Food and Agriculture Organization of the United Nations

Gene banks for *ex situ* conservation of animal genetic resources – a global view

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IMPLEMENTING THE GLOBAL PLAN OF ACTION FOR ANIMAL GENETIC RESOURCES

The *State of the World's Animal Genetic Resources for Food and Agriculture - data*

- Data presented collected during preparation of the 2nd Report on the State of the World's Animal Genetic resources

- The report draws on information provided in
  - 129 country reports (questionnaires) ,
  - 15 reports from international organizations,
  - 4 reports from regional focal points and networks for animal genetic resources,
  - the Domestic Animal Diversity Information system DAD-IS, and
  - inputs from 150 individual authors and reviewers.

The *State of the World's Animal Genetic Resources for Food and Agriculture – what is it*

- *The State of the World's Animal Genetic Resources for Food and Agriculture* 2007
  - first comprehensive global assessment of livestock biodiversity and its management.
  - resulted in Global Plan of Action for Animal Genetic Resources

- The second report 2015 serves as
  - update of the first report on the *State of the World's Animal Genetic Resources for Food and Agriculture (*2007), and
  - focuses on developments since the first report was prepared.

Proportion of countries reporting conservation activities

Regions and subregions	Number of countries	*In situ* conservation programmes	*Ex situ in vivo* conservation programmes	*Ex situ in vitro* conservation programmes
		%		
Africa	**40**	70	48	30
Asia	**20**	90	80	65
Southwest Pacific	**7**	71	29	14
Europe & the Caucasus	**35**	100	69	86
Latin America & the Caribbean	**18**	83	72	61
North America	**1**	100	100	100
Near & Middle East	**7**	71	71	29
World	**128**	84	63	55

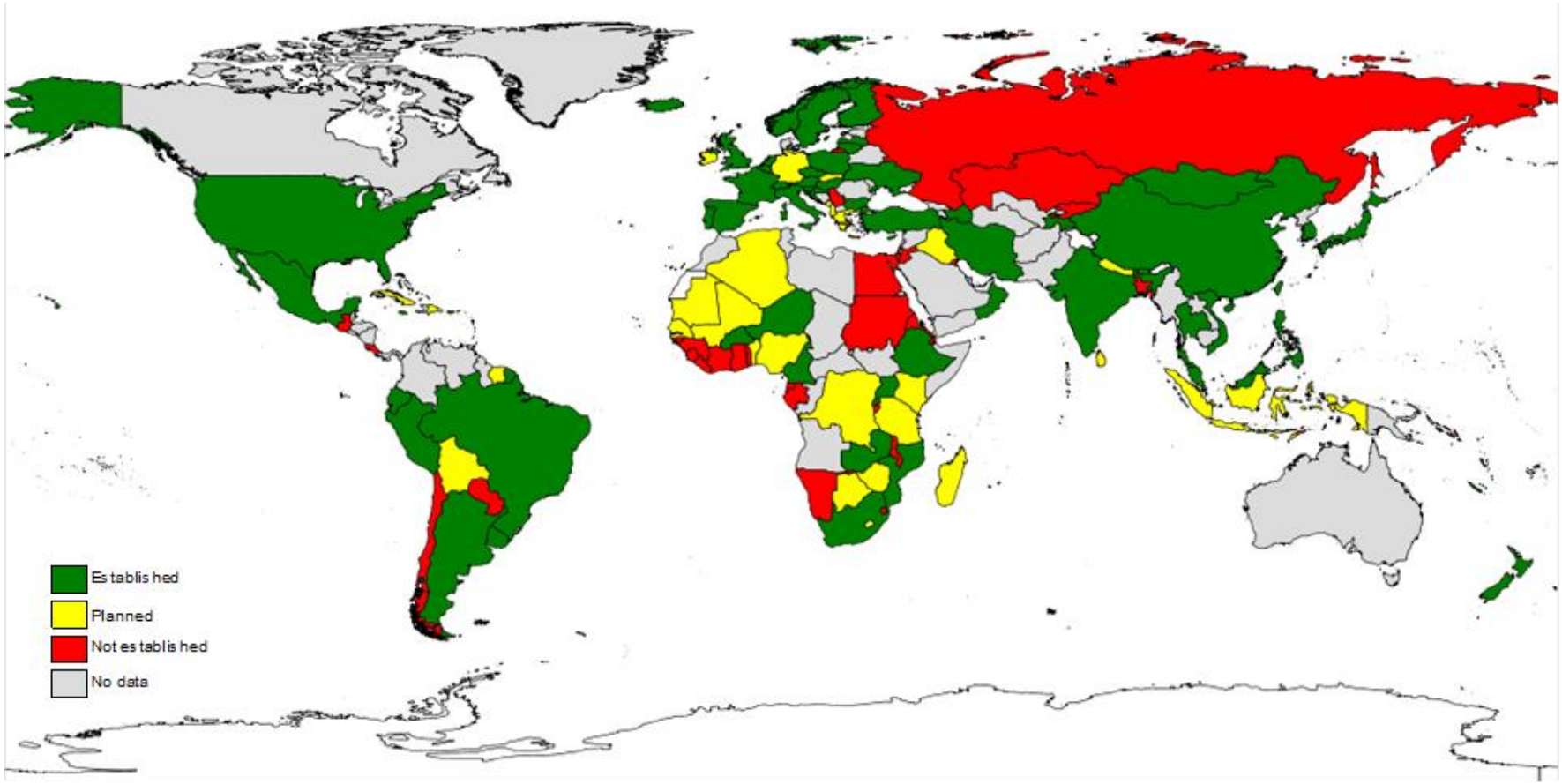
- Among reporting countries, 55% indicated the presence of *ex situ* conservation activities for at least one species

