National Report on Animal Genetic Resources, The Union of Myanmar

National Consultative Committee, Myanmar

. The State of Agricultural Biodiversity in the farm animal sector

This chapter outlines the agricultural sector in general and, more specifically, the livetock sectors .It then describes the current status regarding the use and development of breeds, lines or varieties of farm animals, and summarises the history of farm animals diversity within Myamar.

Myanmar and the Agricultural sector

Myanmar is the largest country on the main land South East Asiawith a total land area of 676,577 sq Km sharing total international borders of 5858 Km with Bangladesh and India on the north west, china on the North East, Laos on the East and Thailand on the South East. It has a total coastline of 2832 Km. It stretches 2090 Km from North to South and 925 Km from East to West at its widest point

Three parellel chains of mountains ranges that begin from the eastern extremity of the Himalaya mountain range, run from North to South; Western Yoma or Rakhine Yoma, the Bago Yoma and the Shan Plateau. These mountain chains divide the country into three river systems, the Ayeyarwaddy, the Sittoung and the Thanlwin, of which the Ayeyarwaddy the most important river about 2170 Km long and its major tributary, the Chindwin, 960 Km long, constitute the greatest riverine system in the country. As it enters the sea, the Ayeyarwaddy forms a vast delta of 240 Km by 210 Km.

According to these mountain chains and river systems, the country can be divided into seven major topographic regions; The Northern Hills, the WesternHills, the Shan Plateau, the central Belt, the Lower Myanmar Delta, the Rakhine Coastel region and the Tanintharyi Coastal strip.

As it is mainly in the Tropical Region, Myanmar has a tropical Monsoon Climate with three seasons; the hot season from mid- February to mid-May, the rainy season from mid- May to mid-October and the cool season from mid-October to mid-February. Annual rainfalls vary from 500 cm in the coastal regions to 75 cm and less in the central dry zone. Mean temperature ranges from 32c in the coastal and delta areas and 21c in the Northern low lands. During the hot season, the temperature could run considerably high in the central dry zone.

Myanmar has a population estimated at 51.14 million people in 2001.Annex(1)

The Union of Myanmar is exercised through hierarchical structure that operates at national, state nor division, township, village tract and village levels. There are seven states and divisions. Each state and division is divided into a number of townships which total 324. Each township is divided into villages and quarters.

Land Resources

Myanmar possess a large land area in the South East Asia region and unlike most neighboring countries, she still has a vast potential of land resources for cultivation and

further expansion of the cultivable land. Of he total land area of 67.6 million hectare only about 13 per cent is under cultivation. The total cultivated area under irrigation accounts for about 21 per cent of net area sown

Crop production

Prevalence of different agro ecological tracts has made it possible to grow a multitude of over 60 crops ranging from tropical ones to moderate temperate varieties. They can be classified into (7) main crops e g , cereals, oil seeds, food legumes, industrial crops , food crops plantation crops and others.

Livestock sector

The agriculture sector that includes agriculture, forestry, livestock and fishery sub sectors is considered as the most important sector in Myanmar's economy, accounting for about 43.74% of GDP and about 66.7% export earnings. The livestock and fisheries contributed 7.9% to the National GDP while its growth rate was at 16.5%. The livestock share of the GDP under Livestock and fisheries was 54% and the livestock share of total GDP was 4.4% respectively. The growth is due to meat and fishery production. National meat production for 2002-2003 was around 0.59 million metric tons. Per capita consumption of meat , milk and eggs are 11.3kg, 15.23 kg, and 52 respectively. Annex(2)(3)

Three quarters of Myanmar population is rural and the agriculture sector directly or indirectly engage two thirds of Myanmar's inhabitants.

The livestock population estimates as of 2002/03 was approximately 11.6 million cattle, 2.6 million buffaloes, 4.5 million pigs, 2.0 million sheep and goats 57 million chicken. Annex (4)

Agriculture, land and feed

Myanmar has a vast land that could be used as cropping and grazing of animals.From the large areas of cereal crops and industrial crops, by-products as roughages are used as fodder for ruminants. In the same way, agricultural by-products from the crops are used as concentrates for both ruminants and mono gastric animals. In addition, the by-products from fresh water and marine sources are useful for fish- meal. So far the country is still self- sufficient in feed for livestock and poultry farming. Except feed supplement and additives, there has been no importation of feed from abroad. Annex (5)

Type of land	ha (000)
Net sown acreage	9026
Current fellow	1117
Culturable waste	7915
Reserved forests	10629
Other forests	21840
Others	17132

essential draught power in agricultural work and rural transport. They also provide a large portion of natural fertilizer for crop planting and horticulture through its manure.

Livestock play a considerable role in agriculture and form an integral part of agriculture; besides providing nutritious food for country's population they are regarded as a financial reserve, source of income and draught power for cropping and as a means of transport for the rural community. In Myanmar, livestock and poultry are raised for local consumption. Beef cattle farming is non

existing and dairy cattle farming is still at an infant stage to developed and some developing countries. Since Myanmar is agro based country draught cattle development is accorded the highest priority in livestock program. Dairy cattle plays a secondary role in ruminant production with some reasons such as demand for milk and milk products for urban population, effective use of family labor, improvement in the level of human nutrition and quality of the life of the rural population. The annual growth rate is spectacular for poultry and the highest rate occurred in the country. A very good annual growth rate was observed in pig. Annex (9)(10) (11)

The significance of small farming system

Small farm systems constitute an integral part of agriculture. These systems, which are labor intensive and combine animals with mixed cropping vary in the country presents a preponderance of small farms and a complexity of production system that is unique to the country. The systems utilize draught power from animals, produce crops for home use, sale of animal feed and animal products for domestic consumption and commercial sale. Crops and animals thus play an important complementary role in the use of available natural resources and the achievement of self- sufficiency with respect to feed, fertilizer and the requirement for human food.

Livestock farms and ownership

Myanmar's population has been increasing at an average annual rate of around 2%. About 86% of the population lives in rural areas and are engaged in agro- livestock production and agro-industrial work. Around 13% of the rural households do not own land. More than half of the rural population are subsistence household farm, which cultivate up to 5 acres(2.08 ha) while 24 % of the rural population cultivate 5-10(2.08-4.2 ha) acres of farm land.

