

Conservation and Economic Generation of Indigenous Community in Integrated Tropical Fruits Reforestation

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Abstract

The purpose of this study is attempted to look into conservation and economic generation of integrated tropical fruits reforestation in Malaysia particularly secondary forest granted to the indigenous community which left idle or partially cultivated with self subsistence crops towards fulfillment of at least some of the national economic agendas namely income generation and livelihood of Malaysian indigenous communities and national economy. The introduction and implementation of a designated cost effective methodology or approach of manageable Integrated Tropical Fruits Reforestation Technique and program on the idle or partial attended indigenous customary land will resulted in reaping in profits in upgrading income and livelihood of indigenous people. This not only will reap in the high returns of quality tropical exotic fruits like durian, langsung, cempedak, tampoi, petai, etc, creating orchards within the jungle vicinity as well as tourism. At the same time conservation effort in economically reforestation of the tropical fruits saplings into its natural habitats will reduce the climatic change, environmental conservation as well as create jobs for the local indigenous people. The participative efforts from JHEOA, state government and indigenous community chieftains are crucial and certainly will have great impact in determining the level of achievement in upgrading indigenous community income and livelihood as well as generate country's economy through the expansion of total reforested tropical fruits trees within the jungle land areas, retain and sustain the last frontier of Malaysian treasured environment. Technicality and expertise in the implementation process are two important factors. Knowledge on forest management and tropical fruits agriculture are also taken into consideration in this study. In general, there is a significant difference among factors stated above on reforestation of indigenous community's idle land with tropical fruits trees. The initiatives and eagerness to be successful in this concept depend on the inter-relatedness of the various quarters in the initiatives that will constitute to the income generation and livelihood of indigenous community. The vast secondary jungle land allocated to the indigenous community in Malaysia has much potentiality in consolidation into integrated tropical fruits reforestation not only for the purpose of conservation of Malaysian jungle frontier but also able to upgrade income and livelihood of the indigenous community within the third wave of national economy through agriculture. It was of utmost important for developing the under develop indigenous community and conserve the natural habitat and heritage of the remaining limited Malaysian jungle frontiers into a profitable economic venture.

Keywords: *Conservation, Indigenous community, Tropical fruits reforestation, Economic generation*

1. INTRODUCTION

The Malaysian government has taken various upgrading steps and efforts to improve its agriculture sector, In the 9th Malaysian Economic Plan, the projected growth of agriculture sector is expected and average rate of 6 per cent per annum for the period 2006 – 2010 and 6.5 per cent in 2011- 2020 period, policy formulation as well as implementation process to move the economy up the value chain by increasing the productivity, competitiveness and value added and value creation of the increase in earnings of major commodities, this is to

enabled the sector to retain its sustainability. Under the new national economic programs, there has been an increase in 'value-added' agriculture due to changing in consumers' taste and preference (Starks and Bukenya, 2008) The value added in agriculture is to economically add value to a product by changing its current place, time and from one set of characteristics to other characteristics that are more preferred in the marketplace" (Boland, 2007). The up-grading of up-stream production as well as the down-stream market enable the Malaysian agriculture fraternities to enjoy the economic booms especially the increase in the price of primary agriculture products and increase in demand of world market.

The large scale commercial estate-plantation and smallholding in agriculture may meet the targeted growth but what about the indigenous community occupying less than 5% of smallholding and indigenous customary land with their self subsistence which left unattended and total dependent to its ecological nature itself and onslaught of the middleman? As King (1995) stated that Malaysia, a state with multiple ethnic, indigenous and religious subgroups and the fragmentation of legal control in relation to traditional knowledge has results in unequal distribution of rights for indigenous people and local communities. They may benefit from the program but not in their earning from their meager plot of small subsistence farm of between 0.5 - 2 hectares. Many of the indigenous community still live a nomadic life style in the jungle fringe cultivating subsistence crops like tapioca, yam and collecting jungle fruits. Worst is the problem of some of this land even though planted with rubber, oil palm, and tropical fruits like especially durian, cempedak, petai etc which are left unattended. Certain indigenous community after the first season cultivation and when the fertility of soil faded and soil erosions set in, they left for a new piece of land in the jungle. In order to revive it through the new concepts of integrated tropical fruits reforestation program which is profitable and add values to the indigenous community, then land consolidation and rehabilitation work has to be done first. Therefore the feasibility in the introduction of the Indigenous Community in Integrated Tropical Fruits Reforestation program will certainly reap in economic generation to a satisfactory level and to conserve the depletion of eco-system, retain the existing flora and fauna and improve indigenous community income and livelihood as well as getting them into the mainstream national economic development.

