



Progress report on the implementation of the *Global Plan of Action for Animal Genetic Resources* - 2007 to 2013

Asian Animal Genetic Resources Network

Strategic Priority Area 1: Characterization, Inventory and Monitoring of Trends and Associated Risks

Most relevant strategic priorities and actions:

Strategic Priority 1, Action 6: *“Strengthen global and **regional information systems** ...”*

Strategic Priority 1, Action 7: *“Establish or strengthen existing breed endangerment early-warning and response systems, through the further development of national, **regional and global risk monitoring mechanisms**...”*

About Asian Farm Animal Biodiversity, there are 16 countries joined the AnGR work. The Asian AnGR national coordinators and other stakeholders had the 1st meeting from 9 to 11 September in Bangkok, Thailand to discuss areas of possible cooperation. The meeting was organized and hosted by the Department of Livestock Development of Thailand. Among the key issues discussed were (1) the need for and process for establishment of an Asian Regional Focal Point and (2) priority areas for capacity building within the region. The countries also reported on national matters regarding AnGR and climate change and on access and benefit sharing for AnGR.

About this report concluded from country reports: inventory, monitoring of trends and associated risks, and characterization should be strengthened and maintained to assist in determining conservation priorities and strategic breeding programmes. Country based risk monitoring will greatly assist in setting up early warning systems and response mechanisms at national levels.

Bhutan: There are 6 species characterized, cattle (multipurpose), sheep, goat, pig, chicken, horse and yak. Cattle (multipurpose) and sheep had high characterization in phenotypic and genetic and medium in genetic evaluation.

Indonesia: There are 12 species characterized, dairy cattle, beef cattle, sheep, goat, pig, chicken, duck, buffalo, horse, pigeon, quail, and rabbit. Chicken had medium characterization in phenotypic and genetic and medium in genetic evaluation.

Malaysia: There are 8 species characterized, dairy cattle, beef cattle, sheep, goat, pig, chicken, and buffalo. Beef cattle had medium characterized and low genetic evaluation.

Mongolia: There are 11 species characterized, dairy cattle, beef cattle, cattle (multipurpose), sheep, goat, pig, chicken, horse, bactrian camel, deer, and yaks. Goats had medium characterized, medium molecular genetic evaluation and low genetic variance evaluation.

Nepal: There are 14 species characterized, dairy cattle, beef cattle, cattle (multipurpose), sheep, goat, pig, chicken, horse, buffalo, rabbit, yaks, turkey quail, and ostrich. Goat and yaks has high phenotypic, low genetic characterized, and medium genetic variance evaluation.

Thailand: There are 9 species characterized, dairy cattle, beef cattle, cattle (multipurpose), sheep, goat, pig, chicken, duck, and

buffalo. Beef cattle and pig had medium phenotypic, low genetic characterized, medium genetic variance, and medium molecular genetic evaluation.

Vietnam: There are 7 species characterized, dairy cattle, beef cattle, cattle (multipurpose), sheep, goat, pig, and chicken. Dairy cattle had medium phenotypic, medium genetic characterized, low genetic variance, and low molecular genetic evaluation.

Strategic Priority Area 2: Sustainable Use and Development

Some country in Asia region work with CBD for animal genetic resources and had implementation and ratification of the Nagoya Protocol on Access to genetic resources and Benefit Sharing arising out of their utilisation (ABS). There are action plans of AnGR and ABS, it supports of supports for endanger of AnGR and ABS, it supports of supports for endangered livestock breeds project focussed on appropriate support measures for local livestock breeds.

Bhutan: There are various policies and action plans as a whole for biodiversity conservation and utilization in which animal genetic resources is a component of it. These are Livestock Sector Development Policy, 2013 and updated National Biodiversity Strategy and Action Plan 2013 which awaits endorsement and enforcement. Bhutan Access and Benefit Sharing Policy is awaits endorsement in which animal genetic resource is included as component of biological resources. Considering locally adapted breeds are low yielders and generally smallholders which are often spread wide apart, the volume of production is small which does not support a perpetual market. Therefore, group formation of producers from locally adapted breeds has been instituted. The group operates the marketing of products and wherever possible, the sale counters have been instituted. Farmers participatory approaches in product development and niche marketing. Wool product development and niche marketing of products from Jakar sheep in collaboration with Mithan Handicrafts development Pvt Ltd. India.