Livestock farming and religion

The majority of the population in Myanmar is Buddhists and one of the main 5 precepts observed by the normal Buddhist is not to kill the living things. This belief dominates the majority of Buddhists leading the people to avoid as much as possible the livelihood related to livestock farming. Once it was not regarded as a way of livelihood for Buddhists and most Myanmar Buddhists are reluctant to carry out that business except only ethnic groups of different religions.For this reason in the past it is very rare to find Myanmar people fully involved in livestock farming directly related to slaughter of farm animals. It is not meant to say that Myanmar Buddhists are all vegetarians who abstain from eating meat or Myanmar are not involved in livestock farming. Actually Myanmar usually raises livestock and poultry in a small scale but they hardly kill and eat their animals on farm even poultry. But they sell out their animals to the market and buy back the meat they want to eat from the dealers from the market. Today the situation is quite different from the past and Myanmar nationals are not very reluctant to undertake livestock business if it is profitable.

Livestock farming and nationality

In the past livestock business especially commercial scale activities is assumed to be related to the other nationals and religions. For this reason, most livestock and related enterprises is undertaken by Indian, Chinese and some other races in the country. For example, Dairy cattle farming, sheep/ goat farming are done by Hindu people, slaughter of cattle, sheep and goats and poultry are undertaken by Indian Moslem people, and pig farming and slaughter is usually done by Chinese people. But now both Bamar and other nationals are freely involved in livestock farming and related activities. Myanmar has been a long history of raising cattle and buffaloes for draught purpose since time immemorial. But livestock farming as meat production has been developed for not more than 50 years.

Livestock and modern technology

In the past unhealthy, livestock and animals were treated by traditional method by using indigenous medicines such as herbs; leaves, roots and other ways of treatments. Some treatments are effective especially for clinical diseases but for some infectious diseases most traditional medicines are not effective. That is why a large amount of annual death toll occurred caused by cattle plague, Rinderpest before the years 1957. During colonial periods, preventic and therapeutic measures with modern drugs and vaccines were gradually introduced for livestock especially cattle and buffaloes. The successive outbreaks in the years around 1950s caused our local people to accept modern veterinary practice. With the advent of veterinary profession livestock farming with scientific methods had been gradually developed

Development of livestock and technology

After Independence, the Government took interest in promoting livestock, importing some good quality breeds of dairy cattle, buffaloes, pigs and chickens as well. Some Missionaries also did the same thing to improve livestock and poultry farming in the country. Agricultural rural development corporation (ARDC) under the Ministry of Agriculture took responsibilities for the improvement of livestock and poultry farming in the country. In the year 1952-53 the draught and Dairy development program was initiated by ARDC in Taungdwingyi township by initiating AI technique with fresh semen but the growth of AI was very slow. In 1958, AI was reintroduced at the Government 9^{th} Mile Farm , Yangon. Livestock and poultry farms under Government sector were set up with a view to distribution of quality breeds and technology.Annex (6) (7 (8)

Since then cross bred animals were derived from breeding between local and imported ones. During 26 years of Socialist state, agriculture and livestock farming was encouraged to try to fulfill the need of the country. Some exotic breeds of livestock and poultry were imported during these periods. In 1985 the new Ministry, the Ministry of Livestock and Fisheries was set up to undertake livestock and fisheries enterprises separately on a broader scale. Being isolated from other neighboring countries and the world and lack of fund, the development in livestock sector was not much noticeable. In 1976 the department of animal husbandry and veterinary services (now it was transformed into livestock breeding and veterinary department) gained a chance to get involved in implementing the World Bank assisted Project, namely Livestock Development Project (BUR/597). With full inputs supported by the project, the development in

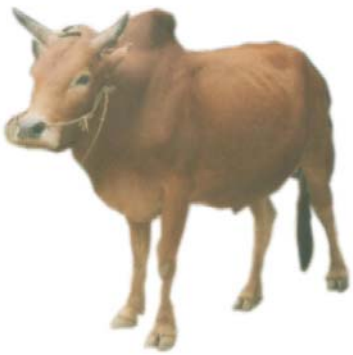
livestock sector rose suddenly high up in project area that covered 40 townships including Yangon and Mandalay cities. But the development was not sustained and lasted about a decade only. In 1988, with the advent of the market economy, the livestock sector has been on the gradual increase. It was not mistaken to say that pure broiler farming was started after 1988. Foreign and local enterprises had been involved in the investment in this field.

Livestock development and Veterinary services

Veterinary services date back to the years 1874 when the British army set foot on the Myanmar land. The aim for the veterinary service of the British Army was to protect the animals especially the pack animals from the infectious diseases prevailing in those periods. then it extended its services to livestock belonged to private ownership. During that period Myanmar stood on top of other neighboring countries in the production of rice in South East Asia and the health care for draught cattle and buffaloes was very important to the country's economy. The Rinderpest outbreaks devastating the local cattle in that times were contributing factor for the widespread emergence of veterinary service in the country. By that time the priority was accorded on disease control only. The Veterinary school was set up to produce trained local people to assign at the various parts of the country. In 1930, the veterinary division was set up to supervise the health measures of livestock.

The Veterinary Division produced the following vaccines for the protection of infectious diseases prevalent in the country.

In 1928	Anthrax
In 1932	Haemorrhagic Septicaemia,
In 1935	RDGS vaccine for cattle plague, the Rinderpest disease
In 1938	Black Leg or Black Quarter
In 1951	Fowl Cholera vaccine, New Castle Disease vaccine
In 1953	Fowl Pox
In 1954	Swine Fever vaccine
In 1955	Swine Plague
In 1995	Foot and Mouth Disease vaccine
In 1998	Gumboro Disease vaccine