2. LITERATURE REVIEW

As Endicott (2003) point out, the true indigenous in Malaysia are the politically marginalized ethnic groups the *Orang Asli*, and their neighbors the Sabah and Sarawak natives, who have inhabited the area prior to the arrival of the ethnically diverse 'Malays'. These are the group of communities that we are taking into consideration in this paper. The livelihood of Malaysian indigenous community is very low and subsistence in nature and some time they have to depend on the jungle for their meagre three meals and survival by collecting the existing tropical fruits such as petai, durian, cempedak, tampoi, and certain exotic fruits which have high commercial value but its production also dwindle through years, occasionally, they also collect wild jungle honey, bamboos and rattan if there is any demand. Their own plot of land were used to cultivate tapioca, pineapple etc and vast area were infertile and just left idle due to soil erosion.

Bucknell and Pearson (2006) have conducted a survey on rural society and land use and the finding is Agricultural consolidation and intensification has not translated into economic sustainability where on-farm income declined from 1991 to 2000, perhaps due to the niche markets created. Therefore if the Malaysian indigenous communities customary land could consolidate, rehabilitate and intensify in the transformation of tropical fruits reforestation, This increase agriculture and reforestation activities could be designated for innovation clusters, thus providing a foundation of resources for not only sustainability in indigenous communities' economic generation and ecology of the Malaysian nature and jungle.

The replanting of various tropical fruits in the process of reforestation and food crops on the indigenous communities customary land will be returning the tropical fruits tree to its natural habitat that not only could yield satisfactory fruits for local consumption but also for export as well as upgrading the indigenous community's livelihood rather than the customary land just left idle and face erosion. Wiersum (1997) stated that there are three major categories of forest management practices that could be identified, namely controlled utilization of forest product; protection and maintenance of forest stands, and purposeful regeneration. Based from the principles, model could be developed for exploitation of agriculture crops, and various stages of forest management are distinguished along a gradient of increasing input of human energy per units of exploited forest and the gradient represents a continuum of forest-people interactions, this also illustrate how a various manifestations of indigenous forest management may be arranged along a nature-culture continuum.

Reforestation of indigenous customary land into value added commercial venture and sustainability of its ecology and environment not only could transform modern farming and its sustainability for the livelihood of indignations community that depend much on the environment. Vernoooy and Song (2004) stated that new approaches to agricultural development are needed to conserve agricultural diversity, improve crops, and produce food of quality for all. Such an approach should enable small farmers on marginal lands to participate as equal partners. Thornton et al. (2006) stated that it is seeking to redefine the roles of scientists and farmers through collaborative learning processes, addressing questions about the level, timing, type and form of participation, as well as the most effective approaches and methods to foster them. The research domains of the program deal with sustainable intensification of indigenous smallholders agriculture, the sustainable management of natural resources, the development of efficient markets, and the promotion of enabling policies. Stoop and Hart (2006) suggested that sustainable agricultural development is presented as a diverse and dynamic process through which it copes with agro-ecological and socio-economic diversity at field level and with ever-changing needs and opportunities of the indigenous communities. Even Kaljonen and Rikkonen (2005) had pointed out that the latest reforms of agriculture practice in Europe that has adopted a concept of multifunctional agriculture that should encourage farming to play several roles in society and contribute to the well-being of rural areas by managing the countryside and the environment. This concept and agriculture reform best suit the managing of indigenous communities' customary land into an integrated tropical fruits reforestation in Malaysia. .

