

Part 3

THE STATE OF CAPACITIES IN ANIMAL GENETIC RESOURCES MANAGEMENT





Introduction

This part of the Report analyses countries' capacities in the management of animal genetic resources for food and agriculture (AnGR), based on the information provided in the Country Reports. The analysis highlights regional differences, and identifies specific weaknesses; thus informing the identification of strategic priorities for action. The analytical approach varies from section to section according to the nature and the depth of the information provided in the Country Reports. It is important to recognize that the analysis presented here is based on Country Reports that were received by FAO between 2002 and 2005 (the majority being submitted in 2003 and 2004) and may, therefore not present a full picture of the state of capacity in 2007.

The first section presents an analysis the state of human and institutional capacity for AnGR management. This is followed by sections describing the state of structured breeding programmes, conservation programmes, and the use of reproductive and molecular biotechnologies. The final section covers the regulatory framework affecting AnGR. Legal frameworks at the country level need to be considered in the context of international and regional frameworks. Thus, the analysis of legislation and policy measures at the national level is preceded by an overview of relevant international legal instruments; and a discussion of regional-level legislation (mainly focusing on the European Union). Because of the increasing attention given to patenting in the discussion of policies for AnGR management this issue is introduced separately.

Section A

Institutions and stakeholders

1 Introduction

The implementation of measures to enhance the conservation and sustainable use of AnGR is highly dependent on the existence of a sound institutional framework. Strong human capacity is also essential. A prerequisite for institutional development and capacity-building in the field of AnGR management is, however, recognition of the importance of the issue. A further challenge is posed by the fact that the diverse stakeholders involved in the field have many different backgrounds and motivations, and may have conflicting interests.

Institutional roles and capacities have to be considered in the context of the driving forces that influence their development. In broad terms, the institutions involved in the management of AnGR are shaped by the evolving requirements of the livestock sector and changing policy concerns. In addition to these general trends, a number of specific influences have affected the development of institutional capacity over the last decade. These include the Convention on Biological Diversity (CBD), which provides the main international legal framework for the management of biodiversity. The significance of the World Trade Organization (WTO) agreements was also mentioned in many Country Reports. Furthermore, the State of the World's Animal Genetic Resources for Food and Agriculture (SoW-AnGR) reporting process has affected institutional development at the country level through the preparation of Country Reports and

the identification and empowering of National Coordinators (NCs) and National Consultative Committees (NCCs) for AnGR. The preparatory meetings which took place as part of the SoW-AnGR process also provided a forum for discussion among stakeholders at the regional level.

The following chapters summarize the state of capacities, institutions and institutional networks in the field of AnGR. The analysis is primarily based on countries' own assessments of the situation as provided in the Country Reports. A brief description of the methodology used to analyse the Country Reports and the other sources used is first presented. Assessments of various aspects of institutional capacity to manage AnGR are then set out. The section ends with a discussion of the main potentials and constraints identified.

2 Analytical framework

The aim of the analysis was to provide an inventory and assessment of human and institutional capacities for the management of AnGR at the national, subregional, regional and international levels.

At the country level, the following factors were considered:

- Stakeholders' involvement in the preparation of the Country Report, along with their involvement in the field of AnGR, their background/history and their group

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membership. The following categories were used to classify group membership: governmental organization; farmer/herder association; interest organization (conservation); commerce/private company; research/science; development organization; donors; breeding association; extension service; insemination organization/association; international organization (governmental); international organization (non-governmental).

- Institutional assessment – including the following thematic areas: infrastructure/capacities for the management of AnGR; participation of stakeholders at local level; research capacities; (indigenous) knowledge of AnGR; level of awareness of AnGR management; existing or proposed laws and programmes; and the degree of implementation of development policy for AnGR.

At the subregional, regional and international levels, organizations and networks were identified.

2.1 Stakeholders' involvement and background at country level

For the purposes of the analysis, stakeholder participation in the SoW-AnGR process at the country level was taken as a proxy for the existence of established relationships between stakeholders and the officially appointed national institutions for AnGR management. Besides the information given in the Country Reports (e.g. on NCC membership and composition, and on actors involved in the preparation of the Country Report or in activities related to AnGR), additional information on stakeholders and their backgrounds was obtained from FAO's DAD-IS information system and through additional Web-based research.

2.2 Assessment of institutional capacities at country level

The institutional assessment was entirely based on the information provided in the Country Reports. The Guidelines for the Development of Country Reports suggested that one chapter should provide information on "Country capacity to manage AnGR". This section was intended to include institutional infrastructures and human resources. To facilitate consistent reporting, a number of predefined tables were provided:

- Table 4.6 – detailing the role of stakeholders (national government, regional/local government, breeders' organizations, private companies, research organizations, NGOs) in the implementation of tools for the development of AnGR (setting breeding goals, individual animal identification, recording, artificial insemination (AI), genetic evaluation);
- Table 4.7 – detailing the involvement of the various stakeholders in thematic areas related to the development of AnGR (legislation, breeding/genetic improvement, infrastructure, human resources and producers' organizations);
- Table 4.8 – detailing the preferences of the various stakeholders with respect to different types of AnGR (locally adapted breeds, breeds imported from within the region, imported exotic breeds);
- Table 4.9 – detailing priority needs (knowledge, training, financial resources, breeding organizations) for the use of technologies (recording, genetic evaluation, AI/embryo transfer (ET), molecular techniques).

Where available, the information provided in these tables was used for the analysis presented here. However, only 38 percent of countries utilized the tables. For this reason, an analytical framework which also drew on other sections of the Country Reports was developed. The variation in the level of detail presented in the reports was high, and placed some limitation on the scope for

TABLE 53

Sources of information (Country Report sections) for the national-level assessments

Thematic area	Part I: Overview	Part II: Changing demands, policies, strategies, programmes	Part III: State of national capacities, assessing future capacity building requirements	Part IV: Identifying national priorities	Part V: International cooperation	Part VI: How the Country Report was prepared	Annex: Predefined tables prepared for stakeholder involvement, priorities, etc.
Infrastructure/capacities	●	●	●		●	●	●
Participation of stakeholders at local/regional level	●		●			●	●
Research			●		●	●	
Knowledge			●		●	●	
Awareness of topic	●	●	●	●		●	
Laws, political programmes	●	●		●	●		●
Degree of implementation		●		●	●		●

See the Annex to this section for explanation.

quantitative analysis. The sections of the Country Reports that were used as sources of information for each thematic area assessed are shown in Table 53.

For each thematic area in the institutional assessment, a score was awarded according to the level of activity/capacity in the country in question. Countries were scored 0 (none), + (little), ++ (medium) or +++ (high). Scores for each thematic area were assigned subjectively taking into account criteria such as Country Report descriptions of the state of capacity, tabulated information (if available), and reported priority needs (see details in the Notes to Annex Table 53). The proportion of countries scoring at 0, +, and ++/+++ in the institutional assessments is presented for each subregion.

The individual country scores in each thematic area of the institutional assessment were aggregated to characterize the subregional/regional situation. The maximum score (achieved if all the countries in a subregion or region scored

“+++” for the category in question) is equal to 1 (or 100 percent) and the minimum score (if all the countries in a subregion or region scored “0” for the category in question) is equal to 0. The average scores the regions achieved in the institutional assessments are shown in Figure 43 (the scores for the subregions are shown in the tables in the Annex to this section). The different thematic areas were arranged on a scale ranging from basic/organizational capacities to strategic capacities for AnGR management. For example, low scores in the assessment of infrastructure indicate a need for action at a basic or organizational level, while a high score for implementation of laws and political programmes indicates existing activities at a strategic level. This aggregation allows the identification of specific weaknesses of subregions or regions with respect to their institutional capacities. Comparison with the country assessments allows the identification of countries with the potential to play a leading role in the respective regions or subregions.

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2.3 Organizations and networks with a potential role in regional and international collaboration

In most Country Reports, some information on cooperation was presented. Additional Web-based research was used to obtain further information on stakeholders and their backgrounds at subregional, regional and international levels. Further sources of information used for the analysis of institutional structures, and the identification of stakeholders and networks at these levels, were reports from international (governmental and non-governmental) organizations received as part of the SoW-AnGR process, and information from the regional and subregional e-mail consultations organized by FAO in late 2005.