Cattle sector

As mentioned above, draught cattle farming has been a long time history in Myanmar because Myanmar is well known as an agriculture for centuries. The population of cattle in Myanmar is estimated as 11.6 M million. Under this category, important breeds of Myanmar cattle are Shwe Ni, Pyar Sein and other non-descript breeds. For draught purpose, male animals of 2.5 years and 3 years of age are castrated to ensure maximum muscle development and strength. As most of the quality bulls are castrated early, the remaining inferior quality males usually become breeding bulls causing degenerating cycle among the cattle population. But in some areas, breeding quality bulls are under well management for specific purpose of breeding. A certain amount of fees is charged for breeding. In those areas there is high possibility of producing quality animals. Pyar Sein are regarded as cross bred cattle which were derived from breeding between Indian breeds and local ones about many decades ago After many years of selection, it seems to become as present type. They are useful as draught as well as dairy purpose. Cattle are more concentrated in central part of Myanmar such as Mandalay, Sagaing and Magway divisions the population of which constitute 0.4 M,0.38 M, 0.34 M, respectively. But cattle are distributed widespread through out the country Shwe Ni breeds are more common in Mandalay and Magway divisions. After Independence, some Indian breeds such as Sindi and Hariarna breeds were imported. In 1975, Artificial Insemination was firstly introduced and Foreign breeds such as Frisian, Jersey and Norwegian Red were brought out in the country.The introduction of exotic breeds to upgrade the indigenous breeds of cattle has a long held objective of the Government of Myanmar. Economic viability assessment of those breeds and their crosses under the prevailing farming condition is the main criteria for the judgement of those breeds. Actually no assessment has been made of the various crosses and straight breeds under the normal farming condition.No comparative analysis has been made with the indigenous breeds.In cattle breeding, the policy aimed largely at distributing exotic semen and maintaining the level of cross breed at 50% to 75% .

Buffalo sector

Indigenous buffalo belongs to Swamp type. There are 2 types of buffaloes in Myanmar, one is smaller commonly found in low lands and the other is bigger and found in the hilly regions like Shan State. They have more working capacity than oxen and are well suited to work in low-lying swampy areas. They are more resistant to low quality roughages. There are small number of Murrah breed of buffaloes and crosses in the country.

Pig Sector

Pig farming in majority is backyard farming under scavenging system. Pig production constitutes 27% of the total meat production. A commercial pig farming shares only a small portion of total pig production. Myanmar typical breed of pigs have been on the decline due to discriminate breeding with imported breeds. Second to the growth rate of poultry, pig population increased noticeably. The main objective of pig farming in Myanmar is to produce pork and fat. The productivity of pig becomes increased due to extensive cross breeding between local breeds and exotic breeds such as Large White, Landrace, Duroc and Berkshire. Most native breeds are black in coat color. The head is small and moderately dished profile, concave back, pendulous belly, characterized by slow growth, thick fat and hardiness. A well- fed pig weighs about 60 kg at 12 months of age. In mountainous regions, small miniature pigs characterized by long snout, small body size ,early maturity, with no excess fat are commonly raised by different tribes of that areas. The large-scale commercial pig farms run by the Government take responsibility for distribution of quality breeds to small scale and median scale pig farmers.At present there are some private breeding farms over the country.

Sheep and Goat sector

Sheep and Goats are raised commonly in the central part of Myanmar under the dry zone. The population of Sheep and Goats in Myanmar amounted to million The population density of sheep and goat in dry zone is similar to that of cattle. They are able to adapt themselves in the harsh conditions where there is a vast land of grazing and browsing. The knowledge about indigenous breeds is limited. There are 2 types of goats in Myanmar, one is characterized by black and white color with drooping ears commonly found in Nyaung Oo, Kyaukpadaung,

Meiktila, Ma Hlaing townships and the another is red breed prevalent in Myingyan, Nahtoe Gyi and Taungthar areas of Upper Myanmar. Black Bengal and Dwarf types are also found in northern Shan State and coastal region in the country respectively. Jumunapuri breed was a breed that was introduced long time ago under colonial period.

Native sheep are reared primarily for wool and secondarily for meat. The native sheep are well adapted to local conditions. They are small framed with long ears and tails. White color in fleece prevails but black ,gray, and brown spotted or headed sheep are common In 1965, ARDC set up the Government sheep farms to promote the sheep production in the country in MeikHtilar, Pyawbwe, Taungdwingyi and ShweBo townships. In 1967, 5 numbers of Corriedale breed of ram and 100 numbers of ewes were imported from Australia and in 1981/82 10 numbers of Awassi breed of ram and 10 number of ewes were imported from Isreal. Corriedale and Awassi sheep are imported from Australia and Isarael respectively to improve wool production of sheep in the country.

Poultry sector

Indigenous chicken is reared for meat and eggs in rural areas. Many types of poultry exist in Myanmar ranging from heavy type, Inbinwa breed to miniature bird, Tain Nyin. Rare and peculiar birds like Bare neck chicken and short legged chicken are also found in the country. RIR, New Hampshire, Austrolop, Barred Plymouth Rock, White Plymouth, Light Sussex ,Cornish were the birds imported many decades ago into the country. White Leghorn was another type followed the previous breeds. Together with the Market economy practiced more than a decade ago, many exotic breeds of chicken were imported from time to time. Though exotic breeds were introduced for commercial production, the population of indigenous breeds of chicken is still dominating in the country Out of 57 million of chicken, 82% constitutes native chickens. Nowadays the Government of the Union of Myanmar, tries its best to exploit the potential of native chickens by using I2 vaccine and wing web AP vaccine for the protection against New Castle disease and Avian pasteurellosis which are the most devastating diseases among chickens.

Duck sector

When compared with the population of chicken, the number of ducks is quite low and they are concentrated in lower parts of Myanmar and delta area where paddy fields, small creeks and ponds are most common. Ducks for egg production are usually hatched in a traditional way by using rice husk incubator. Ducks for laying purpose are named Khayan after the origin of township where duck farming is extensively done.

Horse sector

Horses are known to be as warrior animals and transport animals in the historical periods in the country. But today the use of horse has been declining except in some towns and remote areas used as horse cart and pack animals. Horse race was prohibited about 5 decades but horse riding has been recently encouraged by the Government.

Mythun(Bos frontalis)

Mythun are semi domestic animals commonly found in Chin Hills and some parts of northern regions and Sagaing Division. They are raised for meat purpose. They are in the habit of staying almost all the time in the forest and come out to owner's homestead when they need salt provided by the owners. They are very fond of licking salt. Farmers train them to stay in the corrals at night and let them graze or browse in the forests at day time There are about 300,00 Mythun in the country. Annex(12) (13) (14) (15)

State of use of domestic animal diversity

Due to increasing demand for protein food by growing human population, pig and poultry farming which has better turn over rate than other domestic species has increased by leap and bound in the country. Under the market economy the influx of new breeds and technology from abroad contribute to the development of the livestock sector. Tourism also has an impact on it. Since the country tries to continue to be an agro based country, the role of draught cattle play an important role in agriculture as well as the country's economy. The growing demand for milk usually taken in the form of tea or coffee mostly in urban areas and even now in some rural areas contributes to promote dairy cattle farming in the country. Fresh milk is rarely taken as food. But urban population is in the habit of sitting tea- shops at their free hours or at the time of business talk. In Myanmar tea or coffee are made of sweetened milk produced from raw milk as well as milk power imported from neighboring countries. Dairy cattle are encouraged to substitute imported milk powder. Border trades also encourages for the improvement of livestock and poultry farming. Village chicken constituting 82% of total poultry have become an important species for the supply of protein after FAO consultant, Dr. Peter Spradbrow produced thermo stable vaccine for Newcastle disease which affect most of the village chicken almost every year through out the country. The nation wide regular application of that vaccine for the prevention of Newcastle disease in village chicken has a great impact on the increased production of chicken meat in the country. In contrast to the previous Socialist economy, not only the state owned livestock and poultry farms but also private commercial breeding and production farms have been set up through out the country. The share of productive portion of the livestock and poultry sector under Defense services cannot be overlooked.