Indonesia: There is in the Regulation of the Minister of Agriculture. 36/Permentan/OT.140/8/2006 of the National Livestock Breeding Systems (<http://ditjennak.deptan.go.id>). Before the adoption of the GPA, breeding program has been done for some breeds mainly for economic value (i.e. beef cattle, buffalo, sheep and chickens / ducks), and social value in particular region (ie buffalo Tedong Bonga in South Sulawesi, Madura cattle in P. Madurarta, Garut sheep in Garut, West Java, etc.). Conducting mainly for local beef cattle to improve productivity (growth traits) by ONBS scheme supported by requirement technology (recording, mating design, AI services, genetic evaluation). Sustainable use has also been conducted on some breeds for other purposes i.e. culture (sheep, beef and chicken), uniqueness (chicken, goat), social values and hobby. Cross-breeding through AI at wider production areas continually reduces productivity of crossbreds. Crossbreds requires high input and proper management, so under inferior maintenance cause of inefficiency and losses profit. Erosion on local AGR easily occurs due to intensification of cross-breeding in the field. Recording programs have been developed at government and research breeding centers and by planning open nucleus breeding scheme (ONBS), i.e. for dairy cattle, some beef cattle, sheep and goat. Government has set policies followed by relevant rules for access and utilize local animal genetic resources and benefit-sharing system at local, nationally and international levels.

Malaysia: Malaysia's National Policy on Biological Diversity (1998) - link http://www.nre.gov.my/Malay/Biodiversiti/Documents/Dasar_Kepelbagaian_Biologi_Kebangsaan.pdf. Malaysia's National Strategies and Action Plans for Agrobiodiversity Conservation and Sustainable Utilization (2012) - link http://www.fao.org/ag/againfo/programmes/documents/genetics/country_reports/Malaysia_NSAP_Oct2013.pdf. Breed development projects are all conducted by the government. So far, the private sector has not been involved in breed development. The projects on breed development are for the Mafrival synthetic cattle breed, Brakmas synthetic cattle breed, Cherokee synthetic cattle breed and IKTA quail breed. In the states of Sarawak and Sabah, enactments on access to biodiversity were established in 1997 and 2000 respectively. An ABS law draft is available at national level but has not gone through parliamentary review.

Nepal: The national biodiversity strategy and action plan has the provision of integrating agro-ecosystem approach for AnGR management. There are regulation in National Agriculture Policy (2004); Agrobiodiversity Policy (2007); Animal Breeding Policy (in draft); National Biodiversity Strategy (2002) and revision of national biodiversity strategy and action plan (2014-2020) under preparation. In general dairy cattle specialized breeds and buffaloes have the breeding programme for the enhancing the productivity of the animals. Inadequate capacity (technologies and human resources) to use AnGR; inadequate awareness (development infrastructure) on the use of AnGR; and enabling policy environment.

Thailand: Thailand have adequate national policies in place to promote the sustainable use of animal genetic resources. One of the action is implement to Nagoya protocol. Now there is national regulation. For sustainable use, it provided food security and farmer incomes. The activities are AnGR conservation, AnGR community enterprise, conservation contracted farms of AnGR with culture.

Vietnam: Vietnam have adequate national policies in place to promote the sustainable use of animal genetic resources:

1. Livestock breeding Ordinance No 16/2004/PL-UBTVQH11 of Standing Committee of the National Assembly issued on 24th March 2004.
2. Decision No 10/2008/QD-TTg on the approval of livestock development strategy to 2020 issued on 16 January 2008 by The Prime Minister of Vietnam.
3. Decree 14 CP on the management of domestic animals.
4. Regulation on international exchange of gene sources of precious and rare domestic animals (promulgated together with the Agriculture and Rural Development Minister's Decision No. 43/2006/QD-BNN issued on 1st June 2006).

Strategic Priority Area 3: Conservation

Most relevant strategic priorities and actions:

Strategic Priority 8, Action 2: *“Encourage the development and implementation of national and **regional in situ conservation programmes** for breeds and populations that are at risk ...”*

Strategic Priority 10: *“Develop and implement **regional and global long-term conservation strategies**”*

Strategic Priority 9, Action 2: *“Establish or strengthen national and **regional facilities for ex situ conservation, in particular cryogenic storage. Support the efforts of countries within a region that have opted to establish a regional facility.**”*

Capacity building is required in the following areas :

- Technical guideline and assistance in country and region conservation program
- AnGR conservation methodology
 - In-situ conservation
 - Ex-situ conservation
 - Gene bank

Ex situ Conservation:

Bhutan : There are 6 species in vivo ex situ conservation and 5 in vitro ex situ conservation. They had medium in vivo ex situ conservation of multipurpose cattle. They had ex situ conservation considering risk of extinction, genetic uniqueness, genetic variation within the breed, production traits, non-production traits, cultural or historical importance, and probability of success.