3 Stakeholders, institutions, capacities and structures

3.1 Stakeholder involvement in the State of the World process at country level

The results presented in this subchapter are intended to indicate the extent to which established relationships exist between the officially appointed country-level institutions for AnGR management and the various stakeholders involved in the field. Stakeholder participation in the SoW-AnGR process is used as a proxy measure of such involvement. For the preparation of the Country Reports, countries were encouraged to involve all stakeholders – governmental and non-governmental (e.g. breeders' associations), as well as the commercial sector. In addition to the nomination of an NC, the establishment of a supporting structure, such as a National Consultative Committee (NCC) representing all stakeholders was recommended, and was implemented in most countries.

The pattern of participation by various stakeholder groups in the process varied little from country to country. Individuals from governmental and scientific backgrounds were the most often

involved. Institutions of the National Agricultural Research Systems (NARS) played a leading role in the process, and were actively involved in nearly all NCCs and Country Report preparation processes. In 44 percent of countries, the host institution of the NC was a national research institute. However, many Country Reports note with regret that these institutes are rarely involved in AnGR-related studies, and interest in this topic is often limited to isolated departments which lack adequate financial resources. Moreover, where research institutions do pay more attention to AnGR, the work is usually rather narrow in focus, concentrating on high-output breeds or advanced technical matters.

In 37 percent of countries NGOs (mostly breeders' associations) participated in the NCC. The involvement of NGOs was more prominent in South America and western Europe. This is in accordance with the high number of such organizations existing in these parts of the world. In other regions and countries, conditions for the involvement of these stakeholders were less favourable. In some cases, individual farmers or herders were members of the NCC, but information on their organizational backgrounds is not available.

The commercial sector was rarely included. It is noted in the Country Reports that commercial operators are highly active in the use of AnGR, and are often well organized even at the international level – most notably in the poultry and pig sectors. However, many Country Reports from all regions indicate that the involvement of these stakeholders in national programmes for the conservation of AnGR is difficult, as their interest is limited to breeding programmes relevant to the breeds used in commercial production. Central Asia and the eastern part of the Europe and the Caucasus region were exceptions to this pattern. Here, stakeholders from the commercial sector were more often involved in the NCCs. This may be because of the transitional state of many countries in this part of the world – recent privatization means that stronger links remain between governmental and quasi-commercial stakeholders.

3.2 Assessment of institutional capacities at country and regional level

Participation, infrastructure and capacities

As the utilization and *in situ* conservation of AnGR usually takes place at the local level, considerable participation by non-governmental stakeholders, such as breeding organizations or the private sector in general, in policy processes relating to AnGR might be expected. However, this is not borne out by the majority of the Country Reports analysed. Such organizations have the potential to compensate for weak state structures (such as exist, for example, in many countries in Africa and the former Soviet Union), and to take over key roles in activities such as inventory and *in situ* conservation. CR Czech Republic (2003), CR Spain (2004) and CR Germany (2003), for example, refer to the role of so-called "neo-rurales" or "hobby farmers" in AnGR management.

A strong local-level capacity (e.g. clearly defined and well monitored responsibilities for local stakeholders, and the integration of local organizations in the national policy arena) could be identified mostly in western and northern Europe and, to a lesser extent, in Central and South America. Reports from transition countries emphasize a need for stronger integration of the private sector in order to take advantage of the above-mentioned potential to compensate for the weakness of the state sector in the fields of inventory and monitoring. However, in many countries an established infrastructure exists in the shape of governmental structures such as extension services, which extend down to the local level. This infrastructure and capacity may offer opportunities for better inventory and monitoring, and for further integration and support of AnGR-related activities at the local level. Some Country Reports remark that infrastructure at a high technical level exists, but is not used because of a shortage of trained personnel, financial difficulties or political crises – see for example the Country Reports

from the countries of the former Soviet Union, southeastern Europe, and CR Cuba (2003). Table 54 shows the state of country-level infrastructure and participation based on the Country Report analysis. Particularly in the North and West Africa subregion, in the Southwest Pacific, and in Central Asia, the Country Reports indicate that the present state of infrastructure and capacities is very low or non-existent (+ or 0). For example, 33 percent of countries in Central Asia scored 0 for the state of infrastructure and capacities. However, countries with more favourable conditions (++/+++), such as Australia in the Southwest Pacific, can be identified. These countries have the potential to take on a facilitating role in their respective regions.

NGOs' limited integration in the policy arena and in the preparation of the Country Reports can be interpreted as a sign of limited organizational capacity at the country level (NGOs simply do not exist), or as a sign of a lack of mechanisms to involve NGOs in such processes. In nearly all countries (87 percent), no institutional structures apart from the NCC, exist for the comprehensive coordination of activities related to AnGR. The importance of the NCC is emphasized by the countries as well as by the Intergovernmental Technical Working Group on AnGR (ITWG–AnGR) and other stakeholders involved in policy processes. Nonetheless, the operation of the NCCs has not in all cases been sustainable. A survey in 2004 (FAO, 2004) found that 65 percent of NCCs were active at the time. The results of the FAO regional e-mail consultations held in late 2005 (and also the low level of participation in these activities) suggested that this figure had further decreased. In some countries, even the NC is no longer active. This is frequently the result of a lack of resources, which in turn often results from a lack of awareness of the subject.

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TABLE 54

Institutional assessment – infrastructure, capacities and participation

Region	n*	Infrastructure/capacities [% of countries]			Participation of local/regional level [% of countries]		
		0**	+	++/+++	0	+	++/+++
Africa							
North & West Africa	24	29	63	8	71	25	4
East Africa	7	14	57	29	29	71	0
Southern Africa	11	18	64	18	46	36	18
Asia							
Central Asia	6	33	67	0	83	17	0
East Asia	4	0	50	50	25	25	50
South Asia	7	0	43	57	14	57	29
Southeast Asia	8	13	63	25	38	63	0
Southwest Pacific	11	27	64	9	73	18	9
Europe & the Caucasus	39	10	21	69	13	18	69
Latin America & the Caribbean							
Caribbean	3	0	33	67	0	67	33
Central America	9	11	67	22	44	33	22
South America	10	0	30	70	0	70	30
North America	2	0	0	100	0	0	100
Near & Middle East	7	0	86	14	43	57	0

* n = number of Country Reports included in the analysis; ** 0 = none, + = little, ++/+++ = middle/high.

Research and knowledge

In many countries, capacity is lacking not only in organizational terms, but also at technical and educational levels. Capacity-building is prioritized in most Country Reports. In many countries, there are national research institutions for the livestock sector in general, but there is little specialization in the field of AnGR use and conservation. This is reflected by the fact that many of those working in the field were trained in other fields (e.g. as veterinarians) and had to go abroad for further education or specialization in AnGR. University livestock departments rarely offer specialized training in the management of AnGR.

Even where advanced technologies are available, research often remains isolated or remote from local needs and indigenous knowledge. It is also not well linked to the

policy level, where further awareness-building is required to generate higher levels of support to the field of AnGR management (including in financial terms). The state and accessibility of knowledge regarding the value and utilization of AnGR is also often described as very weak.

Table 55 shows the state of research and knowledge in the countries analysed. Some countries have the potential to play an initiating or supporting role within a subregion or region (e.g. Japan and China in Asia). To realize these potential benefits, more cooperation among the NARS and other research institutions is necessary. The need for increased cooperation is particularly recognized in Country Reports from Latin American countries (e.g. CR Argentina 2003; CR Colombia, 2003; CR Costa Rica, 2004; CR El Salvador; 2003 and CR Uruguay, 2003) and

TABLE 55
Institutional assessment – research and knowledge

Region	n*	Research [% of countries]			Knowledge [% of countries]		
		0**	+	++/+++	0	+	++/+++
Africa							
North & West Africa	24	46	42	13	42	46	13
East Africa	7	29	43	29	29	57	14
Southern Africa	11	27	73	0	46	55	0
Asia							
Central Asia	6	17	83	0	33	67	0
East Asia	4	0	25	75	0	25	75
South Asia	7	14	29	57	14	71	14
Southeast Asia	8	25	50	25	50	25	25
Southwest Pacific	11	36	55	9	55	36	9
Europe & the Caucasus	39	5	31	64	5	28	67
Latin America & the Caribbean							
Caribbean	3	33	0	67	0	33	67
Central America	9	0	78	22	22	56	22
South America	10	0	30	70	0	50	50
North America	2	0	0	100	0	0	100
Near & Middle East	7	14	71	14	14	71	14

* n = number of Country Reports included in the analysis; ** 0 = none, +=little, ++/+++ = middle/high.

many express a willingness to engage to a greater extent in coordinated activities.

