2	Fuel wood	6'x6'x6'= 25000	√			Whole Year	15	1
3	Nipa thatch	1 thatch= 250		√		Oct-Nov	13	3
4	Hin Pyin leave/fruit	1 unit = 200/ 1 vizz= 4000	√	√	√	Jul-Aug	7	8
5	Phanga fruit	1 vizz = 1000	√	√	√	Oct	1	13
6	Kim Ma Lin	1 unit= 200		√	√	May-Jun	2	12
7	Truffle	1 vizz = 5000	√	√	√	Jun	3	11
8	Elephant yam	1 vizz = 500-1000	√	√		Sep-Oct	10	5
9	Gone Thi	1 vizz = 4000	√	√	√	Oct	0	14
10	*Lasia spinosa* leave	1 unit= 200		√	√	May-Jun	10	5
11	Pein pin	1 unit =100	√	√	√	Whole Year	9	6
12	*Centella asiatica*	1 unit =100		√	√	Dec-Feb	8	7
13	*Lasia spinosa*	1 unit= 500	√	√		Whole Year	5	9
14	Min Baw	1 unit = 800-1000	√			Whole Year	4	10
15	Rattan	1 unit= 100	√	√		Whole Year	7	8
16	Medicinal plants	1 vizz= 5000	√			Whole Year	12	4

Annex 7 List, Score and Rank of NTFPs (Fauna), Kyuntaw village, Kawlin township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Jungle fowl	1 vizz= 8000-10000	√			Whole year	11	3
2	Wild boar	1 vizz= 10000	√			Whole year	12	2
3	Barking deer	1 vizz= 10000	√			Nov-Dec	14	1
4	Tortoise	1 vizz= 4000	√	√	√	Jun-Jul	7	6
5	Monitor Lizard	1 vizz= 6000-8000	√			Jun-Jul	6	7
6	Pangolin	1 vizz= 80000-120000 (the scale is 400000)	√			Nov-Dec	14	1
7	Rabbit	1 vizz= 10000	√			Whole year	4	8
8	Monkey	1 vizz= 8000	√			May-Jun	2	9
9	Snake	1 vizz= 3000-5000	√			Whole year	6	7
10	Mole	1 mole= 500	√		√	Whole year	2	9
11	Mice	1 mouse= 500	√		√	Dec-Jan	8	5
12	Squirrel	1 vizz= 8000	√		√	Feb-Apr	2	9
13	Wild cat	1 vizz= 8000	√			Nov-Dec	9	4
14	Bee hive	0.75 liter = 3000-4000	√		√	Feb-Mar	14	1
15	Gecko		√			Whole year	-	10
16	Various kinds of birds	1 bird= 500-2000	√		√	Whole year	9	4

Annex 8 List, Score and Rank of NTFPs (Fauna), Male village, Kanbalu township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Barking deer	1 vizz= 8000	√			Dec-Jun	9	6
2	Wild boar	1 vizz= 8000	√			Dec-Jun	12	3
3	Deer	1 vizz= 8000	√			Dec-Jun	11	4
4	Sambar deer	1 vizz= 15000	√			Dec-Jun	14	1
5	Macaque	1 vizz= 5000	√			Whole year	8	7
6	Serows	1 vizz= 8000	√			Sep-Jun	13	2
7	Rabbit	1 rabbit = 6000-8000	√		√	Whole year	7	8
8	Jungle fowl	1 vizz= 8000	√		√	Oct-Jun	5	10
9	Wild Cats	1 vizz= 5000	√			Whole year	6	9
10	Hog deer	1 vizz= 8000	√			Dec-Jun	10	5
11	Snakes	1 vizz= 10000	√			Dec-Jun	3	12
12	Crickets	1 vizz= 8000-10000	√	√	√	Oct-May/Apr-Jul	1	14
13	Birds	1 bird=4000	√		√	Feb-May	4	11
14	Frogs	1 vizz= 5000	√	√	√	May-Nov	0	15
15	Tortoise	1 vizz= 4000	√	√	√	Whole year	2	13

Annex 9 List, Score and Rank of NTFPs (Fauna), Thaphanzeik village, KyunHla township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Eld's deer	1 vizz= 10000	√	√		Jun-Feb	15	6
2	Barking deer	1 vizz= 14000	√			Whole year	13	8
3	Wild cat	1 vizz= 5000-7000	√			Whole year	3	15
4	Rabbit	1 rabbit= 15000	√	√	√	Apr-Sep	9	10
5	Wild boar	1 vizz= 6000	√			Whole year	16	5
6	Guar	1 vizz= 10000	√			Whole year	20	1
7	Banteng	1 vizz= 10000	√			Whole year	19	2
8	Samber Deer	1 vizz= 10000	√			Whole year	18	3
9	Monkey	1 vizz= 6000	√	√	√	Whole year	8	11
10	Tortoise	1 tortoise= 5000-10000	√			Whole year	5	13
11	Pangolin	1 pangolin= 100000-200000	√			Apr-Sep	14	7
12	Porcupine	1 vizz= 6000	√			Whole year	11	9
13	Mountain goat	1 vizz= 6000	√	√	√	Whole year	17	4
14	Snake	1 vizz= 20000-40000	√			Whole year	7	12
15	Peacock	1 peacock= 20000	√	√	√	Whole year	9	10
16	Wild chicken	1 vizz= 7000	√	√	√	Whole year	4	14
17	Various kinds of birds	1 vizz= 8000	√			Whole year	1	16
18	Monitor Lizard	1 vizz= 10000	√			May-Aug	4	14
19	Big lizard	1 vizz= 10000	√			May-Aug	1	16
20	Dhole	1 vizz= 5000	√			Whole year	11	9