Proportion of countries reporting the presence of *in vitro* gene banks and material stored

Regions and subregions	Number of countries	Countries reporting AnGR gene bank	Proportion of countries storing different types of genetic materials in their gene banks					Countries planning subregional or regional collaboration
			Semen	Embryos	Oocytes	Somatic cells	Isolated DNA	
		(%)						
Africa	40	23	100	44	11	11	22	33
Asia	20	60	100	67	42	42	67	30
Southwest Pacific	7	14	100	100	0	0	0	14
Europe & the Caucasus	35	71	100	64	16	48	60	46
Latin America & the Caribbean	18	44	88	75	25	38	38	11
North America	1	100	100	100	100	100	100	0
Near & Middle East	7	14	100	0	0	0	100	14
World	128	45	98	63	23	39	53	30

- 45% of reporting countries indicated the existence of a national gene bank
- Increasing interest in regional collaboration

State of development of *in vitro* gene banks for animal genetic resources



Breed coverage of big five species in gene banks

Region and subregions		Reported proportion of national breed populations conserved in AnGR gene banks				
		Cattle	Sheep	Goats	Pigs	Chickens
		%				
Africa	Conserved	12	6	5	3	2
	Enough material	8	6	4	3	2
Asia	Conserved	32	24	24	19	19
	Enough material	15	9	11	10	8
Southwest Pacific	Conserved	0	0	0	0	0
	Enough material	0	0	0	0	0
Europe & the Caucasus	Conserved	40	27	28	27	5
	Enough material	23	10	12	12	3
Latin America & the Caribbean	Conserved	15	15	15	5	0
	Enough material	12	10	7	5	0
North America	Conserved	74	67	88	92	25
	Enough material	33	12	13	42	3
Near & Middle East	Conserved	4	0	0	0	0
	Enough material	4	0	0	0	0
World	Conserved	27	23	20	18	6
	Enough material	16	9	9	9	3