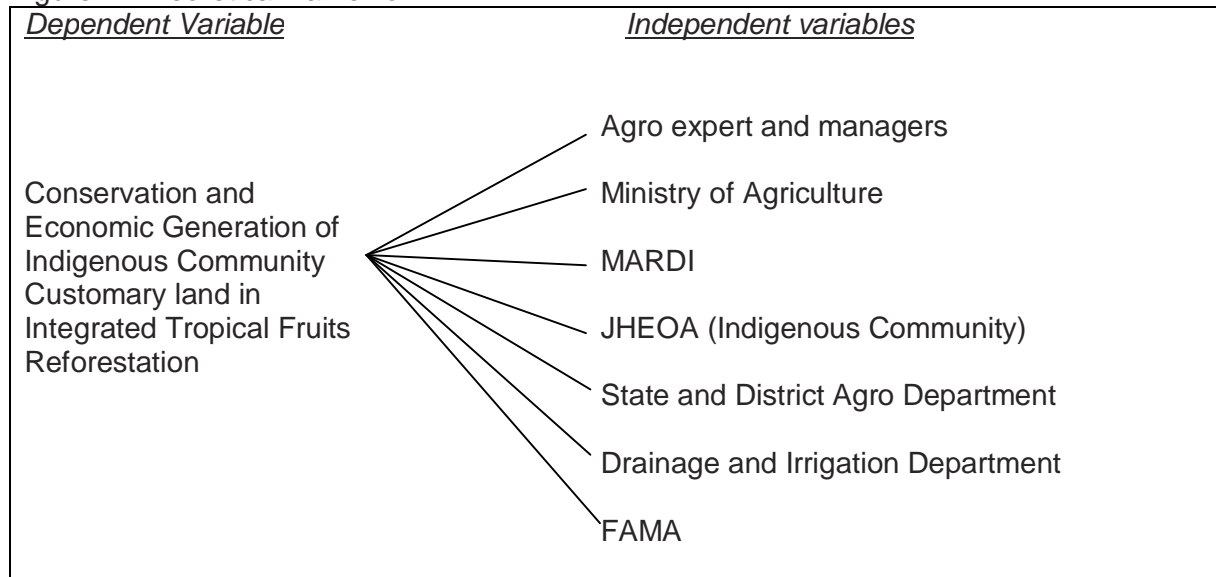
Mele and Chien (2004) quoted a more diverse, perennial cropping systems often have better natural mechanisms for keeping pests at bay. But while scientists emphasize the broad benefits of conservation in terms of effective ecosystem functioning, farmers are more interested in biodiversity for the provision of food or of services such as shade or windbreaks. Because of their limited knowledge of the role of biodiversity in plant protection, farmers sometimes unconsciously disturb natural regulatory mechanisms. Fruits trees grow well in its natural habitat and require little care. Therefore the indigenous communities could be able to sustain their livelihood and helps the country in the conservation process of their customary land. Friday et al. (2006) has surveyed a participatory rural appraisal project as part of an agricultural development project that provided the basis for a number of community-based participatory extension initiatives. Despite the poverty of many of the communities involved, and in contrast to published literature on the local agricultural situation, farmers clearly expressed their need for more marketable crops and alternative sources of livelihoods.

3. RESEARCH OBJECTIVES

The objectives of this research are to examine and propose to the Department of Indigenous Community Welfare (JHEOS) in Malaysia ways on solving the indigenous communities' plight of not be able to follow the mainstream of the country's economic development,

community improvement and sustainability of eco-system with the integrated tropical fruits reforestation on indigenous customary land which are left idle and fall prey to nature and soil erosion. The introduction of a integrated tropical fruit reforestation strategy on the consolidated and rehabilitated indigenous customary land not only could generate income and livelihood of indigenous community to a satisfactory level for their effort in cultivating tropical fruit trees in its natural habitat among the path cleared in between the secondary forest on their 0.5 – 2 hectare plot of land. The enhancing of integrated tropical fruit tree in the secondary jungle could nurture the soil nutrients and contribute to environmental friendly tropical fruit products for local consumption and export.

Figure 1: Theoretical framework



4. RESEARCH METHODOLOGY

Investigative and interview technique through the chieftain (Tok Batin) as medium were applied. Since the total selected respondents are illiterate, the investigative and interview session has been conducted to gather the answers of the opinion on the self subsistence and indigenous customary land of the indigenous community. Interview session also convenes on the management of their plot of land for the feasibility of conducting of the concept of integrated tropical fruit reforestation program proposed. Likert 5 point scale (5- Strongly Agree, 4- Agree, 3- Undecided, 2- Disagree and 1- Strongly Disagree) were use in the process of gathering data pertaining the indigenous communities' opinion on their farm dimension, livelihood dimension and the propose integrated tropical fruits reforestation conception. The details of plot of land, and management of their land uses from the respondents were also studied from secondary data. This is to determine the feasibility of the propose integrated tropical fruits reforestation in improving the indigenous community's income and livelihood, economic generation, sustainability of eco-system, reduce the climatic change, environmental conservation as well as create jobs for the local indigenous people by enhancing the proposed integrated tropical fruits reforestation concept.