Indonesia : There are 12 species in vivo ex situ conservation and 9 in vitro ex situ conservation. They had high in vivo ex situ conservation of cattle, poultry, horse, buffalo, and rabbit. They had ex situ conservation considering risk of extinction, genetic uniqueness, genetic variation within the breed, production traits, non-production traits, cultural or historical importance, and probability of success.

Malaysia : There are 4 species in vivo ex situ conservation and 4 in vitro ex situ conservation. They had medium in vivo ex situ conservation of cattle, goat, and sheep. They had ex situ conservation not considering risk of extinction, genetic uniqueness, genetic variation within the breed, production traits, non-production traits, cultural or historical importance, and probability of success.

Mongolia : There are 3 species in vivo ex situ conservation and 1 in vitro ex situ conservation. They had low in vivo ex situ conservation of beef cattle. They had ex situ conservation not considering risk of extinction, genetic uniqueness, genetic variation within the breed, production traits, non-production traits, cultural or historical importance, and probability of success.

Nepal: There are 1 specie in vivo ex situ conservation and no in vitro ex situ conservation. They had low in vivo ex situ conservation of yaks. They had no ex situ conservation considering risk of extinction, genetic uniqueness, genetic variation within the breed, production traits, non-production traits, cultural or historical importance, and probability of success.

Thailand: There are 8 species in vivo ex situ conservation and 3 in vitro ex situ conservation. They had high in vivo ex situ conservation of cattle and buffalo. They had ex situ conservation considering risk of extinction, genetic uniqueness, genetic variation within the breed, production traits, non-production traits, cultural or historical importance, and probability of success.

Vietnam: There are 1specie in vivo ex situ conservation and 1 in vitro ex situ conservation. They had medium in vitro ex situ conservation of dairy cattle. They had ex situ conservation considering risk of extinction, genetic uniqueness, genetic variation within the breed, production traits, non-production traits, and cultural or historical importance.

Strategic Priority Area 4: Policies, Institutions and Capacity-building

Most relevant strategic priorities and actions:

Strategic Priority 13 Action 3: *“Establish or strengthen, in partnership with other countries, as appropriate, relevant research, training and extension institutions, including national and **regional agricultural research systems**, to support efforts to characterize, inventory and monitor trends and associated risks, sustainably use and develop, and conserve animal genetic resources.”*

Strategic Priority 17: **“Establish Regional Focal Points and strengthen international networks”**

Strategic Priority 19 Action 1: **“Support regional and international campaigns to raise awareness of the status of animal genetic resources for food and agriculture, and seek to develop wide support at the government and institutional levels, as well as among the general public.”**

Strategic Priority 23, Action 1: *“Assist all stakeholders to strengthen capacity-building, including by exchange of experience, by enhancing research and educational activities, and by providing **training opportunities, technology transfer and financial resources**, at national, **regional** and international levels ... ”*

Implementation and financing (paragraph 57): *“The international networks for animal genetic resources should be encouraged and strengthened through implementation of the Global Plan of Action for Animal Genetic Resources, noting the **important role of Regional Focal Points and regional networking to build collaborative partnerships, to coordinate regional management efforts in animal genetic resources, to further develop information sharing, and for technical cooperation, training and research.**”*

From the 1st meeting of Asia AnGR NC, Asia needs the establishment of Asia regional focal point for

- AnGR. Chairperson outlined the roles of Asia RFP and beneficial aspects of having RFP for Asia
- Information exchange among members regarding Animal Genetic Resources
- Assistance and technical advice to member countries
- Improve to attract more funding as compared to individual countries
- All members from all countries attending the meeting agreed to establish RFP for Asia and “interim steering committee” should be set up.
- Structure and basic rules of interim steering committee for Asia region to be discussed
- All members agreed to have the six member country represented at the meeting in the interim steering committee with Thailand continuing to be secretariat until the permanently formal steering committee is established,
- European regional focal point setup was used as a guide for the establishment of Asia RFP, some initial modifications are listed below;
- Terms of reference
- Meeting of National focal points
- Biannually and linked to AAAP biannual conference
- Interim steering committee for Asia was agreed to set up comprising member countries attending this meeting.
- Secretariat to be decided and discussed in the interim steering committee.

Implementation and financing of the Global Plan of Action for Animal Genetic Resources

Most relevant paragraph:

Implementation and financing (paragraph 50): “... *implementation of the Global Plan of Action for Animal Genetic Resources will require substantial and additional financial resources and long-term support for national, regional and international animal genetic resources programmes and priority activities, provided such incentives are consistent with relevant international agreements. The process should encourage and support the participation of governments and all relevant stakeholders. **Regional and international collaboration will be crucial.***”

Bhutan participated in regional or international campaigns to raise awareness of the status of animal genetic resources provided by SAARC Animal Genetic Resources Program.

