The Global Plan of Action for Animal Genetic Resources

Animal Production and Health Division

Bolzano, 21 mai 2008
Contents

Work at the FAO:

- The State of the World’s Animal Genetic Resources for Food and Agriculture
- The Interlaken Declaration on Animal Genetic Resources
- The Global Plan of Action for Animal Genetic Resources

- The Interlaken Conference
- Next steps and outstanding issues
The State of the World’s AnGR

The first-ever global assessment of livestock diversity
Breed diversity – the global picture
7 616 breeds reported, of which 690 are extinct
Risk status - the global picture

- 20% at risk
- 30% unknown

Pie charts showing distribution of risk status:

- Critical: 12%
- Critical-maintained: 1%
- Endangered: 3%
- Endangered-maintained: 2%
- Extinct: 3%
- Not at risk: 42%
- Unknown: 28%

Promoting biodiversity

FAO
In Europe & Caucasus, many breeds aren’t being conserved

<table>
<thead>
<tr>
<th>Conservation activities in Europe and the Caucasus</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goat</th>
<th>Pig</th>
<th>Chicken</th>
<th>Horse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local breeds</td>
<td>277</td>
<td>458</td>
<td>170</td>
<td>165</td>
<td>608</td>
<td>269</td>
</tr>
<tr>
<td>Regional transboundary breeds</td>
<td>28</td>
<td>79</td>
<td>13</td>
<td>17</td>
<td>45</td>
<td>38</td>
</tr>
<tr>
<td>Conserved in vivo</td>
<td>137</td>
<td>175</td>
<td>51</td>
<td>47</td>
<td>101</td>
<td>113</td>
</tr>
<tr>
<td>Conserved in vitro</td>
<td>106</td>
<td>51</td>
<td>15</td>
<td>28</td>
<td>6</td>
<td>23</td>
</tr>
</tbody>
</table>
Threats to AnGR

- Globalization, intensification and mechanisation
- Changing cultural practices, erosion of customary institutions and social relations
- Population pressure, loss of access to resources, overgrazing, resource degradation
The International Response

The Global Plan of Action for Animal Genetic Resources
Aims of the *Global Plan of Action*

- support and increase the overall effectiveness of national, regional and global efforts for the sustainable use, development and conservation of animal genetic resources,
- contribute to the development of a comprehensive framework for the management of agricultural biodiversity
- facilitate international cooperation and the mobilization of resources
The Global Plan of Action contains

23 Strategic Priorities for Action aimed at addressing current and future challenges to the livestock sector, including:

- global food insecurity and poverty
- population increase and changes in consumer demands
- environmental changes, including climate change
- existing and emerging diseases
The *Global Plan of Action* addresses

**4 Strategic Priorities Areas:**

1. Characterisation, Inventory and Monitoring

2. Sustainable Use and Development

3. Conservation

4. Policies, Institutions and Capacity-building
Implementation and Financing of the GPA

- Main responsibility rests with national governments
- Need for international cooperation and support to developing countries – mobilization of new and additional resources
- International organisations to provide support
- Need to involve all relevant stakeholders
- CGRFA to oversee and evaluate progress, within context of its MYPoW
The Interlaken Declaration on Animal Genetic Resources
Through the Interlaken Declaration countries have committed themselves to:

- Implementing the Global Plan of Action in accordance with national priorities and capacities

- Facilitating access to AnGR and the fair and equitable sharing of benefits arising from their use
Next steps and outstanding issues

- Development of national measures and mainstreaming – institutional responsibilities and development of NAP’s
- Development of a Funding Strategy for CGRFA #12
- Review of international policies and coordination with other forums: ABS for GRFA – CGRFA #12 / study on animal health measures
- Roles of small scale livestock keepers – report to the 2009 FAO Conference
- Global back-up
Next steps and outstanding issues

- Facilitate regional and international collaboration (RFPs)
- Technical guidelines / tools and technical / policy support
- Monitoring of AnGR – format and criteria for breeds at risk (DAD-IS) - Early-warning and response
- Training and research
- Development of partnerships
Thank you

www.fao.org/DAD-IS
useful addresses

- **Domestic Animal Diversity Information Service (DAD-IS):**

- sub-regional report for Europe:

- ItalyProf Donato Matassino  Consorzio per la Sperimentazione, Divulgazione e Applicazioni di Biotecniche Innovative (ConSDABI)
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  82100 Benevento
  [Italyconsdabi@consdabi.org](mailto:Italyconsdabi@consdabi.org)
  +39-(0824)-334300+39-(0824)-334046
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>Establishment of the Commission on Plant Genetic Resources for Food and Agriculture</td>
</tr>
<tr>
<td>1993</td>
<td>Initiation of the Global Strategy for the Management of Farm AnGR</td>
</tr>
<tr>
<td>1995</td>
<td>Commission’s mandate expanded to all GRFA, incl. AnGR</td>
</tr>
<tr>
<td>1997</td>
<td>ITWG-AnGR established</td>
</tr>
<tr>
<td>1999</td>
<td>CGRFA requested development of a SOW-AnGR</td>
</tr>
<tr>
<td>2004</td>
<td>CGRFA decided to finalize the SOW-AnGR, including Strategic Priorities for Action, at a first International Technical Conference on Animal Genetic Resources</td>
</tr>
</tbody>
</table>
### Milestones for animal genetic resources

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>4&lt;sup&gt;th&lt;/sup&gt; ITWG-AnGR recommended that the Technical Conference adopt a Global Plan of Action and a Declaration</td>
</tr>
<tr>
<td>2007</td>
<td>11&lt;sup&gt;th&lt;/sup&gt; CGRFA adopted the MYPoW</td>
</tr>
</tbody>
</table>
| 2007 | Interlaken Conference:  
- Launched SoW-AnGR  
- Adopted Global Plan of Action through the Interlaken Declaration |
| 2007 | FAO Conference endorsed outcomes of the Interlaken Conference |
example of a top transboundary breed
(more than 80 countries)

FIGURE 25
Distribution of Saanen goats
Symbolic value of cattle

Box 12
Linguistic links between cattle and wealth

The significance of the role of livestock as a form of wealth is highlighted by the fact that in many unrelated languages there are etymological links between the words for cattle and the words for wealth, capital, money or savings:

*Cho-Chiku* (Japanese: saving money) consists of two characters, of which the first *Cho* means saving. The second word is also used for livestock though the character is (only partly) different, *Chiku*. The Chinese etymology is very similar.

*Rajakayá* in Javanese literally means rich king, but it has the meaning of wealth and cattle.

*Ente* means cattle in Lunyomkole (a Bantu language from Uganda), and *sente* means money in the same language.

*Mikne* (Hebrew) means cows, goats, camels etc. It consists of the root word *kne* or *kana*, that means to buy, and an affix *mi* that makes the root into a noun.

*Byoto* (Polish) means cattle and originates from a Slavic root-word *byd_o* which relates to the meanings of “being, standing, living, the house, possession”.

This root meaning still survives in Czech and Slovakian but it has disappeared in Polish. The change of meaning from possession to livestock is typical for many Slavic languages.

*Da* (Welsh) means wealth or goods; good or goodness; as well as cattle or livestock (*da byw*). In the same language, *cyfal* the word for capital, is related to the word *alaf* – meaning a herd of cattle.

*Vee* (Dutch), *Vieh* (German) meaning livestock are related to *fee* (English) and originate from *fehu* (Old Saksish) which means both livestock and wealth or money. Compare *fja* (Old Frisian), *fahu* (Gothic), *fe* (Norwegian) and *få* (Swedish).

*Cattle* is related to *capital* via *caput* (Latin: head, number of e.g. animals); the word *chattel* seems to be an intermediate.

*Ganado* (Spanish: livestock) is related to *ganar* (Spanish: to earn, to win, to gain).

*Pecunia* (Latin: wealth, money) is linked with *pecu* (livestock) and also used in the Spanish word for animal husbandry (*pecuaria*).

Provided by Hans Schiere.
See also Schiere (1995).
Driver of change: strong trend in consumption

Projected trends in meat consumption from 2000 to 2050

<table>
<thead>
<tr>
<th>Region</th>
<th>Production</th>
<th>Consumption per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[1 000 tonnes p.a.]</td>
<td>[% p.a.]</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>5 564</td>
<td>3.3</td>
</tr>
<tr>
<td>Near East/North Africa</td>
<td>7 382</td>
<td>3.3</td>
</tr>
<tr>
<td>Latin America &amp; the Caribbean</td>
<td>31 608</td>
<td>2.2</td>
</tr>
<tr>
<td>South Asia</td>
<td>7 662</td>
<td>3.9</td>
</tr>
<tr>
<td>East Asia</td>
<td>73 251</td>
<td>2.1</td>
</tr>
<tr>
<td>Developing world</td>
<td>125 466</td>
<td>2.4</td>
</tr>
<tr>
<td>World</td>
<td>229 713</td>
<td>1.7</td>
</tr>
</tbody>
</table>