5. RESULTS

Reliability of instruments - Cronbach Alpha statistic is found to be 0.733; therefore the reliability of the questionnaire is acceptable. Table 1 summarizes the respondents' characteristics. They are 55 male (58%) and 40 female (42%), indigenous people from two separate indigenous communities who still practice the traditional way of life and nomadic

farming on their small plot of customary land in this district. It shows the respondents' age composition, 43 of them were aged 50 and above. Three respondent have between 0-5 years experience in agriculture (3%), 42 respondents have between 6-10 years experience (44%) and 50 respondents have more than 11 years experience (53%) in subsistence agriculture. It also shows that 60 respondents have poses land not more than 0.5 hectares (63%), 32 respondents (34%) poses between 1 - 2 hectare of agriculture land and only 3 respondents poses more than 3 hectare of agriculture land (3%). Frequency table of indigenous people interview pertaining to the improving of income and livelihood by enhancing the propose integrated tropical fruits reforestation concept of eco-system sustainability shows that almost all the respondents strongly agreed to the propose setting up of a work teams in between government agencies and the indigenous communities in improving the indigenous communities' income and livelihood by enhancing integrated tropical fruits reforestation program.

Table 1: Summary of respondents' characteristics

	Frequency	Percentage (%)
<i>Gender</i>		
Male	55	58
Female	40	42
<i>Age</i>		
21 -30	15	16
31 -40	17	18
41 -50	20	21
> 50	43	45
<i>Experience in Agriculture</i>		
0 – 5 years	03	03
6-10 years	42	44
>11 years	50	53
<i>Land own</i>		
0-0.5 hectare	60	63
1-2 hectare	32	34
>3 hectare	03	03
<i>Monthly income</i>		
150 -300	65	68
301 -600	18	19
601 -900	10	11
901 -1200	02	02

Table 2: Indigenous community's opinion on customary land dimension

Customary Land Dimension	N	Frequency					Mean
		SA	A	U	D	SD	
1. Age slow down the tending of land	95	75	20				3.9
2. Able to tend to the land themselves	95		5	10	15	65	0.26
3. Land located far from community	95	84	10	1			4.4
4. Income derive from land not enough to cater the livelihood	95	93	2				4.9
5. Not be able to replant again	95	85	10				4.8
6. Soil erosion not taken care properly	95	70	25				3.7
7. Not be able to sustain	95	86	9				4.5
8. Undergrowth not clear	95	94	1				4.9
9. Not applying of agro fertilizer	95		92	3			4.8
10. Low yielding farm produce	95	80	10		5		4.2

11. Younger generations are not interested to toil the land	95	80	10	1	4		4.2
12. Constant attack by farm pests	95	87	8				4.6
13. Able to develop the land	95		1	2	5	87	0.05

Table 3: Indigenous community's opinion on the marketing of products dimension

Land Tending Dimension	N	Frequency					Mean
		SA	A	U	D	SD	
1. Difficult to sell the farm produces	95	62	25	8			3.3
2. All extra produces sold to middleman	95	70	12	10	3		3.7
3. Agriculture produces fetch low price	95	90	2	1	2		4.7
4. No help come from government agencies	95	60	20	5	5	5	3.2
5. Most of the edible farm produce were consume in personally	95	71	6	2	5	6	3.7
6. Most of the produces destroyed by pests	95	55	21	5	5	9	3.7
7. Need to gather jungle products to supplement family needs	95	75	10	2	8		3.9

Table 4: Indigenous community's opinion on the propose integrated tropical fruits reforestation concept.

Integrated Tropical Fruits Reforestation	N	Frequency					Mean
		SA	A	U	D	SD	
1. Able to generate double the income from customary land.	95	90	3	1		1	4.7
2. Proper management of customary land	95	90	2	1	1	1	4.7
3. Owners are able to involve in the management of their plot of land	95	80	5	2	4	4	4.2
4. Able to share profit and income distribution with governmental agencies	95	85	6	1	3		4.5
5. Joining as member of cooperative.	95	81	10	1	2	1	4.3
6. Owners maintain their plot of and.	95	95					5

6. DISCUSSION

The indigenous communities' plight that lack of knowledge, education, and government agencies' help and their own attitude has hinder their progress and livelihood. They have to depend on the traditional subsistence planting attitude even the government has provide land for cultivation. The stagnated growth of indigenous community agriculture initiative could be rectify easily by gather cooperation from government agencies like FAMA, MARDI, state and district agriculture department, drainage and irrigation department, and the village chieftains or local representative in the state government. Doessel and Vakadkhani (1998) quoted that income inequality can be reduced by stimulating the good producing sectors of the economy such as agriculture and the indigenous communities' customary plots of land could be consolidated and rehabilitated and put into proper and prosperous use for the integrated tropical fruits reforestation in the forest management program.