Developing countries in particular express an urgent need for technical assistance. This is most often expressed in the context of the need for an increase in livestock production by means such as the use of imported high-output breeds.

State of policy development: awareness, laws and political programmes and their degree of implementation

Awareness of the value of animal genetic diversity is essential to raising the political profile of the topic, and bringing about appropriate institutional change. In most countries, much remains to be done if these goals are to be achieved. The situation is illustrated in Table 56, which shows

that many Country Reports describe the degree of awareness as very low. This is mirrored by the state of policies and programmes, and by their degree of implementation. Although awareness is growing among some stakeholders, this has rarely filtered through to the policy level, as can be seen from the very low numbers of policies that have been implemented to date. Most laws that have been implemented are in the field of animal health, and only a few are related to breeding programmes or policies for the conservation of AnGR.

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TABLE 56
Institutional assessment – state of policy development

Region	n*	Awareness of topic [% of countries]			Laws, political programmes [% of countries]			Degree of implementation [% of countries]		
		0**	+	++/+++	0	+	++/+++	0	+	++/+++
Africa										
North & West Africa	24	33	54	13	71	25	4	83	13	4
East Africa	7	14	57	29	71	14	14	100	0	0
Southern Africa	11	36	55	9	55	36	9	55	46	0
Asia										
Central Asia	6	33	67	0	50	50	0	83	17	0
East Asia	4	0	50	50	0	50	50	25	25	50
South Asia	7	14	29	57	14	57	29	43	43	14
Southeast Asia	8	50	25	25	50	25	25	50	25	25
Southwest Pacific	11	73	18	9	55	36	9	73	18	9
Europe & the Caucasus	39	8	23	69	10	26	64	13	33	54
Latin America & the Caribbean										
Caribbean	3	0	33	67	33	33	33	67	0	33
Central America	9	22	56	22	33	44	22	67	11	22
South America	10	0	50	50	10	50	40	30	20	50
North America	2	0	0	100	0	50	50	0	0	100
Near & Middle East	7	14	71	14	14	86	0	29	71	0

* n = number of Country Reports included in the analysis; ** 0 = none, + = little, ++/+++ = middle/high.

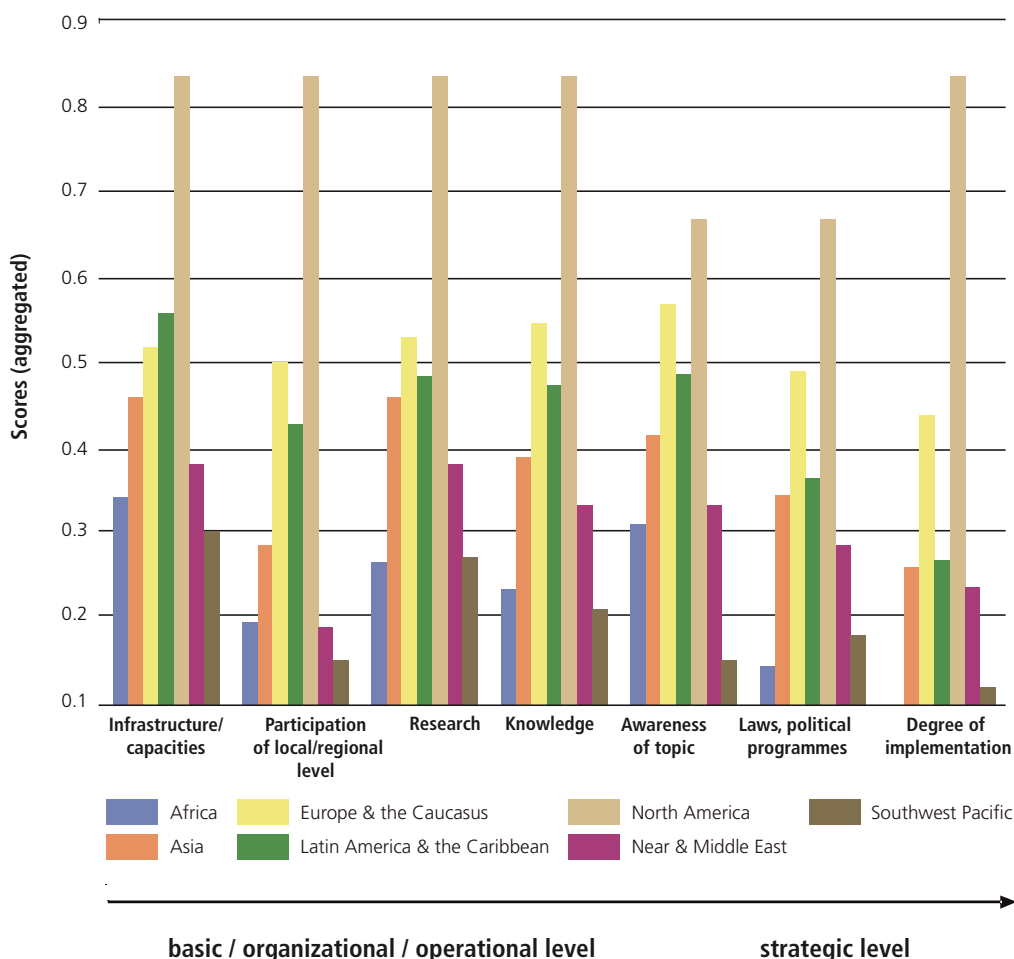
As, in many regions, institutional and organizational structures remain poorly developed, further awareness building at national and regional levels will depend on the personal engagement and networking of individuals or isolated departments. Furthermore, to create more awareness of the subject at the policy level, a crucial challenge is to highlight the need for an appropriate balance between immediate demands for high-output breeds and the need to conserve genetic diversity. Many Country Reports, as well as the results of the regional e-mail consultations, indicate the difficulties that stakeholders face in overcoming their isolation and in communicating arguments in favour of conservation in the policy arena, as these arguments relate to a long-term perspective. The need for international assistance

to overcome structural or financial obstacles at national level was often expressed.

Regional aggregation of institutional assessments

Figure 43 presents a regional comparison of the state of institutions related to the management of AnGR. The country scores are aggregated at regional (Figure 43) and subregional levels (Annex Figures 44 to 46) to identify regions and subregions with more or less favourable conditions. The figures also allow the identification of specific thematic areas where further support is needed in each region.

FIGURE 43
State of institutions – regional comparison



As the figure shows, only in North America, Europe and the Caucasus, and to some extent Latin America and the Caribbean, is there a sound base for strategic action. Particularly in North America and western Europe, much action has already been undertaken with regard to policy formulation and implementation (for more details of European Union (EU) legislation see Section E: 3.2). In contrast, in Africa, the Near and Middle East, and the Southwest Pacific weaknesses are evident not only at the strategic level, but also at the basic, operational and organizational levels. Awareness of the value of AnGR and biological diversity in general is expressed strongly in many reports from Latin America and the Caribbean,

which also stress the regional character of these resources. However much remains to be done in these countries, as illustrated by the scores of 0.38 and 0.27 achieved by the region for the state of laws and programmes, and the state of their implementation, respectively.

Some differences within regions should also be noted. In Europe and the Caucasus, many countries from the eastern part of the region are relatively weak at the strategic level, and also with respect to the basic, organizational and operational levels. The subregions of Asia are also quite heterogeneous, with East Asia achieving higher scores in all thematic areas than the other Asian subregions. Country Reports from the East

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Africa subregion indicate that awareness of the topic is growing – which should provide a base for future action at the strategic level.

Comparing the status of individual countries (Annex Table 58) with the averages for the regions and subregions may help to identify countries with potential to play a facilitating role at regional or subregional level. Such suggestions on the basis of Country Reports written over a period of several years (the first being received by FAO in 2002) have to be considered with care, as circumstances may have changed and new opportunities or new constraints may have arisen. Nevertheless, it is evident that some countries are in a favourable position to play a facilitating role. For example, Australia offered, during the e-mail consultation, to support the implementation of regional cooperation networks. South Africa has offered laboratory capacity for the Southern Africa subregion, as has Malawi. Similarly, there may be potential for North African countries to assist with AnGR-related research in West African countries. Japan has played a leading role – financing a cooperative project in Asia.