2.4 Pigs
Pig breeding is considered a priority in 44 countries (33 percent, Table 60), but only 36 countries (27 percent) report the existence of structured breeding programmes (Table 61), and only ten of these countries are outside Europe and the Caucasus or North America. The discrepancy between the expression of priority and the actual existence of breeding programmes is, thus, much smaller than for cattle, but similar to that for small ruminants. Several Country Reports from Latin America and the Southwest Pacific indicate that genetic improvement of pig populations largely depends on the import of animals or semen. Systematic cross-breeding programmes, mainly involving three-breed crosses, have become the standard in nearly all countries with advanced pig production – 34 Country Reports indicate the existence of such systems. Among the 70 subsample countries, the number of pig breeds reported is much smaller than the number of cattle or small ruminant breeds (Annex Table 70). Breeding goals and breeding strategies have been specified for 35 percent and 30 percent of the breeds, respectively, but the proportion is more than twice as high in Europe and the Caucasus as in the other regions. The number of specific local breeds reported is much smaller than for ruminants, while a few international breeds, such as Landrace, Large White, Duroc, Hampshire and Yorkshire, have a very wide distribution. Important objectives of the reported breeding programmes include fertility, feed conversion rate, and proportion of lean meat production. According to many Country Reports, pigs of the lard type have largely lost their former importance.
Box 48
Slovenia’s Livestock Breeding Act (2002)

The principal objective of this act is to harmonize Slovenia’s livestock breeding legislation with the “acquis communautaire” of the EU, and to adapt to the CAP. It also sets out principles in accordance with the goals of agricultural policy, and outlines the economic, spatial, ecological, and social roles of animal husbandry and sustainable agricultural development.

The more specific objectives of the act are:

- regulating the field of animal husbandry, with the aim of promoting stable production of quality food and ensuring food safety;
- conserving settlements in rural areas, and the cultivated landscape;
- utilizing natural resources for food production in such a way as to maintain the productive capacity and fertility of the land;
- managing the operation of recognized breeding organizations and the implementation of breeding programmes;
- providing a higher level of education in the field of animal husbandry;
- maintaining biodiversity in animal husbandry and protecting the environment; and
- providing a suitable income for those involved in agriculture.

Box 89
Community-driven breeding programmes for local pig breeds in north Vietnam

In the mountainous areas of Northwest Vietnam, livestock breeding and management programmes can contribute to improving rural livelihoods if they respect the production objectives, intensity and resource-availability of the area’s resource-poor smallholder mixed farming systems. The local Ban pig, which shows considerable hardness, but has a low reproductive and growth performance is increasingly being replaced by higher-yielding Vietnamese Mong Cai sows from the Red River Delta.

In a collaborative project between the National Institute of Animal Husbandry (NIAH), Hanoi and the University of Hohenheim, Germany, community-based pig breeding programmes have been established in seven villages, differing in terms of their remoteness and market access.

A total of 176 households currently participate in the programmes. On-farm performance testing schemes have been developed. Farmers are provided with data sheets on which they record the performance of their pigs (mainly data of farrowing and number of piglets). Vietnamese and German researchers cross-check data and collect additional data by weighing and identifying animals when they visit the villages. Specially trained farmers enter the data into the project database using the PigChamp® software and researchers analyse the data.

Farmers in Vietnam often receive money for their participation in projects; in the case of this project, compensations are gradually being reduced. Results are fed back to farmers at seminars/training modules, and are further used to optimize breeding (gift selection and optimization of mating plans). In order to ensure long-term sustainability, local partners such as the province Department of Agriculture and Rural Development (DARD) and the sub-Department of Animal Health of Son La province, are actively involved and trained. Cooperation with provincial extension services will be strengthened in the current project phase. In earlier phases, the service’s strong orientation towards intensive management in favoured regions meant that exchanges were limited. Financial support for the future of the project seems to be available thanks to NIAH’s official mandate to carry out projects on AnGR conservation. Moreover, the marketing element of the current project is aimed at ensuring long-term economic viability.

Initial performance testing results indicate that Mong Cai and their cross-bred offspring (sired by exotic boars) are more suited to semi-intensive, market-oriented production conditions, where the higher levels of inputs needed to achieve higher production can be provided. They seem to be less robust in the harsh upland climates and under conditions of low and varying input intensity. Ban pigs are only suited for the extensive conditions of subsistence-oriented resource-poor farming. As the project continues, efforts are being made to further develop breeding goals, to optimize stratified breeding programmes, and to implement marketing programmes. Close to town, lean meat is produced from the cross-bred offspring of Mong Cai sows. Production of Ban pigs continues in remote locations with pure or cross-bred animals marketed as a branded specialty – contributing to the “conservation through use” of this local breed.