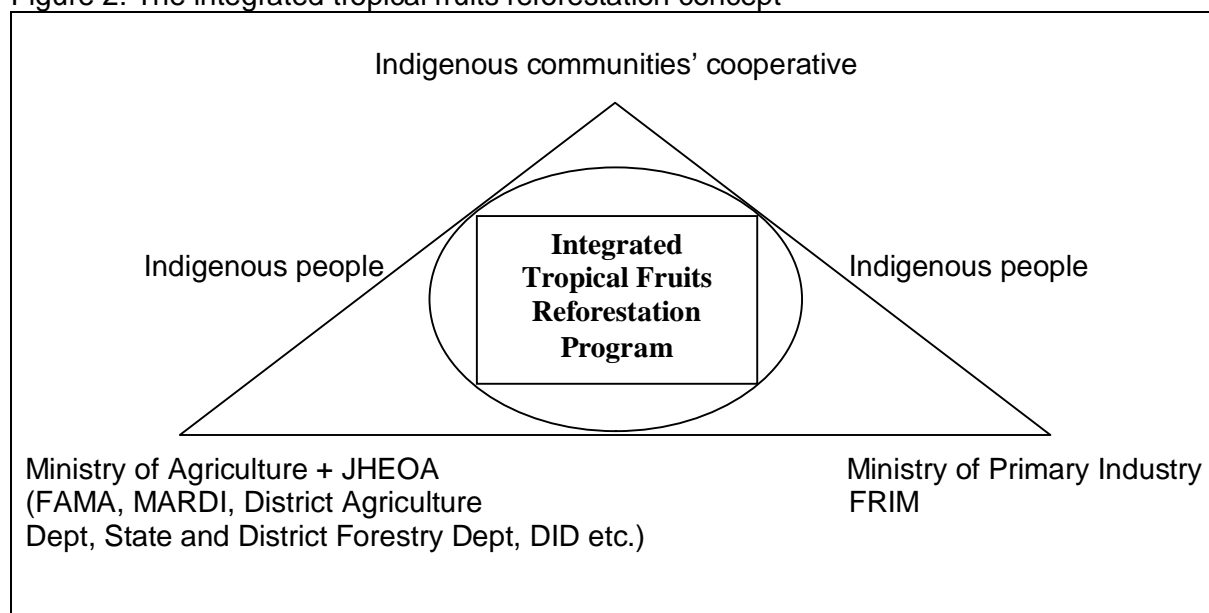
The statistical Table 2 above on the indigenous people's customary land dimension can be sums up as even though the total area is quite large but due to the lack of fund, technological know-how, and the indigenous people's attitude and culture, many are left idle which were

cover by secondary jungle with thick undergrowth and a few fruit trees. Occasionally, we can see the clearing of certain patches of land for the cultivation of temporary crops like tapioca and yam. If the indigenous land can be consolidate and rehabilitate through propose integrated tropical fruits reforestation program. It will reap in high quality agriculture produces, exotic jungle product and generate economy for the indigenous communities and country as well as conservation of eco-system and reducing climatic warming.

The consolidation and rehabilitation of indigenous customary land in forest management will complying to the rules and regulation stipulated in the national land code with strict regulation on the plot of customary land grant to the indigenous community members that stipulated in the land title on land uses, prohibition for sale and mortgage as well as the prevention of soil erosion. Most of the indigenous community land were left idle even there are still planted with orchard like durian, langsung, bidara, cempedak, jering, tampoi, petai and various exotic jungle fruits or uneven rubber trees and oil palm intertwined with secondary jungle and thick undergrowth. The propose integrated tropical fruits reforestation are feasible to revitalize and regenerate the indigenous customary land into economically sound eco-system friendly conservation project and generate economy to upgrade the livelihood of indigenous communities and the country. The profit derive from the project would be able not only upgrading their livelihood but also re-greening the country and protect the eco-system that will reduce the climatic change, environmental conservation as well as create jobs for the local indigenous people who are suffering from unable to join the economic growth.