3.3 Organizations and networks with a potential role in subregional, regional and international collaboration

Subregional and regional organizations and networks

This subchapter gives an overview of networks and organizations at subregional and regional levels mentioned in the Country Reports and during the regional e-mail consultations (Table 57). The current state of networks for the management of AnGR is varied across the regions and subregions. In Europe and the Caucasus, networks at governmental and non-governmental level exist, but in other regions the situation is less favourable. In Central Asia, no networks are mentioned. This is explained in the Country Reports from this subregion by the breakdown of structures following the collapse of the Soviet Union (see, for example, CR Kyrgyzstan,

2003). Networks with a focus on AnGR exist in and between East and Southern Africa. However, no concrete networks are mentioned for North and West Africa, which is a heterogeneous subregion with a long history of conflicts. In South and Central America, there is a basic network structure which also involves Spain. The two North American countries report cooperation with Latin America and the Caribbean, but no specific networks are mentioned.

The basis of many networks is research – one element of which is research related to AnGR. This is reflected in the few concrete proposals for further international networking given in the Country Reports. Where such proposals are put forward, (e.g. CR Argentina, 2003; CR Uruguay, 2003; and CR Japan, 2003), they mainly relate to the establishment of subregional “centres of expertise” covering fields such as research or training on specific breeds or methodologies.

Networks that are exclusively built for AnGR management are rare. Moreover, there are only a limited number of networks and organizations that focus on the subject or that have related activities and programmes. Examples include the European Association for Animal Production (EAAP), the SAVE Foundation (Safeguard for Agricultural Varieties in Europe), the Inter-Governmental Authority on Development (IGAD), the Southern African Development Community (SADC) and the Southern African Centre for Cooperation in Agriculture and Natural Resources Research and Training (SACCAR). However, some other networks are mentioned in the Country Reports as being relevant to livestock development. Most frequently these are economic networks¹. Such organizations provide a platform for networking in the field of AnGR.

¹ For example: the Southern Common Market (MERCOSUR) in Latin America; the Economic and Monetary Community of Central Africa (CEMAC) in Africa; the Caribbean Community and Common Market (CARICOM) in the Caribbean; D-8 as a body for development cooperation among Bangladesh, Egypt, Indonesia, the Islamic Republic of Iran, Malaysia, Nigeria, Pakistan and Turkey; and the Asia-Pacific Economic Cooperation (APEC) with its Agricultural Technical Cooperation Working Group (ATCWG).

TABLE 57

Organizations and networks that play or may play a role in animal genetic resources management at regional/subregional level

Region	Networks/Organizations	
	Name	Description
Africa	ILRI (International Livestock Research Institute)	Research and training, CGIAR centre
North & West Africa	IRD (Institut de Recherche pour le Développement, ex-OSTROM)	Research projects and scientific programmes on relations between humans and environment in the tropics
	CIRDES (Centre International de Recherche-Développement sur l'Élevage en Zone Subhumide)	Regional research centre, focusing on epidemiological research and the application of new biotechnologies
	CIRAD (Centre de Coopération Internationale en Recherche Agronomique pour le Développement)	French research institute for agricultural research in the service of developing countries and French overseas departments
	ICARDA (International Center for Agricultural Research in the Dry Areas)	Research and training, CGIAR centre
	ACSAD (The Arab Center for Studies of Arid Zones and Dry Lands)	Centre for agricultural research and development, within the frame of the League of Arab States
East Africa	ASARECA (The Association for Strengthening Agricultural Research in Eastern and Central Africa)	Agricultural research network
	IGAD (Intergovernmental Authority on Development)	Regional cooperation for overall development, was created as the Intergovernmental Authority on Drought and Development (IGADD)
Southern Africa	SADC (Southern African Development Community)	Development community, was a party to a UNDP/FAO project on AnGR management
	SACCAR (Southern African Center for Cooperation in Agricultural and Natural Resources Research and Training)	Agricultural research and training network, active at the policy level
Asia		
Central Asia		
East Asia		
South Asia	SAARC (South Asian Association for Regional Cooperation)	Subregional cooperation platform to enhance economic growth, social progress and cultural development
Southeast Asia	ASEAN (Association of Southeast Asian Nations)	Subregional cooperation platform to enhance economic growth, social progress and cultural development
	ARCBC (ASEAN Regional Center for Biodiversity Conservation)	Centre for exchange of knowledge, an intergovernmental organization of ASEAN
	ILRI	Research and training, CGIAR centre
Europe & the Caucasus	EAAP (European Association for Animal Production)	Organization for animal production
	DAGENE (Danubian Alliance for Gene Conservation in Animal Species)	NGO active in AnGR conservation
	Nordic Genebank	Genebank
	SAVE (Safeguard for Agricultural Varieties in Europe)	Umbrella organization for NGOs working on conservation of biodiversity in agriculture

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TABLE 57 *cont.*

Organizations and networks that play or may play a role in animal genetic resources management at regional/subregional level

Region	Networks/Organizations	
	Name	Description
Latin America & the Caribbean	IICA (Inter-American Institute for Cooperation on Agriculture)	Regional cooperation for rural development
	ILRI, CIAT (International Center for Tropical Agriculture)	Research and training, CGIAR centres
	ALPA (Latin-American Association for Animal Production)	Professional organization
	FIRC (International Federation of Creole Breeds) or IberoAmerican Federation of Autochthonous and Creole Breeds	Ibero-American Federation of Criollo Breeds
	CYTED (Red XII-H: Ibero-American Network)	Network for AnGR, research and training
Caribbean	CARDI (Caribbean Agricultural Research and Development Institute)	Subregional agricultural research and development institute
South America		
Central America		
Near & Middle East	ACSAD (Arab Center for Studies of the Arid Zones and Dry Lands)	Centre for agricultural research and development, within the frame of the League of Arab States
	AOAD (Arab Organization for Agricultural Development)	Development, research, training and reporting in food and agriculture in Arab states
	ICARDA	Research and training, CGIAR centre
Southwest Pacific	SPC (Secretariat of the Pacific Community)	Regional cooperation for development
Asia/North America/ Southwest Pacific	ATCWG (Agriculture Technical Cooperation Working Group) Part of APEC (Asia-Pacific Economic Cooperation)	Forum for exchange of information between technical and scientific experts, e.g. on biotechnology, conservation of genetic resources, pest management and sustainable agriculture

Source: Country Reports and e-mail consultations.

It should be noted that there is a growing awareness of the value of AnGR arising from the globalization process, international trade in animals and animal products, and the world trade agreements (see for, example, CR Cuba, 2003; CR India 2004; CR Malaysia, 2003; CR Switzerland, 2002; CR Tonga, 2005 and CR Zambia, 2003). These developments, as the Country Reports indicate, have increased motivation to build networks related to animal production, but have not yet led to concrete action specifically for AnGR.

Another point to be stressed is the varying degree of activity of the few networks that do exist. The Country Reports do not give much indication of the actual role which the

different organizations/networks play in AnGR management or of their concrete activities. Furthermore, other networks exist that are not mentioned in the Country Reports². Thus, the available information only provides a starting

² For example in Africa the two agricultural research and development networks: FARA (Forum for Agricultural Research in Africa) and CORAF/WECARD (Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricole/ West and Central African Council for Agricultural Research and Development), were not mentioned by any African Country Report. Another example of an institution not mentioned in the Country Reports is the Centre International de Hautes Etudes Agronomiques Méditerranéennes (CIHEAM), which conducted an advanced training course on conservation and management of AnGR in 2003.

point for identifying organizations and networks that have potential for coordinating future actions.

Cooperation should be a logical consequence of shared resources. The Country Reports often mention regional cooperation as a necessity and express a willingness to participate. However, there are few examples of concrete activities. A variety of historical factors probably contribute to the lack of cooperation in certain subregions. The Country Reports from some southeast European countries provide examples of the problems faced. International organizations and networks can play a facilitating or mediating role in cases where bilateral or regional cooperation is hindered by such factors.