Development of each sector in Myanmar will be described as follows,

Draught cattle and buffaloes

The growth of cattle has been not very fluctuating and fairly stable at a rate of 2% during 2 decades. The population of cattle in the year 2002 is about 11.6 Mmillion. The total force of working animals accounts for 55 % of the total population of cattle and buffaloes. Based on the total cultivable land, it is calculated that a pair of draught cattle or buffaloes can do 5.5.acres (2.3ha). The typical breeds of draught cattle, namely Shwe Ni and Pyarsein breeds are concentrated in central part of Myanmar like Manadalay, Sagaing and Magway Divisions. The non-descript breeds of cattle are distributed through out the country. Breeding practice differs from one regions from another depending on the interest and custom of the cattle farmers. In some places breeding of cattle is done systematically. There are bull owners who keep special bull for breeding purpose in some areas. They charge a certain amount of fee for using their bulls for breeding. The farmers who like to breed their cows with that bull must pay for the service. In this way selective breeding is practiced and quality animals are produced. But in most of the rural areas indiscriminate breeding usually occurs among cattle population. During the period after harvest the cattle are able to graze freely on the recently harvested land and they breed naturally with the animals available there. Most of the bulls left in the field are animals which are rejected for draught purpose. They are small animals and not suitable for work. For this reason degenerating breeding cycle continues among the cattle.

In some region especially in dry zone, there are some contest or competition of cattle for bull, working cattle, cart drawn-cattle and milking cows according to their outstanding

performances, conducted by the villagers. These contests are usually performed at certain religious ceremonies or on the certain dates celebrating some occasions. Gambling usually take place in those occasions. Anyhow this kind of contest could probably lead to the emergence good quality breeds of cattle. Though there was no scientific criteria set for the selection of cattle in the past, the Myanmar usually refer some age old criteria handed down from father to son in the selection of cattle. Some are still documented but they are usually based on physical features like coat colors, body conformations, whore, defective characters and good characters present on the body. Though they are not based on scientific methods, they contribute to a certain extent to good selection of quality cattle.

In order to prevent the declining number of working cattle, the Government promulgated the law enforcing to slaughter cattle for meat purpose not older than 13 years of age. That law was in effective in the year 1947. In 1970, the slaughter age was extended up to 16 years of age. But illegal slaughter of cattle may be younger than the prescribed age. The cattle markets run in some townships at weekly interval contribute to wards the development of draught cattle. There are 38 cattle markets all over the country. As quality animals worth good prices in the market it encourages farmers to raise quality animals.

Artificial Insemination firstly introduced in 1975 for the improvement of draught cattle made the cattle farmers interested in rearing of quality draught cattle AI Project area extended from 20 experimented townships to 40 selected townships and then later to 110 townships in 1980s. Both frozen semen of Pyarsein breed and ShweNi breed were widely used in the project areas. But AI has been declining due to the shortage of liquid nitrogen, containers and other inputs. In the beginning of the Project period farmers are encouraged to use male cross bred cattle as working animals. Though they have bigger body sizes than the local draught cattle, the stamina in work is not comparable to that of real draught cattle.

Dairy Breeds

There is no typical dairy breed of cattle in Myanmar. But Pyar Sein serves both as draught and dairy cattle. During colonial period and Post Independence period some Red Shindi and Thari breeds were imported with a view to promoting milk production in the country. Once dairy cattle farming was specialized by Indian people but nowadays both Indian and Myanmar nationals become involved in this business. Most of the dairy cattle in the past were crossbred animals derived from breeding between Indian breeds and local cattle. Together with the World Bank Project, many exotic breeds of cattle were introduced by upgrading program. The frozen semen of exotic breeds were imported and the breeds of cattle were Fresian, Jersey, Guernsey, Norwegian Red. Out of them, Holstein Frisian is the most popular and the LBVD has been producing frozen semen of such breed until today. During the momentum of AI was high, there was a project granted by Canadian Government. It was for the development of performance recording and Embryo Transfer project. A certain degree of success was achieved in embryo transfer technology. But it went down rapidly because of the lack of continuation of funding. Dairy cattle farming is more concentrated in peri-urban areas of Large cities and township. In conformity with the growing demand for sweetened milk to be used in coffee / tea shops and in confectionaries, some business people shift their attention to dairy cattle farming and small scale milk processing plants. The areas where sweetened milk processing abound in the country are Mandalay, Kyauk Se, Meikhtilar townships. Most dairy cattle farming rely on cut and carry system. Some species of grass and legumes introduced by the world bank project are still striving

well and are of good use for dairy farmers. There is no extensive improved pasture in the country except natural grazing ground set aside by the Government for cattle grazing. Once the Government enforced the law to set aside and maintain the natural grazing ground for cattle and buffaloes in the years 1876 and 1889. By that time the area of grazing ground amounted to 917206 acres (371338 ha)Even the areas of natural grazing land become smaller due to encroachment by urbanization and industrialization. The present area of natural grazing land amount to over 800000 acres (324559ha) that is equivalent to 0.056.acre(0.02 ha) per cattle.Annex (16)

Beef cattle

There is no beef cattle farming in Myanmar. Beef usually comes from the animals of old age which are no longer useful for work. In other word, beef is the end product of draught cattle. And also there is no importation of beef into the country for local consumption because the demand for beef is relatively lower than pork and chicken meat.
The Buddhist religion dominating in the country is one of the factors for the low consumption of beef in the country's population. The majority that eats beef is of Moslem. During the religious period, the cattle of best quality are paid good prices for their religious services. The price of beef is rather cheaper than the price of chicken and pork. Mythun, the native breed of mountainous area in Chin state is a promising animal as a beef type and Government takes interest in promoting Mythun farming in Chill Hill. Foreign investors are invited to come and invest in beef cattle farming in Myanmar.