The statistical Table 3 above shows that the indigenous communities really need help from all quarters, private or public to revitalize their idle customary land to generate economy. Would it be on sharing basis or governmental subsidized project, otherwise it will left to the mercy and onslaught of the unscrupulous middleman. The blunders will further worsen the situation and livelihood of the indigenous community. Statistical Table 4 above shows that the indigenous communities need certain forms of assistance from the authorities. The introduction and implementation of the Integrated Tropical Fruits Reforestation program not only could sustain the existing eco-system with its flora and faunas, further with the addition of various tropical fruits trees back to its natural habitat will boost its reforestation scheme, produce high quality and high demanded tropical fruits for local consumption and foreign market as well as increase the consciousness in environmental conservation.

Figure 2: The integrated tropical fruits reforestation concept



The formula of profit sharing is shown below:

$$\text{Integrated Tropical Fruit Reforestation} = \sum_{i=1}^n I+F+A+C+T+B - \text{Cost} \quad (1)$$

Where Integrated Tropical Fruit Reforestation concept and implementation on the indigenous communities are the combine effort of government agencies which include indigenous people (*I*), FAMA (*F*), Agro department (*A*), Indigenous Community cooperative (*C*), local private tourist agencies (*T*), FRIM (*B*). The cost of implementing the integrated tropical fruits reforestation concept is minimal, it consist of the indigenous community customary land, tropical fruits tree sapping clearing of the undergrowth, tree sapping from FRIM and subsidies provided by the various government agencies. The total earning from the initiatives could be handling through the JHEOA and the indigenous community cooperative. The other cost will be absorbed by the government agencies respectively.

Therefore the exact earning of the above concept will be five fold, it not only could upgrade the indigenous communities' livelihood but also able to profit various sectors and indirectly conserve eco-system, reduce global warming and generate economy for the indigenous communities and country. The indigenous community will enjoy larger amount of profit and earning if they are willing to put forth other initiative and effort in venturing into other miscellaneous business such as bee breeding, fungus planting as well as sandal wood planting. Besides, the creativities and innovativeness of the indigenous community could spur further their earning by introducing local specialties like dishes, handy crafts etc. All this ventures are very lucrative and enable them to earn many folds of profits. The indigenous people still getting on with their daily routine of harvesting their effort and maintain their holding of the customary land. The differences are the results from the new economic concept; they may reap in the extra income to further upgrade their livelihood.

7. CONCLUSION AND RECOMMENDATIONS

The anticipation of integrated tropical fruits reforestation concept on the indigenous community customary land through consolidation and rehabilitation is in fact very feasible to their expectation in term of profit earning which could increase their income and livelihood rather than just let the valuable land idle and face soil erosion. It has been tested and the result is beyond the mere expectation of everyone involved. Even if the concept applied not round the year basis but seasonal in nature tropical fruits season of durian, langsats, rambutan, bidara dan cempedak and other exotic fruits lasted only a month in a year. The secondary jungle could also reap in the valuable tropical hard wood for wood based industries. With the introduction and implementation of the formidable integrated tropical fruits reforestation concept on the indigenous communities' customary land, each village's chieftains will have to play their part in helping their society prosper the village. Through this means, it not only the government does not have to subsidize heavily on them but the indigenous people could upgrade their livelihood and generate the country's economy.

The government through the Ministry of agriculture and the affiliating agencies should draft out a monthly Calendar of planning to initiate the smooth process of integrated tropical fruits reforestation in each indigenous village throughout the country. The young generation of the indigenous society must be trained to upkeep, clear the undergrowth and fertilize their customary land to facilitate the success of the integrated tropical fruits reforestation. Everything must be at bay for the successful of the said program implementations. Indigenous society village chieftains should review the projects occasionally with the district

office and governmental authorities to foresee prospect of the integrated tropical fruits reforestation for the country's future.

All in all, to conclude, as Ferrari observe and noted that since the 1980s, and the past decade, indigenous peoples and local communities have been taking active initiatives in conserving and sustainable managing biodiversity, sometimes on their own but often with the support of NGOs or as joint management with government departments, despite the lack of supporting legal instruments. There is a recent increasing trend in community conservation initiatives and in community involvement in conservation initiatives initiated by NGOs or government agencies which is in-line with the Ninth Malaysian Economic Plan for agriculture sector which emphasized on *New Agriculture*, participation in high quality and value-adding activities. Such as undertaken to expand the use of better clones, seedlings or breed, adopt new technology and knowledge-based agriculture, gazette the necessary and for agricultural zoning, land consolidation as well as promote better coordination in project planning and implementation, extension services, quality control, financing and marketing. With the inclination of according to Phillips (2003), the shift from a 'fortress conservation' framework to a community-oriented protected areas approach has emerged alongside international trends seeking to combine conservation and community development – the notion of community-based conservation.

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