Nearly all regions lack key stakeholders with the capacity to host a Regional Focal Point (RFP) for AnGR management. Currently, only the European Regional Focal Point is functioning. The former RFP in the Asia region is no longer active. A few potential host organizations are mentioned in the Country Reports or were mentioned during the regional e-mail consultations. For example, in the East Africa subregion, ASARECA (Association for Strengthening Agricultural Research in Eastern and Central Africa) and IGAD are mentioned, while SADC and SACCAR are mentioned in the Southern Africa subregion.

International organizations and networks

Besides FAO's global network of NCs and other stakeholders (along with the discussion forum DAD-Net³), no international networks specialized in AnGR management exist. However, some organizations dealing with livestock development have incorporated some aspects of AnGR management into their agendas. The World Association of Animal Production (WAAP) and its various member organizations is an example of an existing international network, although it has not yet achieved worldwide coverage. Organizations covering specific aspects of AnGR management (e.g. animal recording), such as the International

Committee for Animal Recording (ICAR) or the International Bull Evaluation Service (INTERBULL) are also named as global players in the Country Reports. NGOs such as Rare Breeds International (RBI) and the League for Pastoral People (LPP) can play an important role in awareness-building at local, national and international levels. However, their impact (including that of their training activities) is limited as a result of a lack of financial and human resources. As part of the SoW-AnGR process, intergovernmental and non-governmental organizations were asked to indicate their involvement in the field of AnGR. However, response to the invitation was limited. Reports were received from four international non-governmental organizations, three intergovernmental organizations, and two research organizations. A further three organizations stated that, as yet, they were not undertaking any activities related to AnGR. A summary table showing the responses received from these organizations is included in the Annex to this section (Table 61), and the reports are available in the Annex to the SoW-AnGR (attached CD-ROM). This low level of response may indicate that awareness of AnGR is lacking not only in national agendas, but also at the international level.

The institutions of the Consultative Group on International Agricultural Research (CGIAR) play a central role in research and training activities at the international level. The centres with programmes of research on AnGR are the International Livestock Research Institute (ILRI) and the International Center for Agricultural Research in the Dry Areas (ICARDA). The System-wide Genetic Resources Programme (SGRP), based at the International Plant Genetic Resources Institute (IPGRI), links the genetic resources programmes and activities of all the centres of the CGIAR – covering the crop, livestock, forest and aquatic sectors. Surprisingly, the CGIAR centres do not feature prominently in the Country Reports. They are mentioned as strategic players, but a lack of connection to national needs and structures is mentioned by some countries.

³ E-mail: DAD-Net@fao.org

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In nearly all Country Reports from developing countries or countries in transition, a strong demand for a genebank for *ex situ* conservation is expressed. The CGIAR centres, under the auspices of FAO, maintain the "International Network of *Ex situ* Collections" together with the CGIAR System-wide Information Network for Genetic Resources (SINGER), which has focused to date on plant genetic resources. It is mentioned in the report contributed by the CGIAR to the SoW-AnGR process that: "ILRI in collaboration with relevant international and national agencies is developing an active programme aiming to conserve AnGR, with a focus on *in situ* conservation, but also looking into the role of other approaches to conservation, such as *ex situ in vivo* and *in vitro*." Advances in technology, reductions in costs and changing pressures on diversity mean that a reassessment is needed of the role of *in vitro* technology as a means of conserving AnGR.

It can be argued that even though the international research and development institutions are active in the field of AnGR, there is urgent need for further investment. This is underlined by a report prepared for the Science Council of the CGIAR:

*"The needs for future CGIAR activities in FanGR [farm animal genetic resources] identified throughout this report focus more on filling particular urgent needs rather than obtaining a better balance of activities across the broad spectrum of characterisation, conservation and utilisation. Examples, ... include: a substantial commitment and clear role in development of policy and regulatory frameworks for management of farm animal genetic resources; a detailed assessment and possible active role in *in vitro* conservation of farm animal genetic resources; a clear and focused program on sustainable methods of genetic improvement of farm animal genetic resources"* (Gibson and Pullin, 2005, p. 37).

Additionally, a strong demand for regional and international information networks and databases is expressed in the Country Reports. FAO's Domestic Animal Diversity Information

System (DAD-IS) and ILRI's Domestic Animal Genetic Resource Information System (DAGRIS) are highlighted in nearly half of the Country Reports as useful tools for information management, even though they still need further improvement (cf. Australian contribution in regional e-mail consultation; CR Malaysia, 2003). For a system like DAD-IS, the interactivity of the database⁴ is of great importance, as it gives ownership to the data contributors. The significance of such interactive systems, therefore, relates not only to the management of data, but also to the process of motivation and awareness-building. Efforts have been made to achieve harmonization between European and FAO-managed global databases (see Box 69). Another existing resource is the Agro Web, an Internet portal with more than 25 participating countries in Europe and the Caucasus. However, at the time of this analysis, not all member countries had updated their pages, and this portal is not mentioned in any Country Report.

⁴ DAD-IS:3 is part of a global network of stand alone information systems. The network allows FAO's DAD-IS to be linked to regional databases – such as EFABIS (European Farm Animal Biodiversity Information System), successor to EAAP-AGDB (European Association of Animal Production – Animal Genetic Data Bank) at <http://efabis.tzv.fal.de/> – and in turn to national databases in individual countries. The global network enables the automatic propagation of public data to all databases in the network – enhancing communication and the availability of information at all levels. Individual countries have the option to establish their own national Web-based information systems, into which the country's AnGR related information can be entered. Alternatively, countries can make use of the global or regional systems.

4 Conclusions

The analysis, which was primarily based on the countries' own assessments, shows that in most parts of the world the institutional and structural situation at national, regional and international levels is not always supportive for the sustainable use and conservation of AnGR. AnGR are not a priority topic in most national, regional and international policy arenas. The relevance of AnGR to food security and poverty alleviation is not fully recognized, and this is reflected in the low level of awareness of the subject in many countries, and by its limited presence on international agendas and in the work of international organizations.

Opportunities to specialize in conservation or utilization of AnGR have been limited, and the prominence of the topic is only slowly increasing in the curricula of universities and research centres. This is reflected in the backgrounds of many of those working in the field. Adequate infrastructure and technical resources are also needed for effective management of AnGR, but are often lacking or not used. Research seems sporadic and isolated from policy processes.

Legal structures, policies and development programmes with a focus on AnGR are often lacking, as are basic institutions for characterization, inventory and monitoring, and structures for national and international cooperation. Even where networks for cooperation exist, there is frequently a need for further efforts to vitalize them or to establish new structures for cooperation.

The reasons for this situation are manifold. The Country Reports and the results of the regional e-mail consultations indicate that an emphasis on technical education, and the short-term perspective of livestock sector policies focused on the immediate need to increase output, are contributing factors. The benefits accruing from investment in AnGR conservation and utilization are often only to be achieved in the long term, and are associated with a degree of uncertainty. It is, therefore, difficult to communicate the need

for investment in AnGR management in the policy arena. The commercial sector, which would often have the financial means to support conservation activities, is difficult to integrate into programmes for the management of AnGR. For example, few countries achieved the inclusion of commercial stakeholders in NCCs or in the preparation of the Country Reports. This does not seem to be a case of conflicting interests, but simply of a lack of shared interests. The objectives of commercial operators tend to be short-term profitability, and their interests centre on the limited range of livestock breeds that can achieve high levels of output in large-scale production units. If greater integration of the commercial sector is to be achieved, there is a need to demonstrate the relevance of publicly sponsored conservation activities in terms of enhancing profitability and providing insurance in the longer term. A potential area of cooperation could be for private sector AI companies to share "low-value" cryoconserved genetic material that they have in their keeping with national programmes.

In many countries there also seems to be a lack of national NGOs interested and active in AnGR management. Where such organizations exist, for example in India⁵, they were often not present in the NCCs or involved in the preparation of Country Reports, and are not involved in reporting on the state of AnGR diversity. Only in Europe, North America, South America and Australia is the involvement of NGOs more prominent. In some countries, national rare breed societies make an important contribution to conservation efforts. However, it is clear that further efforts need to be undertaken, both at the country level and by the international community, to strengthen stakeholder involvement in AnGR management.

