vegetations in evaluated area have strong secondary features.

3.4 Social environment

3.4.1 Social economy

Kachin State which is the Kachin Autonomous Prefecture lying in the northeast of the Union of Myanmar is bounded on the east by Nujiang Lisu Autonomous Prefecture and Dehong Dai and Jingpo Autonomous Prefecture of Yunnan Province, China and on the north by Qamdo Prefecture of Tibet Autonomous Region. The area of Kachin State is 89,000 km^2, about 13% of the area of Myanmar. Kachin State has jurisdiction over three cities of Myitkyina, Bhamo and Putao as well as 18 villages. It has a population of about 1.42 million, with a population density of 15.9 persons per square kilometer, and is the least densely populated of Myanmar. In plains areas such as Bhamo and Mogong Township, the population density can be 40 ~ 45 persons per square kilometer. Myitkyina, capital of Kachin State, has a population of about 200 thousand. In terms of sex ratio, Kachin people have 60% females and 40% males.

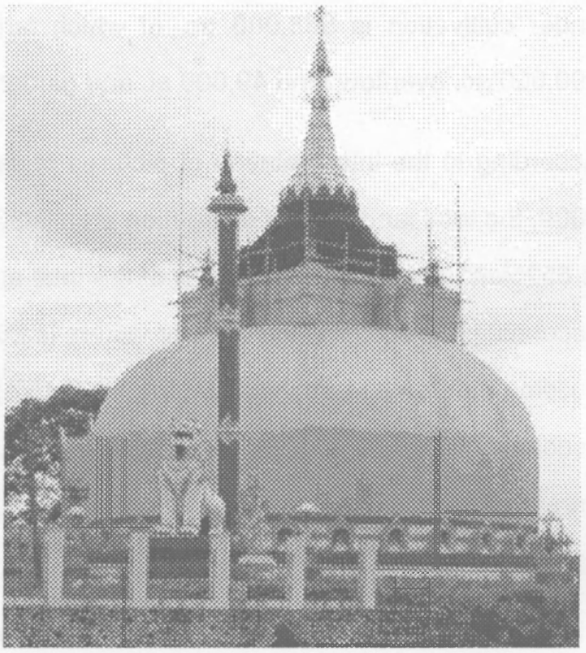
According to statistics, GDP per capita of the country was $239 in 2007. Agriculture which employs 64% of the labor force and accounts for 50.5% of GDP is the basis of Myanmar's economy. Industry accounted for a lower percentage of GDP for a long time. In recent years, development has been accelerated, with industry increasing and accounting for 16.2% of GDP.

The pillar industry of Kachin's economy is agriculture. The main crops include rice, sorghum, maize, sugar cane, rape, etc. Rice is an important crop in this area,which makes up 75% of the total planted area and is mainly planted on the plain and mountain. In addition to agriculture, the main source of income depends on the jade and teak produced in Kachin State. Jade is found in Hanba, Longqin and other places while teak is distributed in Bhamo and Myitkyina.

Kachin's industry is yet to be developed. Industrial structure is dominated by farm crops

processing and handicraft industry, there are currently only some rice mills, saw mills, sugar mills and cigarette factories, etc., among which the pillar industry is the sugar mill located at Nanmudi Township, and handloom industry is wide spread. There are only a few small power plants in Kachin State, with a gross electric generating capacity of about 3.04 million kW•h, and 15 townships and 15 villages have already been using electricity for lighting. The commerce of cities such as Myitkyina and Bhamo began to grow in recent years.

3.4.2 Religious beliefs and ethnic culture



In Kachin State, the main religions are Buddhism and Christianity. Islam and Hinduism also exist. Among these religions, Buddhist believers account for 57.8% while Christian believers 36.4%.In Kachin State, there are 614 Christian churches, 20 Islamic churches, 48 Hindu churches and many Buddhist pagodas.

Kachin State is mainly populated by the main ethnic group of ethnic Kachin and its 11 branches. There are also other ethnic groups such as Bamar, and Shan as well as hundreds of thousands of overseas Chinese and immigrants from India, Pakistan, Bangladesh and other countries. Most ethnic Kachin groups live in north Kachin areas; most Bamar and Shan ethnic groups and their branches live along the Mandalay-Myitkyina railway, and some Shan ethnic groups and its branches also live in the Ayeyawady valley and Putao basin; in the northernmost areas there are a small number of Tibetan inhabitants.

In Kachin State, a lot of people know English and Chinese. Most of the local ethnic minorities have their own language. Kachin and Shan ethnic groups have their own ethnic language and writing.

There are numerous traditional festivals and folk dances in Kachin State. For traditional festivals, the most characteristic is New Rice Tasting Festival while for folk dances, Munao Zongge Dance Festival and Elephant-foot drum dance.

3.4.3 Land utilization

Agriculture (crop farming) is the most important industry in Kachin State's agriculture, and the basis of Kachin State's economy. The total land area of Kachin State is 89,000 km^2, with plains accounting for 38.66% and mountain areas 61.34%.In Kachin State, the total area under cultivation is 568,000 ac, of which farmland accounts for 351,000 ac, dry land 990,000 ac, overflow land 49,000 ac and garden plot 30,000 ac.