Commercial Layer

With the event of Market Economy, there was a great influx of new breeds of chicken into the country. Both Parent stock and Grand Parent stock farms were set up to distribute DOC and layer through their own hatcheries extensively all over the country. Yangon City Development Committee (YCDC) and Defence services are also actively involved in commercial poultry farming. Foreign and local companies such as CP and others participate in this business. For this reason, the old breeds which were imported previously have been dominated by the newly introduced breeds depending on the type of organization and invasion of the poultry companies, the breeds of chicken raised in one area differ from that of another. The local authorities of different regions take interest in the development of agriculture, livestock and poultry and try their best to improve their regions and to be self sufficient under their supervision.

Broiler

It is not mistaken to say that modern broiler farming was just started in the years after 1988. Before that period the meat production from chicken totally relies on local chicken in majority and male birds from layer type, rejected layers and semi broilers derived from layer type birds. The birds marketed for meat are not in conformity with the standards set for today's true broiler birds. In those days there was no chance for importing broiler breeds due to the economy of that time. Even today, not all the urban population has accepted the broiler meat and the majority of rural population hardly choose to eat such meat. The marketing for broiler meat

will be much easier if the price is cheaper than that of local chicken meat. The broiler chicken farming is a bit risky when the prices of feed and the influx of fish and other food items into the market are higher.

Local chickens

When compared with the cost of commercial chicken farming, the production of local chicken is much lesser but proper management system must be adopted in order to obtain good results. For small scale poultry farmers it is possible to gain good benefit out of local chicken farming by improving feeding, housing and health care system. The most damaging disease in chicken is NCD and today the Livestock breeding and Veterinary department tries to control over that disease on a nation wide scale by using thermo stable vaccine produced by FAO consultant, Dr. Peter Spradbrow.

State of conservation of domestic animal diversity

ex situ conservation

The Artificial Insemination section under Livestock Breeding and Veterinary Department, take responsibilities for conserving frozen semen of local breeds of cattle, exotic breeds and mythun. This section was set up under Livestock Breeding and Veterinary Department since 1975 when Livestock Development Project was implemented by the World Bank Project.

In situ conservation

In Salin township, Shwe Ni Gyi breed of cattle are raised under Private sector. Myanmar native Chicken are kept on In situ basis at Nyaung Oo township and Yangon Division under LBVD.

Changing demands on Livestock Production

This chapter covers policies of the past and the factors that were important to livestock development, production and genetic resources. It also includes the trend for the future and the expectation for the livestock sector and the consequences of this and the opportunities for the conservation, development, and the use of animal genetic resources.

Past experiences

As Myanmar experiences agriculture for long generations, the characteristics of quality draught cattle were recorded in old aged literatures. Most of them were based on physical characters such as body conformation, coat colors external organs like eyes, limbs, ears, and tail etc. There were some characters describing for whether the animal should be kept at household or not. But they are not based on scientific methods. But some may be useful due to long time tradition handed down from one generation to another.

Agricultural policy together with draught animals

Being an agricultural country, the factors necessary for the cultivation of land play an essential role in the sector. Before independence in the years around 1940s, land cultivation was done by draught cattle and buffaloes. The mechanization was introduced in the later years. But the participation of mechanization in agricultural sector is still a small portion until today but the country has laid down the plan to develop the sector by mechanization in the years to come. Since the working animals are essential to the sector, the Government promulgated the essential supplies and services Act 1947 with the objective of maintaining the number of draught animals in the country, not allowing the draught animals to be slaughtered under the age of 13 years except animals invalid, or injured or not suitable for use. But the Act was supplemented by extending the age of slaughter to 16 years instead of 13 in 1970.

Though the policies emphasized on the maintenance of the existing population of working animals in the country, there was no specific policy laid down to conserve so and so kinds of breeds for draught cattle after Independence. The conservation depended on the choice of owner's interest, hobby and willingness. Depending on the liking of cattle owners, selective breeding is done in some localities. For this reason, different kinds of cattle breed are concentrated in different regions. So far there is no breed association in livestock and poultry. In the same way there is no breeding record in livestock species.

Policy related to Indigenous chicken

In the year 2003, the Government has laid down the program to set up a breeding chicken farm with an objective of conservation and proliferation of indigenous chicken. The farm was situated in Nyaung Oo township, Manadalay Division. The indigenous breeds of chicken are raised on the farm. The farm is under the supervision of LBVD. Another similar farm will be set up in Hlegu Township under Yangon Division.

The policies and Objectives of the Ministry of Livestock and Fisheries

- to produce quality breeds of livestock and fish
-to promote integrated development of livestock and fisheries
-to produce meat and fish sufficiently enough to meet the local demand and to export the surplus
-to promote investment in livestock and fishery sector
-to extend fishery and shrimp activities
-to maintain and conserve breeds of fresh water and marine resources
-for local consumption to extend fresh water fisheries and promote fishery resources at available water resources
-to promote socio-economic status of population involved in livestock and fishery sector

Under the Ministry, there are 6 organizations directly involved in livestock activities. They are Directorate of Livestock and Fisheries, Livestock Breeding and Veterinary Department, Institute of Veterinary Science, Livestock Feedstuff and Milk Products Enterprise, Fishery

Department, Bee keeping Division. There are 3 organizations involved in the development of livestock sector are Livestock Breeding and Veterinary Department (LBVD), Livestock feedstuff and Milk Product Enterprise (LFME) and Myanma Farm Enterprises.

In order to promote the livestock sector with the development of related sectors involved in the sector, the Government encourages to form some new organizations and reorganize the old ones. The new organizations newly founded in the country are Myanmar livestock federation, Myanmar Veterinary Council, Academy for Livestock and Fisheries, Myanmar Livestock and Fishery Bank. Myanmar Veterinary Association was reorganized and its activities has become lively to contribute towards the development of the livestock sector. Based on the Myanmar livestock Federation, different federations were formed at different States /Divisions and townships levels.