⁵ In India there are several NGOs such as ANTHRA (a trust of women veterinary scientists), LPPS (Lokhit Pashu-Palak Sansthan) and SEVA.

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Ex situ conservation is cost-intensive, and in most countries cannot be undertaken without international support. The central problem for *in situ* conservation is the heterogeneity of the users of AnGR and the fragile state of the production systems under which many threatened breeds are managed. For example, CR Czech Republic (2003)⁶ and CR Bulgaria (2004) report that local breeds considered to be of low productivity are increasingly kept only by older farmers. When the working lives of these farmers end, the keeping of these breeds will also end unless steps are taken to promote their continued use. In countries where cattle are largely kept by herders practising mobile husbandry, changing economic, ecological and political conditions threaten the herders' livelihoods and, thereby, restrict opportunities for the implementation of *in situ* conservation measures. Establishing an institutional environment able to respond to such problems is difficult even at the national level, and presents a greater challenge at international level. These arguments underline the need for international cooperation to overcome structural or financial obstacles at the national level. Consequently, there is an urgent need for functioning national and regional structures to support sustainable use and conservation of AnGR.

The NCCs, which were established during the preparation process of Country Reports, are a means of supporting the work of the NCs. The committees should be maintained and/or further developed as a mechanism for the involvement of all stakeholders and the organization of coordinated action. The establishment of focal points in the regions and subregions is a further important step in coordinating cross-border activities. Strong regional and subregional networks supported by development partners are important to ensure ongoing improvements in capacities and institutions for AnGR

Box 23

Suggestions for strengthening national structures

Where possible, National Coordinators (NCs) should be made full-time professionals dedicated to the management of AnGR. They would, thus, be able to allocate sufficient time to the coordination of activities at the country level, and to close cooperation with relevant stakeholders. Adequate financial resources should be provided for the work of the NCs. Experience in some countries indicates that funding is improved when AnGR management is mainstreamed within the hosting institution's annual work plans and agendas. Other key stakeholders, such as breeding companies, research and training organizations, NGOs and representatives of community organizations, are also potential sources of funds. Such opportunities will, of course, differ from country to country.

As well as financial support, NCs need to be supported by well-organized national structures with clearly defined functions and roles. The necessary technical expertise to implement these functions needs to be in place. The regional and the global focal points may provide support in this respect, but training to strengthen human resources at the country level is frequently an important priority. Efforts should be made to increase awareness of the importance of AnGR at government level. The inclusion of priority actions for AnGR management within governments' action plans for poverty alleviation and food security is a means to facilitate closer cooperation between NCs and other ministries.

Source: extracted from S. Moyo (2004). *Strengthening national structures for the management of farm animal genetic resources* – (contributions from a National Coordinator). Working Document written for FAO.

⁶ Following the development of the Country Report, the Czech Republic amended its Breeding Act to reflect AnGR issues particularly to implement a monitoring system and reaction mechanism which is based on a subsidy system.

management. However, such networks are still not well developed, and cooperation is hindered not only by a lack of awareness of the subject, but also by a lack of settled relations between some countries.

In the field of research and knowledge, the NARS are key players at the country level. The Country Reports note a lack of links between the NARS and the CGIAR centres, which is a further important structural gap. Moreover, AnGR is still not prioritized in the activities of the NARS or the CGIAR, and further awareness-building is needed. The same is true for the international donor community. As, particularly in developing countries, the infrastructure (e.g. for inventory and monitoring of AnGR) is weak, further engagement of the donor community is needed.

The Country Reports and the regional e-mail consultations, however, indicate that the SoW-AnGR preparation process has given rise to developments in the field of AnGR management. Awareness, the key to policy and institutional change, is growing in most countries, and new networks are being created.

References

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Annex**Notes to Table 53****List of criteria taken into account to assign scores to each thematic are:*****Infrastructure and capacities***

- State as described in the Country Reports.
- State as detailed in Table 4.7 of the Country Reports (see Section A: 2 for description of the contents of this table).

Participation of stakeholders at local/regional level

- State as described in the Country Reports.
- Existing mechanisms for participation and integration of stakeholders; participation in the preparation of the Country Reports, in the NCC or other structures (who has which role and what authority), degree of organization, and influence in policy setting.
- Existence of decentralized or centralized structures (as mentioned in the Country Reports).

Research

- State of research as described in the Country Reports (capacities, number of institutions, grade of specialization in AnGR, priorities, research focus in the country).
- Role/relevance of research related to varying aspects of AnGR as described in Tables 4.6 – 4.9 of the Country Reports (see Section A: 2 for description of the contents of these tables).
- Participation of research institutions in the NCC, in report writing, and in other existing national/international structures.

Knowledge

- State and efficiency of AnGR-related extension services as described in the Country Reports.
- State and accessibility of (indigenous) knowledge as described in the Country Reports.
- Priority needs as described in Table 4.9 of the Country Reports (see Section A: 2 for description of the contents of these tables).

Awareness

- State as described in the Country Reports (priorities, policy focus).
- Role of various stakeholders with respect to legislation (Table 4.7 of the Country Reports – see Section A: 2 for details of this table).

Laws and political programmes

- Number and state of laws, programmes as described in the Country Reports (chapter on legal situation, institutions and programmes).

Degree of implementation

- Degree of implementation of laws and programmes as described in the Country Reports (chapter on legal situation, institutions, and programmes).

FIGURE 44
State of institutions – subregional comparison within Africa

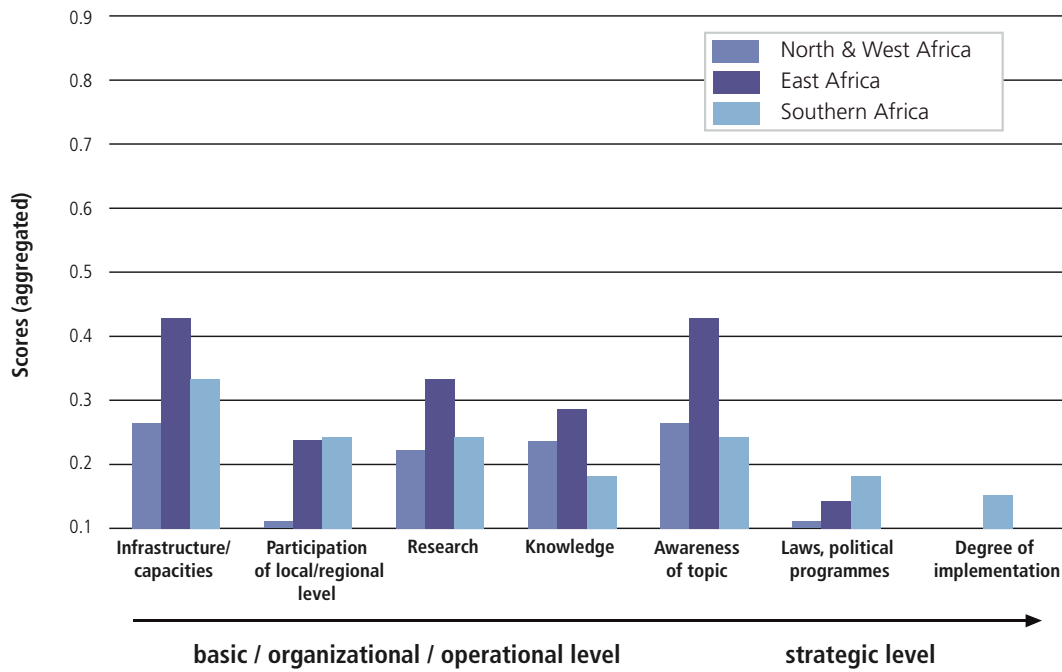
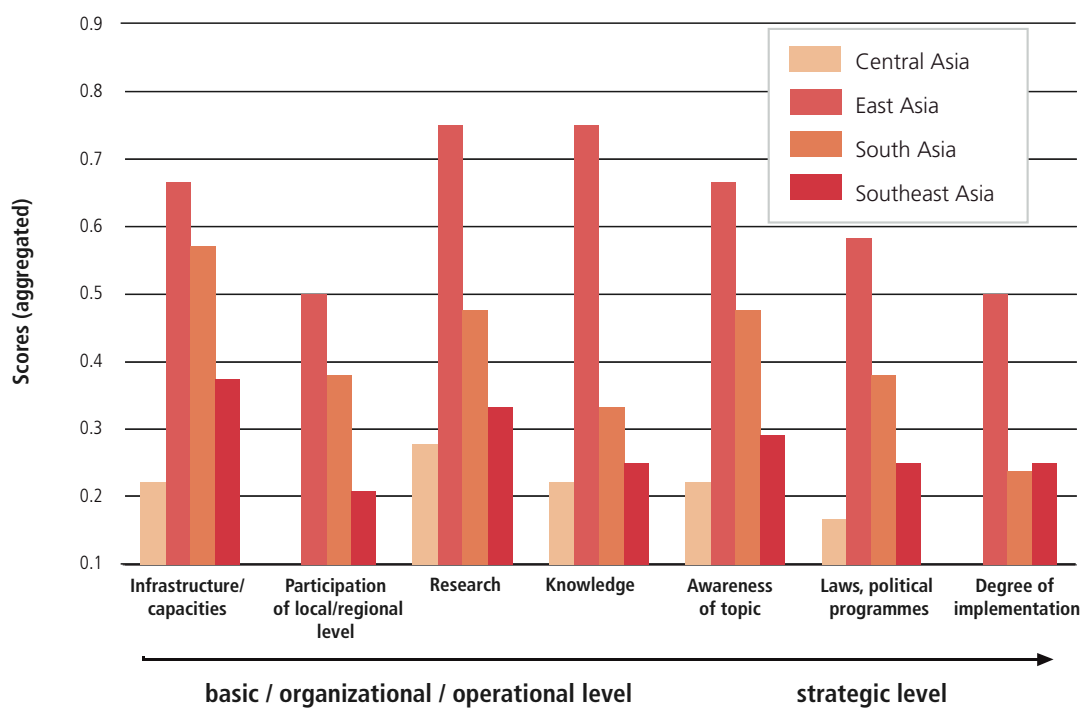