21	Flying squirrel	1 vizz= 5000	√			Whole year	1	16

Annex 10 List, Score and Rank of NTFPs (Fauna), Kani village, InnDaw township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Jungle fowl	1 vizz= 8000	√			Whole year	8	5
2	Snakes	1 vizz= 5000	√		√	Whole year	6	6
3	Wild Cats	1 vizz= 6000	√			Whole year	9	4
4	Barking deer	1 vizz= 8000	√			Whole year	4	8
5	Monitor Lizard	1 vizz=6000	√			Whole year	4	8
6	Rabbit	1 vizz= 6000	√			Whole year	3	9
7	Squirrels	1 vizz= 6000	√		√	Whole year	9	4
8	Fish, Crab, Snail	1 vizz= 4000	√	√	√	Whole year	13	1
9	Tortoise	1 vizz= 6000	√	√	√	Whole year	1	10
10	Birds	1 vizz= 8000	√		√	Whole year	12	2
11	Frogs	1 vizz= 3500	√	√	√	Apr-Aug	11	3
12	Duck	1 vizz= 6000	√		√	Whole year	0	11
13	Crickets	1 vizz =2000-8000	√	√	√	Oct-Nov	6	6
14	mole	1 vizz= 6000	√		√	Whole year	5	7

Annex 11 List, Score and Rank of NTFPs (Fauna), Cheiktin village, Tigyaing township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Fish	1 vizz= 5000	√	√	√	Whole year	17	1
2	Frogs	1 vizz= 4000	√	√	√	Jun-Aug	16	2
3	Tortoise	1 vizz= 10000	√			Apr-May	2	14
4	Monitor Lizard	1 vizz= 8000	√			Jun-Jul	7	9
5	Jungle fowl	1 vizz=8000	√			Apr-May	15	3
6	Wild boar	1 vizz= 10000	√			Whole year	5	11
7	Barking deer	1 vizz= 10000	√			Whole year	6	10
8	Samba Deer	1 vizz= 10000	√			Whole year	3	13
9	Hog deer	1 vizz= 10000	√			Whole year	1	15
10	Pangolin	1 vizz= 100000	√			Whole year	2	14
11	Macaque	1 vizz= 8000	√			Whole year	4	12
12	Rabbit	1 vizz= 10000	√			Whole year	9	8
13	Snakes	1 vizz=6000	√		√	Whole year	10	7
14	Birds	1 vizz= 10000	√		√	Whole year	14	4
15	Crickets	1 cricket= 50	√	√		October	11	6
16	Wild Cats	1 vizz= 8000	√			Whole year	9	8
17	Mole/Mice	1 vizz= 4000	√		√	Apr-May	10	7
18	Squirrels	1 vizz= 4000	√		√	Whole year	12	5

Annex 12 List, Score and Rank of NTFPs (Fauna), Maelinchaung village, Katha township

No	NTFP	Price (MMK)	Who is collecting			Time of Collection	Score	Rank
			Male	Women	Child	Month (s)		
1	Fish	1 vizz = 4000-5500	√	√	√	Whole year	17	1
2	Crickets	1 vizz = 8000	√	√	√	Apr-May/Oct-Nov	16	2
3	Frog	1 vizz = 4000	√	√	√	May-Jun	11	6
4	Jungle fowl	1 vizz = 7000	√			Whole year	11	6
5	Wild Boar	1 vizz = 8000	√			Whole year	14	4
6	Barking deer	1 vizz = 8000	√			Whole year	13	5
7	Wild cat	1 vizz = 4000	√			Whole Year	11	6
8	Monitor Lizard	1 vizz = 4000	√			May-Jun	6	10
9	Pangolin	1 vizz = 180000	√			Whole year	15	3
10	Snake	1 vizz = 3000	√			Whole year	5	11
11	Birds	1 vizz = 3000	√		√	Whole year	3	12
12	Tortoise	1 vizz = 12000	√	√	√	Whole year	9	7
13	Rabbit	1 vizz = 4000	√			Whole year	7	9
14	porcupine	1 vizz = 5000	√			Whole year	8	8
15	Mole	Own Consumption	√			Whole year	3	12
16	Flying squirrel	Own Consumption	√			Whole year	3	12
17	Flying squirrel	Own Consumption	√			Whole year	0	14
18	Squirrel	Own Consumption	√		√	Whole year	1	13