Responsibilities of Livestock Breeding and Veterinary Department

Of them, the Livestock Breeding and Veterinary Department takes responsibilities for the following activities;

(a) to produce biologics for the protection of infectious diseases of livestock and poultry
(b) to undertake disease control and animal health care
(c) to perform research, epidemiological and diagnostic activities
(d) for the development of draught, dairy cattle and pig ,to undertake artificial insemination services
(e) to produce frozen semen of cattle for upgrading
(f) to promote fodder and pasture development
(g) to promote private enterprises together with model farms run by the department
(h) to undertake trainings and extension services for departmental staff and private farmers
(i) to encourage border area development through improved livestock farming
(j) to monitor the inspection of animals and animal products for export and import
(k) to monitor the inspection of slaughter animals, meat and other products

The policies laid down by the LBVD to promote the Animal Genetic Resources in Myanmar are as follows;
to improve the genetic resources of indigenous breeds of livestock and poultry in Myanmar
to conserve the existing indigenous breeds of livestock and poultry.

Present Trend

In line with the Market economy, there are many food stores, departmental stores that sell processed meat in different forms. In the past, meat is only available at the market but now meat can be purchased from food stores preserved under cold chain system at opening hours. As tourism becomes active, many hotels and restaurants have been established in many parts of the country. The demand for quality and safe food is growing. Most men and women become

actively involved in daily routine works, the way of eating and cooking styles has been gradually changing. People prefer to take fast food and ready-made or readily processed food. Hygienic processing of meat becomes essential. The growing population and urbanization, industrialization in large cities demands more meat egg and milk. People live in urban areas use processed milk for tea and coffee, and for confectionaries greater than in the past. The chances to access to the neighboring countries through borders become higher. Border trades of live animals become greater than the past. The flows of livestock and livestock products within and without the country become greater.

State of national capacities

This chapter covers the institutional set up describing the organizations available are active in realizing the policies objectives regarding the conservation, development and use of animal genetic resources.

National Government

The Ministry of Livestock and Fisheries is responsible for the development of livestock and fishery sectors in Myanmar. The policies related to the genetic conservation are highlighted on the conservation of native breeds of draught cattle, Mythun and indigenous chicken. For the other species of livestock and poultry, the increased production is the priority and upgrading with exotic breeds is allowed to do for the increased production in the country. At present situation, genetic conservation of livestock and poultry is not actively undertaken in the country. The main constraints for this matter are lack of qualified scientists, technology, finance and research institution The livestock Breeding and Veterinary is the only agency that takes responsibility as a national focal point for animal genetic resources. There is no subsidy system practiced for keeping farm rare animals.

Education and public information

The subject on the use of animal genetic resources is still not popular among the public It touches in just a few portion of biology prescribed in the text of the students involved in this field.

Research

Neither research institution nor organization that engages research in genetic resources is present in the country.

The Institute of Veterinary Science

The Institute of Veterinary Science produces about 100 graduates annually. The graduates are specialized in animal husbandry and veterinary science but not in animal science. There is no institute specializing in genetics in Myanmar and the number of specialists in this field is too small in the country.

Breeding –private sector

Though Livestock Breeding and Veterinary Department encourages farmers to promote pure breeds of Indigenous draught cattle, breeding practice is optional and no rules and regulations are enforced in this issue. Just education by the staff of LBVD for the conservation of pure breeds is undertaken at village level.

National priority

To secure the existing genetic diversity in an effective way and promote sustainable use and management of the current genetic diversity is the basic principal of the national policy. Conservation of genes or gene combinations that possess the qualities of disease and stress resistance, adaptation should be considered. Genetic variation between and among breeds still existing in the country must be secured.

International Cooperation in Genetics

The research collaboration was initiated between LBVD and Japanese scientists to study the genetic properties of animal resources of native livestock in Myanmar from 1999 to 2001. The topics covered are as follows;

Cyto- genetic analysis of Mythun
Mitochondria DNA diversity of native goats
Gene contribution of horses and native goats
Gene contribution of egg white protein in native chicken

Under the conservation and the use of animal genetic resources regional project (GCP/RAS/MYA/JPN) in Asia and the Pacific under FAO, the program for conserving Shwe Ni Gyi cattle of central part of Myanmar was undertaken.

Appendix 1

Project organisation and the organisation and persons involved

In March 2001, the Myanmar Government received the FAO's invitation to submit a national report on Animal Genetic Resources. The Ministry of livestock and fisheries agreed to form a national consultative committee and Dr. Soe Lwin was nominated as the national coordinator for animal genetic resources from Livestock Breeding and Veterinary Department. After he got retired, Dr. Ne Win Deputy Director continued to take the responsibility for National Coordinator.

National Consultative Committee

1	Dr. Than Daing	Deputy Director General, LBVD	Chairman
2	Dr. Than Hla	Director, LBVD	Member
3	Dr. Aung Than	Professor, University of Veterinary Science	Member
4	Dr. Zaw Myint	Deputy General Manager, Livestock, Feedstuff and milk product interprise	Member
5	Dr. Kyaw Nyunt Lwin	Director, Forest Department	Member
6	Dr. Htay Aung	Deputy Director, Yangon City Development Committee	Member
7	Dr. Than Htun	Director, LBVD	Member
8	Dr. Zaw Win Myat	Vice Chainmen, Myanmar Livestock Federation	Member
9	Dr. Myat Kyaw	Deputy Director, LBVD Additional Coordinator	Member
10	Dr. Ne Win	Deputy Director, LBVD National Coordinator	Secetary

Under the sponsorship of the National consultative Committee, the workshop on Animal Genetic Resources was conducted in Yangon, Myanmar May 2002 and the following agencies participated in the workshop.

- National consultative committee.
- Heads of States and Divisions from Livestock Breeding and Veterinary Department.
- Livestock Feedstuffs and Milk ProductsEnterprise.
- Myanmar Livestock Federation.
- Ministry of Forestry.
- Yangon City Development Committee.

Annex (1)

Human Population in Myanmar

Year	Total	Male	Female	Total growth rate (Percentage)
1990-1991	40.78	20.21	20.57	1.88
1999-2000	49.13	24.40	24.73	2.02
2001-2002	51.14	25.42	25.72	2.02

Sources: - Statistical year book (2001).