Provided by Ute Lemke and Anne-Valee Zierath.
Further information can be obtained from the following sources: Huyen, et al. (2005); Lemke, (2006); Robbé (2005), or from Prof Dr Anne-Valee Zierath, Institute of Animal Production in the Tropics and Subtropics, University of Hohenheim, 70599 Stuttgart, Germany.
E-mail: lemm@uni-hohenheim.de

* continues
Foreign breeds do not solve every problem... ex. Nigeria

Box 91
Nigeria’s Village Poultry Improvement Scheme

A Village Poultry Improvement Scheme aimed at upgrading the indigenous breed of chicken with improved exotic breeds (Rhode Island Red, Light Sussex and Australorp) was initiated in Nigeria around 1950 (Anwo, 1989). The strategy was to cull all indigenous males and replace them with improved imported breeds in a “cockerel exchange programme” (Bessei, 1987). This scheme failed because the cross-bred chicks, though better in performance, could not survive in the semi-wild extensive backyard production system under which the indigenous chickens were raised. Another major drawback was that breed replacement resulted in a rapid loss in genetic variation and narrowing of the available AnGR.
Lucky ex. in U-K

Box 96
Lleyn sheep of Wales - revival in fortunes in tune with modern demands

In the course of the last half century the Lleyn sheep breed of northwest Wales has progressed from the brink of extinction to a breed of widespread national importance in the British sheep industry. Following the Second World War, the breed retreated from the considerable local importance that it had in the first half of the century, and by the 1960s there were a mere seven pure-bred flocks and 500 ewes. In contrast, by 2006 the number of pure breeders exceeds 1,000 spread throughout the United Kingdom, and regional Society sales involve the annual trading of many thousands of Lleyn sheep.

This revival was achieved through the determination and enthusiasm of an initially small group of twelve local breeders and supportive advisers. They set up a breed society in 1970 to coordinate breeding policy, register pure-bred flocks and grade up cross-bred sheep (by repeated backcrossing using Lleyn rams). The chief attributes of the breed from the start were its medium size, mothering ability (in its hay-day it was milked after weaning the lamb) and prolificacy, as well as meat and wool quality. An added attraction for flock biosecurity was the suitability of the Lleyn for “closed flock” operations in which the only animals purchased are top-quality rams.

These attributes were intensified by organized breeding, partly through the operation of a New Zealand-type nucleus group breeding scheme, involving objective recording (Meat and Livestock Commission) and fast generation turnover. The resulting wide appeal of easily handled ewes, convenient for large and small flock owners, coupled with efficient utilization of expensive land, was fostered by the support of the Breed Society. This involved sheared marketing, with well-organized breed sales and information provision for prospective buyers and member breeders.

Another important element, as the breed rapidly expanded its geographical coverage, was the encouragement given to local devolution. Groups or clubs have been formed on a country-wide basis, currently seven clubs in all, although the parent breed society has maintained its coordinating role and its link with the home base in northwest Wales.

Provided by J. B. Owen.
For further information on the breed see:
http://www.lleynsheep.com

Photo credit: David Clegg
useful addresses

• **Domestic Animal Diversity Information Service (DAD-IS)**:

• sub-regional report for Europe:

• Italy:
  Prof Donato Matassino
  Consorzio per la Sperimentazione, Divulgazione e Applicazioni di Biotecniche Innovative (ConSDABI)
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  +39-(0824)-334300+39-(0824)-334046
The State of the World’s AnGR

169 Country Reports
9 reports from international organizations
13 thematic studies

DAD-IS
State of the World’s Animal Genetic Resources for Food and Agriculture
Draft Released: The draft report, finalized and uploaded on 30 November 2004, contains various data and information on the state of animal genetic resources, the state of the art in the management of animal genetic resources, and the state of capabilities for the use, development and conservation of animal genetic resources. The draft will be reviewed at the meeting of the Intergovernmental Technical Working Group for Animal Genetic Resources (ITWG-AnGR) on 11-12 December 2004. The final printed version will be presented at the International Technical Conference on Animal Genetic Resources, which will be held from 17-20 September 2005 in Interlaken, Switzerland.