FIGURE 45
State of institutions – subregional comparison within Asia



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FIGURE 46
State of institutions – subregional comparisons within Latin America and the Caribbean

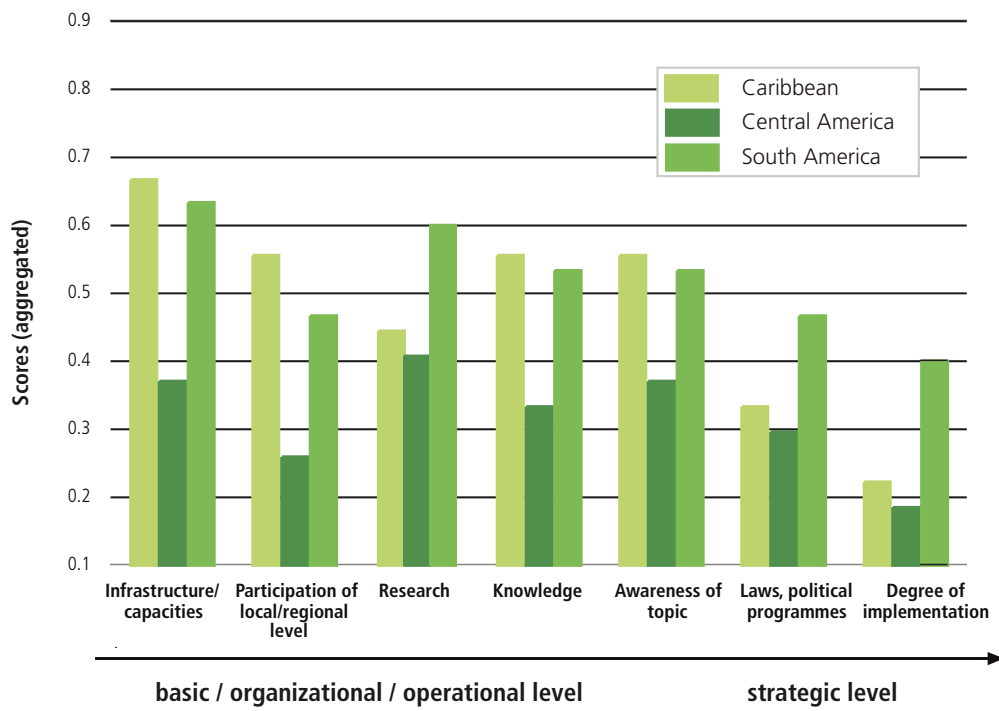


TABLE 58
Institutional assessment at country level

Subregion/ Country	Research	Knowledge	Awareness of topic	Infrastructure/ capacities	Participation of local / regional level	Laws, political programmes	Degree of implementation
North & West Africa							
Algeria	+	++	+	+	0	0	0
Benin	0	0	0	+	+	0	0
Burkina Faso	+	+	0	+	0	0	0
Cameroon	+	+	++	+	0	0	+
Cape Verde	0	0	0	0	0	0	0
Central African Republic	0	0	+	+	+	+	0
Chad	0	0	0	0	0	0	0
Congo	+	+	+	+	0	0	0
Côte d'Ivoire	+	+	++	+	+	++	++
Democratic Republic of the Congo	0	0	0	++	0	0	0
Equatorial Guinea	0	0	+	0	0	0	0
Gabon	0	0	0	0	0	0	0
Gambia	0	+	+	+	0	0	0
Ghana	+	+	+	+	++	+	0
Guinea	+	+	+	+	0	0	0
Guinea-Bissau	0	0	0	0	0	0	0
Mali	+	+	+	+	0	+	0
Mauritania	0	0	0	0	0	0	0
Niger		++	++	++	+	+	+
Nigeria		+	+	+	0	+	+
Sao Tome and Principe	0	0	+	0	0	0	0
Senegal	+	+	+	+	+	+	0
Togo	+	+	+	+	+	0	0
Tunisia		++	+	+	0	0	0

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TABLE 58 cont.

Institutional assessment at country level

Subregion/ Country	Research	Knowledge	Awareness of topic	Infrastructure/ capacities	Participation of local / regional level	Laws, political programmes	Degree of implementation
East Africa							
Burundi	0*	0*	+	0*	0*	0*	0
Eritrea	0	+	0	+	+	0	0
Ethiopia	+	+	+++	+	+	0	0
Kenya	++	++	+	+++	+	+	0
Rwanda	+	0	+	+	0	0	0
Uganda	+	+	++	+	+	++	0
United Republic of Tanzania	++	+	+	++	+	0	0
Southern Africa							
Angola	+	0	0	+	0	0	0
Comoros	0	0	0	0	0	0	0
Botswana	+	+	++	++	++	+	+
Lesotho	0	0	+	+	++	+	+
Madagascar	+	+	+	+	0	++	+
Malawi	+	+	+	+	+	+	+
Mauritius	+	0	0	+	+	+	+
Mozambique	+	+	+	+	+	0	0
Swaziland	+	+	+	++	+	0	0
Zambia	+	+	+	0	0	0	0
Zimbabwe	0	0	0	+	0	0	0

*The figures presented in this table are based on analysis of the information presented in Country Reports received by FAO between 2002 and 2005. The situation in some countries may have changed subsequent to the submission of the Country Report. After countries were given the opportunity to review the first draft SoW-AnGR in December 2006/January 2007, Burundi indicated that the current situation in the country would be better represented if 0 were replaced by + in these columns.

TABLE 58 cont.