Indonesia: Before the GPA was adopted by Indonesian government, many government institutions, research inst., university and private sectors have done inventory of AGR covering most species for economic values. Government is currently supporting the existence of various local/native breeds/strains allowing the availability of morphology, performance, location, production environment and specific features those breeds (strains). Many government institutions, research inst., university and private sectors have done molecular characterization of anim. genetic resources covering: most species of economic values. Molecular characterization has been done on various breeds by several methods i.e. PCR-RFLP and SSCP on micro satellites, SNPs, mutation bases to determine AGR diversity. Bureau Government has conducted baseline survey on the status of species having important economic value for all species of livestock at 10 years interval. The latest data are available in Indonesian Livestock Statistic Book in the year of 2012. Indonesia has national committee and local committees (existing in some provinces) having one of the tasks to monitor status of animal genetic resources. A number of breeds have been regularly monitored their status, i.e. beef cattle, buffalo, dairy cattle, sheep, goat, chicken and duck. The remaining still has not be monitored due to spreading and unknown population. The criteria has been conducted by our country according to the FAO Criteria in the year 1996 for classifying the risk status of animal genetic resources. Coordination among relevant actors (stakeholders) to conserve and increase population by implementing sustainable AGR management.

Malaysia: A multi-sectorial approach was taken in drafting Malaysia's Strategies and Action Plans for Agrobiodiversity Conservation and Sustainable Use (2012).

Mongolia Pan-Asian project by AFACI "Improving animal genetic resources values and productive performance in Asia" www.afaci.org.

Nepal: 25 local breeds (7 in cattle; 3 in buffaloes; 4 in sheep; 4 in goats; 3 in pigs; 3 in chicken, 1 in horse) have been identified before the first country report was developed [Refer to the first CR]. Molecular level characterization was done for few breeds (Lulu cattle) and several breeds are characterized at biochemical level (Yak; Lime, Parkote and Gaddi buffaloes; Khari goats and others).

Thailand: The country's progress in building an inventory of its animal genetic resources covering all livestock species of economic importance completed before the adoption of GPA. It is compiled as book. After adoption of GPA, there is surveying and characterization of AnGR again. The new breeds from surveying is put in inventory system. They were monitored and characterized again. Some of them are put in website and some are still in book. It is in Thai language. Comprehensive studies were undertaken before the adoption of the GPA. We recognized the importance of AnGR. Study about phenotypic characterization covering morphology, performance, location, production environments and specific features in all livestock species of economic importance were undertaken during development of animal production. Even though, some information has been generated before the adoption of GPA, the situation of country has no enough information. The action is planned and funding to work continuing. A baseline survey has been undertaken for some species (coverage not increased since the adoption of the GPA). Even though, some information has been generated before the adoption of GPA. The situation of country has no enough information. The action is planned and funding to work continuing. The responsibilities established before the adoption of the GPA. Responsibilities were established but there is no enough fund to work. The protocols established before the adoption of the GPA. Responsibilities were established but there is no enough fund to work. The country use for assessing the risk status of its animal genetic resources by FAO criteria. Kow Lamphun cattle, there are less than 1000 cows. They are risk as endanger.

Vietnam: The country have sufficient institutional capacity to support holistic planning of the livestock sector. Annual plan for management program, scientific and technological activities, as well as research application in production. The national strategy and action plan for animal genetic resources are:

- Mitigate genetic loss that is widespread in nature and in production; protect, maintain, and develop the national genetic resources, as this is a fundamental element of sustainable biodiversity
- Conserve, use, and develop genetic resources in a sustainable manner; transform domestic breeds into specialized goods for Vietnamese and international breeders.
- Develop legal codes for conservation management and international trade.

- Develop a plan for national genetic resource conservation, with specific steps in terms of organization and investment. Genetic resources are included in the national program for conservation and sustainable use and the ministry's agriculture development program. National body AnGR network of stakeholders, managers, policy makers, researchers, extensionists and livestock keepers. Strength and consistency can be improved. the state of training and technology transfer programmes in your country related to inventory, characterization, monitoring, sustainable use, development and conservation of animal genetic resources are:

- Technical standards and protocols for characterization have been developed.
- Phenotypic and molecular characterization studies have been implemented on local chickens (MARD), goats and sheep (IAEA), cattle, pigs and chickens in the north of the country (DFG; Biodiva ;GEF-NEP), LIEPSAP.

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