Global Workshop for National Coordinators, 11-12 December 2006, FAO HQ, Rome
The forthcoming global workshop of animal genetic resources will discuss progress made at country and regional levels in the implementation of the strategic guidelines identified in the Country Reports and the Strategic Priorities for Action. It will also discuss the potential for enhancing technical assistance, capacity building, and the establishment of national and regional animal genetic resource networks.

Intergovernmental Technical Working Group for Animal Genetic Resources (ITWG-AnGR), 13-15 December, 2006, FAO HQ, Rome
The Intergovernmental meeting will review the draft version of the State of the World’s Animal Genetic Resources for Food and Agriculture and provide for the 1st International Technical Conference on Animal Genetic Resources. The conference will be held from 17-20 September 2005 in Interlaken, Switzerland. For more details, check our website.

Box 18
War and rehabilitation in Bosnia and Herzegovina

During the 1992–1995 war in Bosnia and Herzegovina the livestock sector was seriously affected. Cattle numbers are thought to have declined by 60 percent, sheep by 75 percent, pigs by 90 percent, poultry by 68 percent and horses by 65 percent. A nucleus herd of pure-bred Busa cattle near Sarajevo was destroyed along with the herd book and other documentation. The breeding and conservation programme for the Bosnian Mountain Horse was also severely disrupted. Additionally, a number of flocks of pure-bred Sjenicka sheep were completely eradicated.

In 1996, a three-year programme for the rehabilitation of the animal production sector was adopted. It envisaged the import of 60,000 high-quality cows, 100,000 sheep and 20,000 goats. During the first year of the programme (1997) around 10,000 heifers were imported, 6,500 of which were financed by the International Fund for Agricultural Development (IFAD) and coordinated by the Project Implementation Unit of the Federal Ministry of Agriculture. The remaining numbers were made up of donations from various governments and humanitarian organizations. Heifers were imported from Hungary, Austria, Germany and the Netherlands. Seventy-five percent were Simmental, 10 percent Holstein-Friesian, 10 percent Montafona (Alpine Brown) and 5 percent Oberinntal (Grey Tyrolean).

Semen was also imported. Farmers who had lost over 50 percent of their farms’ production assets and who had sufficient land to keep animals, could obtain soft loans from the government. In general, the policy was to supply one cow per family, but later more commercially oriented units with three to five cows were preferred. While the imported breeds clearly have the potential to increase milk and meat production, insufficient feed resources, poor management practices and a lack of animal health and milk collection services have in some cases limited the success of the restocking projects.

Numerous organizations have been involved in the distribution of animals in Bosnia and Herzegovina during the years following the war, and imports by the private sector have also sought to meet demand. The full extent of these imports and the breeds involved is not well recorded. Nonetheless, it is clear that the war and the subsequent rehabilitation efforts have led to considerable changes in the composition of the livestock population over recent years. The population of Busa cattle, for example, estimated to be above 80,000 in 1991, fell to below 100 by 2003.

For further information see: CR Bosnia and Herzegovina (2003); FAO (2006); SVABH. (2003).
Ex. of threat to AnG diversity: epidemic: FMD

<table>
<thead>
<tr>
<th>Breed</th>
<th>Total number of breeding females in 2002</th>
<th>Estimated reduction of breeding females in 2001 [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belted Galloway</td>
<td>1,400</td>
<td>approx. 30</td>
</tr>
<tr>
<td>Galloway</td>
<td>3,500</td>
<td>25</td>
</tr>
<tr>
<td>Whitebred Shorthorn</td>
<td>120</td>
<td>21</td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>British Milksheep</td>
<td>1,232</td>
<td>&lt; 40</td>
</tr>
<tr>
<td>Cheviot (South Country)</td>
<td>43,000</td>
<td>39</td>
</tr>
<tr>
<td>Herdwick</td>
<td>45,000</td>
<td>35</td>
</tr>
<tr>
<td>Hill Radnor</td>
<td>1,893</td>
<td>23</td>
</tr>
<tr>
<td>Rough Fell</td>
<td>12,000</td>
<td>31</td>
</tr>
<tr>
<td>Swaledale</td>
<td>750,000</td>
<td>30</td>
</tr>
<tr>
<td>Whitefaced Woodland</td>
<td>656</td>
<td>23</td>
</tr>
</tbody>
</table>

In most developing countries there is a lack of:

- capacities and basic institutions for characterisation, inventory & monitoring, breeding & conservation
- development policies & legal structures
- structures for national, regional & international cooperation
- interest in NARS and national Non-Governmental Organisations
- interest in international donor community