According to the interpretation of pictures of satellite images of project evaluation area in 2009, the total land area of evaluation area is 3377100km^2, in which the area of arable land is 6525km^2, accounting for 0.19% of the total area; the area of forest land is 3331841 hm^2, accounting for 98.66%; the area of waters is 26035km^2, accounting for 0.77%: the area of building plot is 4884km^2, accounting for 0.15%; and the area of unused land is 7815km^2, accounting for 0.23%. It's clear that forest land predominates in land types of evaluation area. For the categories of land utilization in evaluation area, see Table 3.4-1 and attached figure 10.

Table 3.4-1 category list of land utilization in evaluation area

Category	Farmland	Forestland			Waters	Building plot		Unused land	Evaluation area
		Thick forestland	Thin forestland	Other forestland	Rivers	Rural residential area	Other building plot	marshland	
Area (km^2)	65	323229	8854	110	260	37	12	78	33771
Accounting for % of the area of evaluation area (%)	0.19	95.71	2.62	0.33	0.77	0.11	0.04	0.23	100

3.4.4 Landscape and tourism resources

Kachin State is rich in tourism resources. "Myitsone", Khakaborazi National Park, Indawgyi Lake Wildlife Sanctuary, Pitaung Wildlife Sanctuary, Katha Bird Watching Paradise, Hu Kaung Valley Tiger Nature Reserve, Temple of the Sleeping Buddha, Munao Altar etc. are excellent local tourism resources or ecological, natural resources. In January 2002, Myanmar Hotel and Ministry of Tourism and Ministry of Forestry identified 15 natural scenic areas and 15 natural areas as nature adventure and tourism areas. Khakaborazi National Park and Indawgyi Lake Wildlife Sanctuary were chosen as one of the natural scenic areas and nature adventure and tourism areas respectively.

Myitsone which is 45km north of Myitkyina is the confluence of the Nmaihka River and the Malikha River. Myitsone is one of the typical scenic spots in Kachin State. The Nmaihka River of the east and the Malikha River of the west flow together and form the Ayeyawady River.

the confluence of the Nmaihka River and the Malikha River at Myitsone

Among the landscape and tourism resources above, only the Ayeyawady-River "Myitsone" is included in the evaluation area, and the others are left out.

3.4.5 Population health

There are 6 hospitals with over 100 beds, 21 hospitals with less than 50 beds, and some township hospitals and village clinics. Bhamo and Myitkyina have a drug rehabilitation hospital respectively.

Diseases of Myanmar are mainly insect-borne diseases, food-borne diseases, and water-borne diseases.

Insect-borne diseases are major diseases in Myanmar. The common ones include malaria, Japanese encephalitis, and leishmaniasis. Chikungunya, dengue fever, filariasis, bubonic plague, and typhus (forest), etc. also occur from time to time. In areas below the altitude of 1,000 meters of Myanmar, the risk of malaria infection is prevalent, and in Kachin State, the risk of malaria infection exists from March to December.

Common food-borne and water-borne diseases include cholera, dysentery, fasciolopsis buski, large intestinal trematodes, hepatitis, melioidosis, and typhoid fever.

Measles, diphtheria, influenza, poliomyelitis and other diseases also often occur.

3.4.6 Traffic

The land transportation of Kachin State is rather poor, with only one railway.Myitkyina city is an important transport hub in northern Myanmar. It is located in the northern end of Myanmar's North-South Railway, at a full distance of 542 km from Mandalay in the south, and a full distance of 1163 km from Yangon. The full distance of the highway from Myitkyina to Putao in the north is 365 km, from Myitkyina to Bhamo in the south, 187 km, from Myitkyina to Ledo of India in the west, 458 km. The distance of the Myitkyina-Jiamai section of the Myanmar-India Highway is about 200 km, and this section can be available for transport all the year round while the other sections can barely available for jeeps in dry seasons. Myitkyina city and China's Yunnan province have close contacts at border areas,

and the main highways include Tengchong-Myitkyina Highway, Myitkyina-Chibwe-Banwa Highway, and Myitkyina-Chibwe-Pianma Highway.

The main navigable river for inland water transport is the Ayeyawady River. Myitkyina is the starting point of the Ayeyawady River shipping, at a full distance of 169 km from Myitkyina to Bhamo, with the width of river of 400m to 800m, and small ships can be navigable in flood period. The voyage distance from Bhamo to Mandalay is 510km, with the width of river of 800m to 1500m, ships below 400 t can be navigable all the year round.

Myitkyina Airport is an important dual-use airport in northern Myanmar, with asphalt runways, equipment of communication navigation and night navigation. There are also airports at Bhamo and Putao. Normally, there are two flights per week from Yangon to Myitkina and Putao.

3.4.7 Education

There were 156 colleges and universities in 2007, with a highly uneven distribution. Educational opportunities in Myanmar are limited outside the main cities of Yangon and Mandalay. It is somewhat an obvious problem in Kachin State. According to the 2002-2003 statistics, there were 1183 primary schools, 86 junior high schools and 41 senior high schools in Kachin State.

Primary school of Kachin State

3.5 Situation of environmental quality

3.5.1 Accepted standard

The standard for surface water adopted by BANCA is CPCB, see Table 3.5-1. The implementation standard of ambient air quality is that maximum limit of PM_{10} 24 hours averagely is 70 μg/m^3, and maximum limit of SO_2 24 hours averagely is 125 μg/m^3; See the