- Central Statistical Organization, Myanmar

Annex (2)

Per Capita Consumptiom Myanmar

Sr. No	Item	A / C	2001 – 2002	2002 – 2003
1.	Fish	Kg	24.87	26.18
2.	Meat	"	9.8	11.3
3.	Milk	"	14.7	15.23
4.	Egg	No	47	52

Annex (3)

Livestock Products in Myanmar

(number in thousand)

Sr. No		Particulars	Units	2001-2002	2002-2003
1		**Meat**			
	1	Beef	Metric ton	75.26	80.59
	2	Mutton	"	10.96	12.78
	3	Pork	"	134.60	164.46
	4	Chicken meat	"	247.67	296.05
	5	Duck meat	"	31.54	33.88
	6	Other poultry meat	"	2.28	2.44
2		**Egg**			
	1	Chicken egg	number	2108366	2394370
	2	Duck egg	"	268230	296569
	3	Milk	Metric ton	76.12	803.03

Annex (4)

Livestock Population Trend in Union of Myanmar (1990-2001, in million)

Year	Buffalo	Cattle	Sheep and Goat	Pig	Fowl	Duck
1990-91	2.1	9.3	1.3	2.2	22.4	3.2
1991-92	2.1	9.4	1.4	2.4	23.4	3.6
1992-93	2.1	9.5	1.5	2.5	24.7	4.4
1993-94	2.1	9.6	1.4	2.5	25.2	4.2
1994-95	2.1	9.7	1.4	2.6	25.4	4.2
1995-96	2.2	9.9	1.5	2.9	28.0	5.0
1996-97	2.3	10.1	1.5	3.2	31.3	5.4
1997-98	2.3	10.3	1.6	3.3	33.0	5.6
1998-99	2.3	10.4	1.6	3.5	36.1	5.8
1999-2000	2.3	10.7	1.7	3.7	39.5	6.1
2000-2001	2.4	10.9	1.8	3.9	43.5	6.4
2001-2002	2.5	11.2	1.8	4.1	48.3	6.8
2002-2003	2.6	11.6	2.0	4.5	57.1	7.3

Sources: - Livestock Breeding and Veterinary Department, Myanmar.

Annex (5)

Animal Feed Production

Overall production of Animal feed (estimated calculation) (000, metric ton)

Sr. No.	Items	2001-2002	2002-2003
1	Straw	8592	8826
2	Paddy	50	51
3	Broken rice	630	728
4	Fine bran	277	314
5	Coarse bran	1231	1335
6	Fish meal	260	3054
7	Maize	120	135
8	Sesame Cake & Groundnut cake	170	196
9	Gram powder	25	27
10	Salt	84	91

Annex (6)

LIST OF IMPORTED EXOTIC BREED (CATTLE)

(In Figure)

Sr. No	Name of Breed	Imported year	Country	
1	Red Sindhi	1958	Pakistan	
2	Thari	"		
3	Implementation of AI project in Myanmar & Importation of Proven Bull Semen data & records will be available at LBVD.			
4	Friesian 67 Jersey 62 Pregnant Heifer 129 heads	1978, June	New Zealand	World Bank Loan
5	Friesian 79 Preg: Heifer 2 young Bulls 81 heads	1978	Australia	UNDCP
6	Donkey	1980	Northern India, Rajastan State	
7	Guinea Fowl 500 DOC	1980	Japan	JICA project
8	Quail	Not available		

Sources: - Livestock, Feedstuff and Milk Products Enterprise, Myanmar

Annex (7)

LIST OF IMPORTED EXOTIC BREED (PIG)

(In Figure)

Sr. No	Name of Breed	Imported year	Country	
1	Large Black (Bo cake)	British colonial Time	USA	
2	Yorkshire (LW) Landrace Berkshire (180 gilt + 20 Boar) (Pyinmabin Pig Farm)	1978, July	Australia	World Bank Loan
3	Yorkshire (improved L.W) (Grong Grong) 70 gilt + 7 Boar	1978, August	Australia	UNDCP
4	Duroc, Yorkshire Landrace, Berkshire 350 heads of Pigs	1979	Japan	JICA project
5	Yorkshire (89 heads) Daik-Oo, Bago Division	1985	Australia	Food Industry Co-operation (FIC)
6	Yorkshire & Landrace 14 Boars + 6 Boars 20 young Boar	1995 Feb:	Australia	
7	Yorkshire + Duroc + Landrace GP 3 boars + 15 gilt (Pyinmabin Farm)	1999	Thailand	
	CP Company has improved	D.Y.L Breed	very frequently.	

Sources: - Livestock, Feedstuff and Milk Products Enterprise, Myanmar

Annex (8)

LIST OF IMPORTED EXOTIC BREED (POULTRY)

(In Figure)

Sr. No	Year	Name of Breed	Stock	Country
1		**Poultry**		
1	1980-81	Sunny	Layer Grand Parent Stock	Israel
2	"	Hubbard Golden Comet (pullet)	Layer Grand Parent Stock	Belgium
3	"	Star Cross 288	Layer Parent Stock	Canada
4	"	Star Cross 566	Layer Grand Parent Stock	Canada
5	"	Arbor Acres	Broiler Grand Parent Stock	USA
6	"	Hubbard	Broiler Grand Parent Stock	Belgium
7	"	Starbro	Broiler Grand Parent Stock	Canada
8	1981-82	Star Cross 288	Layer Grand Parent Stock	Canada
9	"	Star Cross 566	Layer Grand Parent Stock	Canada
10	"	Arbor Acres	Broiler Grand Parent Stock	USA
11	1982-83	Sunny	Layer Grand Parent Stock	Israel
12	"	Star Cross 566	Layer Grand Parent Stock	Canada
13	"	Hubbard	Broiler Grand Parent Stock	Belgium
14	1983-84	Nera Sex Link	Layer Grand Parent Stock	USA
15	"	Arbor Acres	Broiler Grand Parent Stock	USA
16	1984-85	Black Beauty	Layer Grand Parent Stock	USA
17	"	Cornish Game Bird	Broiler Parent Stock	Canada
18	1988-89	Starbro	Broiler Grand Parent Stock	Canada
19	"	White Plymouth Rock	True Line	Canada
20	"	White Cornish	True Line	Canada
21	"	Rhode Island Red (RIR)	True Line	Canada
22	"	Barred Plymouth Rock	True Line	Canada
23	1992-93	Tegel Brown	Broiler Parent Stock	Australia
24	1993-94	Tegel Brown	Broiler Parent Stock	Australia
25	"	Tegel Brown	Layer Parent Stock	Australia
2		**Duck**		
1	1990-91& 1991-92	Cherry Valley	Broiler Parent Stock	UK

Indigenous animal breeds available in Myanmar

Annex (9)