Institutional assessment at country level

Subregion/ Country	Research	Knowledge	Awareness of topic	Infrastructure/ capacities	Participation of local / regional level	Laws, political programmes	Degree of implementation
Central Asia							
Iran (Islamic Republic of)	+	+	+	0	0	+	0
Kazakhstan	0	0	0	0	0	0	0
Kyrgyzstan	+	+	+	+	0	+	0
Tajikistan	+	+	+	+	+	0	0
Turkmenistan	+	0	+	+	0	0	0
Uzbekistan	+	+	0	+	0	+	+
East Asia							
China	+++	+++	+++	+++	0	+++	+++
Japan	+++	+++	+++	+++	+++	++	++
Mongolia	++	++	+	+	++	+	+
Republic of Korea	+	+	+	+	+	+	0
South Asia							
Bangladesh	++	++	++	+	+	+	+
Bhutan	++	+	++	++	++	++	+
India	++	+	++	+++	+	++	++
Maldives	0	0	0	+	0	0	0
Nepal	+	+	++	+	+	+	0
Pakistan	++	+	+	++	+	+	0
Southeast Asia							
Cambodia	0	0	0	0	0	0	0
Indonesia	+	+	+	+	+	+	+
Lao People's Democratic Republic	+	0	0	+	+	0	0
Malaysia	++	++	++	++	+	++	++
Myanmar	+	0	0	+	0	0	0
Papua New Guinea	0	0	0	+	0	0	0
Philippines	+	+	+	+	+	+	+
Viet Nam	++	++	+++	++	+	++	++

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TABLE 58 cont.
Institutional assessment at country level

Region/Country	Research	Knowledge	Awareness of topic	Infrastructure/capacities	Participation of local / regional level	Laws, political programmes	Degree of implementation
Europe & the Caucasus							
Albania	+	+	+	+	0	+	+
Armenia	+	+	+	+	+	+	+
Azerbaijan	0	+	++	+	+	+	+
Bulgaria	++	++	++	++	+	++	+
Belgium	+++	+++	+++	+++	+++	++	++
Belarus	+	++	++	++	++	++	++
Bosnia and Herzegovina	0	0	0	+	+	0	0
Croatia	++	++	+*	+*	+*	+*	+
Cyprus	+	+	0	0	0	0	0
Czech Republic	++	++	+++	++	++	++	++
Denmark	++	++	+++	+++	++	++	++
Estonia	++	++	+	++	++	++	+
Finland	+++	+++	+++	+++	+++	+++	++
France	+++	+++	+++	+++	+++	+++	++
Georgia	+	+	0	0	0	0	0
Germany	+++	+++	+++	+++	+++	+++	+++
Greece	++	+	++	++	++	++	++
Hungary	++	++	++	++	++	++	++
Iceland	+	+	++	++	++	++	+
Ireland	++	++	++	++	++	++	++

*The figures presented in this table are based on analysis of the information presented in Country Reports received by FAO between 2002 and 2005. The situation in some countries may have changed subsequent to the submission of the Country Report. After countries were given the opportunity to review the first draft SoW-AnGR in December 2006/January 2007, Croatia indicated that the current situation in the country would be better represented if + were replaced by ++ in these columns.

TABLE 58 *cont.*

Institutional assessment at country level

Region/Country	Research	Knowledge	Awareness of topic	Infrastructure/ capacities	Participation of local / regional level	Laws, political programmes	Degree of implementation
Europe & the Caucasus							
Latvia	+	+	++	++	++	+	+
Lithuania	++	++	++	++	++	++	+
Moldova	+	0	+	0	0	+	0
Netherlands	+++	+++	+++	++	+++	+++	+++
Norway	+++	+++	+++	+++	+++	+++	+++
Portugal	+++	+++	+++	+++	+++	++	++
Poland	+	++	+	++	++	+	+
Romania	+	+	+	+	++	+	+
Russian Federation	++	++	++	++	++	++	++
Serbia and Montenegro	+	+	+	+	+	+	+
Slovakia	++	++	++	++	++	++	++
Slovenia	+++	+++	+++	+++	++	++	++
Spain	+++	+++	+++	+++	++	+++	+++
Sweden	+++	+++	+++	+++	+++	+++	+++
Switzerland	+++	+++	+++	+++	+++	+++	+++
The former Yugoslav Republic of Macedonia	+	+	+	0	0	0	0
Turkey	++	++	++	++	++	++	++
Ukraine	++	++	++	+	+	+	+
United Kingdom	++	++	++	++	++	++	++

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TABLE 58 cont.
Institutional assessment at country level

Subregion/ Country	Research	Knowledge	Awareness of topic	Infrastructure/ capacities	Participation of local / regional level	Laws, political programmes	Degree of implementation
Caribbean							
Barbados	0	+	+	+	+	+	0
Jamaica	++	++	++	+++	+++	++	++
Trinidad and Tobago	++	++	++	++	+	0	0
Central America							
Costa Rica	++	++	++	++	++	+	++
Cuba	+	+	+	+	+	++	+
Dominican Republic	+	+	+	+	0	+	0
El Salvador	+	0	+	+	0	0	0
Guatemala	+	+	+	+	+	+	0
Haiti	+	0	0	0	0	0	0
Honduras	+	+	0	+	0	0	0
Mexico	++	++	+++	++	++	++	++
Nicaragua	+	+	+	+	+	+	0
South America							
Argentina	++	+	+	++	+	+	+
Bolivia	+	+	+	+	+	0	0
Brazil	+++	+++	+++	+++	+++	+++	++
Chile	++	++	++	+++	+	++	++
Peru	++	++	++	++	++	++	++
Colombia	++	++	+	++	+	+	++
Ecuador	+	+	+	+	++	+	0
Paraguay	+	+	+	+	+	+	0
Uruguay	++	++	++	++	+	++	++
Venezuela (Bolivarian Republic of)	++	+	++	++	+	+	+

TABLE 58 cont.
Institutional assessment at country level

Region/ Country	Research	Knowledge	Awareness of topic	Infrastructure/ capacities	Participation of local / regional level	Laws, political programmes	Degree of implementation
North America							
Canada	++*	++	++	++*	++	+	++*
United States of America	+++	+++	++	+++	+++	+++	+++
Near & Middle East							
Egypt	+++	++	++	++	+	+	+
Iraq	+	+	+	+	0	+	+
Jordan	+	+	+	+	+	+	+
Lebanon							
Libyan Arab Jamahiriya							
Oman	0	0	0	+	0	0	0
Sudan	+	+	+	+	0	+	0
Syrian Arab Republic	+	+	+	+	+	+	+
Southwest Pacific							
Australia	+++	+++	+++	+++	+++	++	++
Cook Islands	+	+	0	+	0	+	0
Fiji	+	+	0	+	0	+	+
Kiribati	+	0	0	+	0	+	+
Northern Mariana Islands	0	0	0	0	0	0	0
Palau	0	0	0	0	0	0	0
Samoa	+	+	+	+	+	+	0
Solomon	+	+	0	+	+	0	0
Tuvalu	+	0	0	+	0	0	0
Tonga	0	0	+	0	0	0	0
Vanuatu	0	0	0	+	0	0	0

*The figures presented in this table are based on analysis of the information presented in Country Reports received by FAO between 2002 and 2005. The situation in some countries may have changed subsequent to the submission of the Country Report. After countries were given the opportunity to review the first draft SoW-AnGR in December 2006/January 2007, Canada indicated that the current situation in the country would be better represented if ++ were replaced by +++ in these columns.

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TABLE 59

List of international organizations and reports on their activities

Organizations	Type of response
International Society for Animal Genetics (ISAG)/FAO advisory group on animal genetic diversity	Report on Activities, March 2005.
Safeguard for Agricultural Varieties in Europe (SAVE) Foundation	Brief Portrait, April 2004.
League for Pastoral Peoples	Report on Activities, November 2004.
The Mediterranean Agronomic Institute of Zaragoza (IAMZ)	Report on Training Activities, January 2005.
World Organisation for Animal Health (OIE)	Presentation to the Commission on Genetic Resources for Food and Agriculture, 10th Session, November 2004.
European Association for Animal Production (EAAP)	Report of the Working Group on Animal Genetic Resources (EAAP-WG-AGR), February 2005.
D8 Countries	Report on Animal Genetic Resources in the D-8 Countries – Strategic Priorities for Action; and Reports on Seminars on Conservation of Farm Animal Genetic Resources.
Arab Center for the Studies of Arid zones and Dry lands (ACSAD)	Report on Activities, December 2004.
Consultative Group on International Agricultural Research (CGIAR) Centres	Report, Section I: Description of the CGIAR Institutes and Programmes, May 2004.
World Intellectual Property Organization (WIPO)	Indicated that they had some activities, but did not send a report.
International Council for Game and Wildlife Conservation (CIC)	Indicated that they had some activities, but did not send a report.
Observatoire du Sahara et du Sahel (Sahara and Sahel Observatory OSS)	Indicated that they had no activities in the field of AnGR management.
Commonwealth Secretariat, Special Advisory Services Division	Indicated that they had no activities in the field of AnGR management.
Institute for Environment and Sustainability (IES) of the European Commission's Joint Research Centre	Indicated that they had no activities in the field of AnGR management.