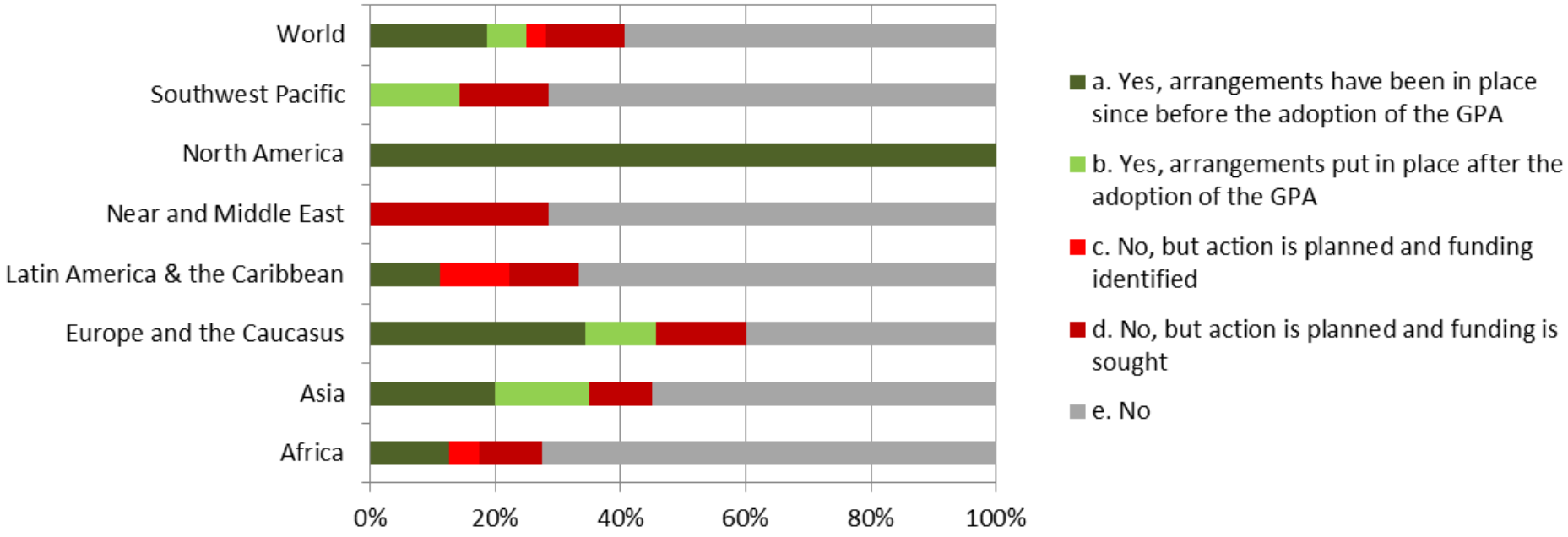
- The reported proportion of world national breed populations from which material is stored in a gene bank was 6, 18, 20, 23 and 27% for chickens, pigs, goats, sheep and cattle, respectively

Characteristics and functions of national gene banks

Regions and subregions	Number of countries	Storage of not-at-risk breeds	Participation of livestock keepers/ breeder's association	Increase genetic variability in *ex situ* population	Increase genetic variability in *in situ* population	Reconstitution of extinct breeds
		(%)				
Africa	**9**	35	30	31	33	4
Asia	**12**	67	26	35	29	4
Southwest Pacific	**1**	0	0	0	0	0
Europe & the Caucasus	**25**	58	61	10	24	1
Latin America & the Caribbean	**8**	40	27	2	19	0
North America	**1**	100	100	83	67	17
Near & Middle East	**1**	17	0	0	17	0
World	**57**	53	42	18	26	2