Sr. No	Species	Name of Species	Breed available	State and Division	Used
1	Cattle	Bos indicus	Pyar Zein, Shwe Ni Gyi, Shane cattle, Kadonta, Kyauk phyu	Mandalay, Magwe, Sagaing, Shan, Kayin, Rakhine.	Draught and meat
		Bibos Frontalis	Mythum	Chin	Meat
2	Buffalo	Bubalus Bubalis	Myanmar Kywe, Shan Kywe	Ayeyarwaddy, Shan	Draught and meat
3	Horse	Equis Caballus	Myanmar Myin, Shan Myin	Magwe, Mandalay, Shan	Draught
4	Ass	Equis Asinus	Myanmar Mye	Shan	Draught
5	Pig	Suis domesticus	Bocake, Wet taung, Badaung, Ah Kha, Myanmar pig	Magwe, Mandalay, Sagaing, Shan	Meat
6	Sheep	Ovis aries	Myanmar Thoe, Kalar Thoe	Magwe, Mandalay, Sagaing	Meat and Carpet Wool
7	Goat	Capra biraus	Nyaung Oo, Jade Ni, Hkway Seik	Mandalay, Sagaing, Rakhine	Meat
8	Chicken	Gallus gallus	Taik Kyet, Tainnyin Kyet, Kyet Lada, Inbyinwa Kyet	Wide spread	Meat and Egg
9	Turkey	Meleagris gallopavo	Kyet Sin	Wide spread	Meat
10	Duck	Anas Platyrbynchos	Khayan Be, Taw Be	Wide spread	Egg and Meat
	Muskovy Duck	Cairina Maschata	Mandarli	Wide spread	Meat
11	Goose	Anser cygnoides	Ngan	Wide spread	Meat
12	Quail	Coturnix spp	Ngown	Wide spread	Meat and egg

Sources: - Livestock Breeding and Veterinary Department, Myanmar

Annex (10)

Breeds of domestic animals in Myanmar used by farmers in food and agriculture.

	Local		Exotic Breeds
	Cattle		
1	Shwe Ni	1	Friesian
2	Shwe Ni Gyi	2	Jersey
3	Pyar Zein	3	Red Sindhi
4	Shan Nwa	4	Tarry
5	Dawai Nwa		
6	Kyauk Phyu Nwa		
7	Katonda		
8	Mythum		
	Buffalo		
1	Myanmar Kywe		
2	Shan Kywe		
	Goat		
1	Nyaung Oo		
2	Jade Ni		
3	Hkway Seik		
	Sheep		
1	Myanmar Thoe		
2	Kalar Thoe		
	Horse		
1	Myanmar Myin		
2	Shan Myin		

Annex (11)

	Local		Exotic Breeds
	Pig		
1	Bo cake	1	Berkshire
2	Wet taung	2	Landrace
3	Badaung	3	Large White
4	Ahkha	4	Joroc Jersey
5	Myanmar Pig		
	Chicken		
1	Taik Kyet		
2	Tainnyin Kyet		
3	Kyet Linda		
4	Inbyinwa		
5	Sittagaung		
	Duck		
1	Khayan Be	1	Kharki Kamble
2	Taw Be	2	Legard
		3	Pekin
		4	Cherry berry
	Geese		
1	Goose		

Annex (12)

Poultry industry development

Current Status

- **Poultry population**
  - Total poultry population is 48 million heads.
  - 85 percent of total poultry population is indigenous chicken.
  - The remaining 19 percent including 15% layer and 4% broiler is exotic breeds.
- **Breed layer**
  - CP Brown, Lohman brown, Hisex, Hyline, Gold line, Babcock Broiler - Arbor Acre, Kasila, CP broiler, Lohmann meat, Cobb, United Broiler.
- **Population density**

Local chicken	- Ayeyarwady, Bago, Yangon.
Commercial poultry (broiler)	- Yangon, Mandalay, Shan
Commercial poultry (layer)	- Mandalay, Shan, Yangon.

Marker demand
- Ordinary meat and eggs for domestic market.
- Value added meat and standard eggs for Export market.
- GMP for poultry farming and processing is required to be upgraded

Annex (13)

Pig industry development

Current Status

- **Pig population**	- Total pig population is 3.9 million heads.
	- 40 percent of cross-bred are dispersed through out the country.
	- Nature of pig breeding is small scale by rural farmer. Commercial scale is found at state farms and some entrepreneurs at urban area.
- **Breed**	- Cross breeds such as large white, Landrace, Duroc and Berkshire.
	- Local breeds (many verities)
- **Population density**	- Lower and middle and eastern part of Myanmar.
Marker demand	- High demand in both domestic and Export market.
	- GMP is required to be upgraded and harmonized.

Annex (14)

Dairy industry development

Current Status

- **Dairy cattle population**	-	0.4 million heads in total dairy cattle / buffalo - 7 percent of total cattle/ buffalo population)
- **Breed**	-	Cross breeds of Friesian, Sindhi, Thari
- **Herd size**	-	1-5 cows' size 8500 herds
		6-10 cows' size 1300 herds
		Above 20 cows' size 300 herds
- **Area in population density**	-	Middle of Myanmar (Mandalay)
- **Dairy products**	-	Fresh milk, pasteurized milk, condensed milk, reconstituted milk, butter etc.
Market demand	-	People more preferred to take tea & coffee with condensed milk.
	-	Milk powder for infants.
	-	Some potential fresh milk, butter, cheese and ghees.

Annex (15)

Beef cattle industry development

Current Status

- No special beed type of cattle apart from native breed of Mythun at mountain area.
- Draft cattle / buffalo are used for beef purpose.
- 0.5 million head of draft cattle are supplied to market for slaughter.
- Abattoirs at present are not in standard of ASEAN level.

Market demand

- Most of Myanmar people abstain eating beef.
- Myanmar people more prefer fish, pork, chicken & duck meat and mutton.

Annex (16)

Registered communal pasture land in State/ Division

(Nos. in hectares)

Sr. No.	State/Division	Pasture Land
1	Kachin State	2062
2	Kayah State	-
3	Kayin State	16695
4	Chin State	-
5	Sagaing Division	7523
6	Tanin Tharyi Division	20580
7	Bago Division	53991
8	Magwe Division	1864
9	Mandalay Division	6772
10	Mon State	20501
11	Rakhine State	34919
12	Yangon Division	27729
13	Shan State	-
14	Ayeyarwaddy Division	123266
	Total	315902