Annex 13 SWOT of NTFPs collection, Kyun Taw village, KawLin Township

Strength	Weakness
- Get alternative income for the households - Get income for Kitchen - Get daily food	- NTFPs are difficult to find since the forest is degraded. - Extinction of Bamboo - Get low income from NTFP - Limited knowledge on the laws and regulation related with forest
Opportunities	Threats
- To cultivate NTFPs at home as a home gardening - To get market price - To establish village used fuel wood plantation	- Extension of Agricultural land - Increase population - No technologies - Increase utilization of chemicals for the agricultural land - Food and grazing land became reduced - Excessive extraction of NTFPs

Annex 14 SWOT of NTFPs collection, Thaphanzeik village, Kyunhla Township

Strength	**Weakness**
- Diverse NTFP products in this township, - Responsible government institutions to manage natural resources, - Favourable weather - Easy to collect for daily income for households, - (Local people depend on local food, vegetables and forest bush meats),	- Rare, scare of forest products, - Deforestation, - Illegal extraction, over extraction, - Weak law enforcement, - No Technology to improve product, - Low market price, - No stable market, only season market, - No water available in dry season for people in upstream areas,
Opportunities	**Threats**
- To get strong market of NTFPs in future, when transportation is better, - Assistance from agricultural techniques, soil improvement techniques,	- Climate change, (Natural disaster) - Population increase, - Soil degradation

Annex 15 SWOT of NTFPs collection, Malae village, Kanbalu Township

Strength	**Weakness**
- NTFPs can be easily collected without restriction, - Seasonal collection forest food for local people, - Secure for fuelwood, free of charge, - Meat and fishes can be collected, - Animal products, - Freshness of vegetable, meat to support health,	- Scarcity of Bamboo, fuelwood due to over harvesting from nearest forest, - Endanger and threaten wildlife species, - Soil degradation due to deforestation, - To increase impact of climate change, - Decreasing crop production, - Degrading pasture land, - Not affordable for long term investment, - Technical issue (not fully understand FLR) - Daily income for living, - Investment problem - Labour
Opportunities	**Threats**
- Domestication of NTFPs as plantations, - Decrease in fuelwood consumption if electricity available in villages, - Fuel-wood substitution, Briquette will be used in future, - Compose soil will be used more than chemical fertilizers,	- Climate change, (Natural disaster: drought in summer season, flood in raining season)

Annex 16 SWOT of NTFPs collection, Kan Ni village, Inndaw Township

Strength	**Weakness**
- Get food - Get income - Get things to use in house (eg- basket from Bamboo) - Get shelter for house - Freshness of vegetable, meat to support health - Get sand, gravel	- Difficult to find wildlife species, fish and aquatic animals - Difficult to find fuel wood, bamboo and medicinal plants - Degradation of Soil - Difficult to find natural water resources - Excessive extraction of NTFP - No systematic allocation of NTFP - No information of NTFP
Opportunities	**Threats**
- To establish village used fuel wood plantation - Getting the agricultural techniques - Get the legal right for the agricultural land - Make specific area for grazing land - Get techniques to establish fish pond	- Less Rain and if the rain is heavy, there is erosion - Natural disaster - Difficult in financial - Limited grazing land - Degradation of Natural Forest - Limited livelihood Opportunities

Annex 17 SWOT of NTFPs collection, Cheik Thin village, Tigyaing Township

Strength	**Weakness**
- Less cost for the kitchen - Good for health - More income - Less time - Get livelihood - Easy to find	- NTFPs are difficult to find - Degradation of Forest - Get low income from NTFP - No systematic extraction of NTFP - Increase in population
Opportunities	**Threats**
- To establish village used fuel wood plantation - Can do animals husbandry - Can use modern agricultural techniques - More agricultural land - Assessable is better - Less dangerous from wildlife	- Climate change and natural disasters - Extinction of wildlife species - Effect on human health - Difficult for livelihood - Scarcity of water resources

Annex 18 SWOT of NTFPs collection, Maelinchaung village, Katha Township

Strength	**Weakness**
- Good for health because of medicinal plants - Get more income - NTFPs can be easily collected without restriction - There are land to plant NTFPs	- Since we got free NTFPs in the forest, we forget their value - No market for NTFPs - Scarcity of NTFPs these years - No sustainable use since local do not have knowledge - Technical issue to plant NTFPs - No support from government departments such as Forest department, Agricultural Department) - No investment for agriculture
Opportunities	**Threats**
- Domestication of NTFPs as plantations (Yam) - Markets of Yam or bamboo is available - Other income for households - By selling NTFPs, it will support Religious, education and health - Animal husbandry can be done together with NTFPs - Fisheries or animal husbandry departments can support techniques - Can grow low investment NTFP at home	- Scarcity of NTFPs and wildlife species because of Climate change - Applying chemical fertilizers, pesticides and insecticides to Eucalyptus by the private companies cause the damage to soil and water - No market - Wildlife species (rabbit, wild boar, mole, etc) destroyed the paddy field and agricultural crops

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