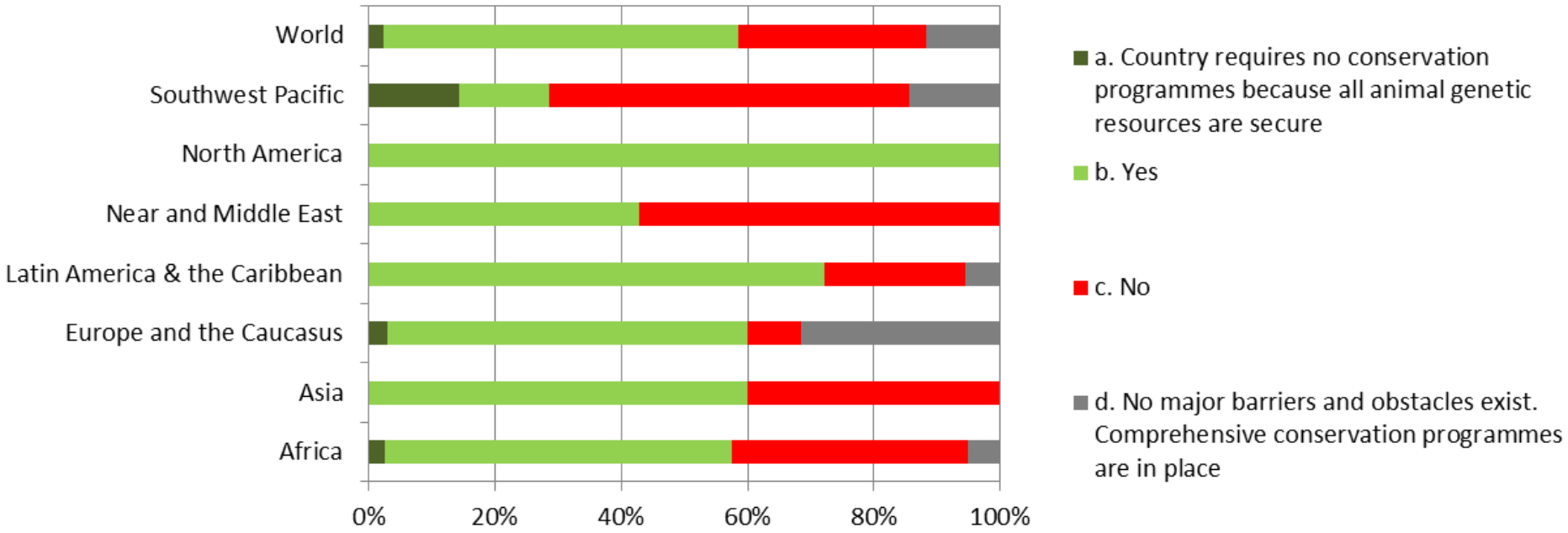
- The use of gene banks to store material from breeds that are not currently regarded as being at risk of extinction is quite widespread

Arrangements for extraction and use of conserved genetic material following loss of animal genetic resources



- 25% of reporting countries have arrangements in place for the extraction and use of conserved genetic material following loss of animal genetic resources through events such as disasters

Identification of the major barriers and obstacles to enhancing the conservation of its animal genetic resources



- The majority of reporting countries have identified the major barriers and obstacles to enhancing the conservation of their animal genetic resources,
- The most predominant: lack of financial resources cited (by 31% of countries), but also lack of human resources, infrastructure and political support….

Summary and Conclusions

- Conservation activities have become more widespread over the last ten years.
- Few countries report that they have no conservation measures of any kind in place.
- Major gaps remain, both in *in situ* and in *ex situ* conservation programmes.
- Many breeds remain untargeted or inadequately covered by conservation programmes.

Summary and Conclusions

- An increasing number of countries have set up AnGR gene banks.
- Inadequate funding, infrastructure and technical skills remain significant obstacles to the establishment / development of such facilities.
- Establishing gene banks at subregional or regional level is a potential option.
  - agreements on rules for the transfer of genetic material and the identification of locations considered “safe” by all parties required.

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Thank you for your attention

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More information: …

www.fao.org/ag/angr.html

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