



Food and Agriculture Organization
of the United Nations

Reconciling nature protection with breed conservation – the environmental values of local livestock breeds in Europe

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IMPLEMENTING THE GLOBAL PLAN OF ACTION FOR ANIMAL GENETIC RESOURCES

Assessment

Issues

Livestock sector “supply” perspective on ESS provision

Data availability: livestock in general > species > breeds

Methods

- GIS – mapping
 - Spatial distribution of species by land cover and climatic zone / production system
 - Attribution of ESS provision by production system
- EU survey – 29 responses from 12 countries
- Global survey – 120 responses from 47 countries
- Country responses to SOW-AgBio
- Country responses to SOW-AnGR-2

October 2014

BACKGROUND STUDY PAPER NO. 66



Food and Agriculture Organization of the United Nations
Organisation des Nations Unies pour l'Agriculture, l'Élevage et la Pêche
Fédération Internationale des Organisations des Agriculteurs
Fédération Internationale des Associations de Producteurs Ruraux
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COMMISSION ON GENETIC RESOURCES
FOR FOOD AND AGRICULTURE

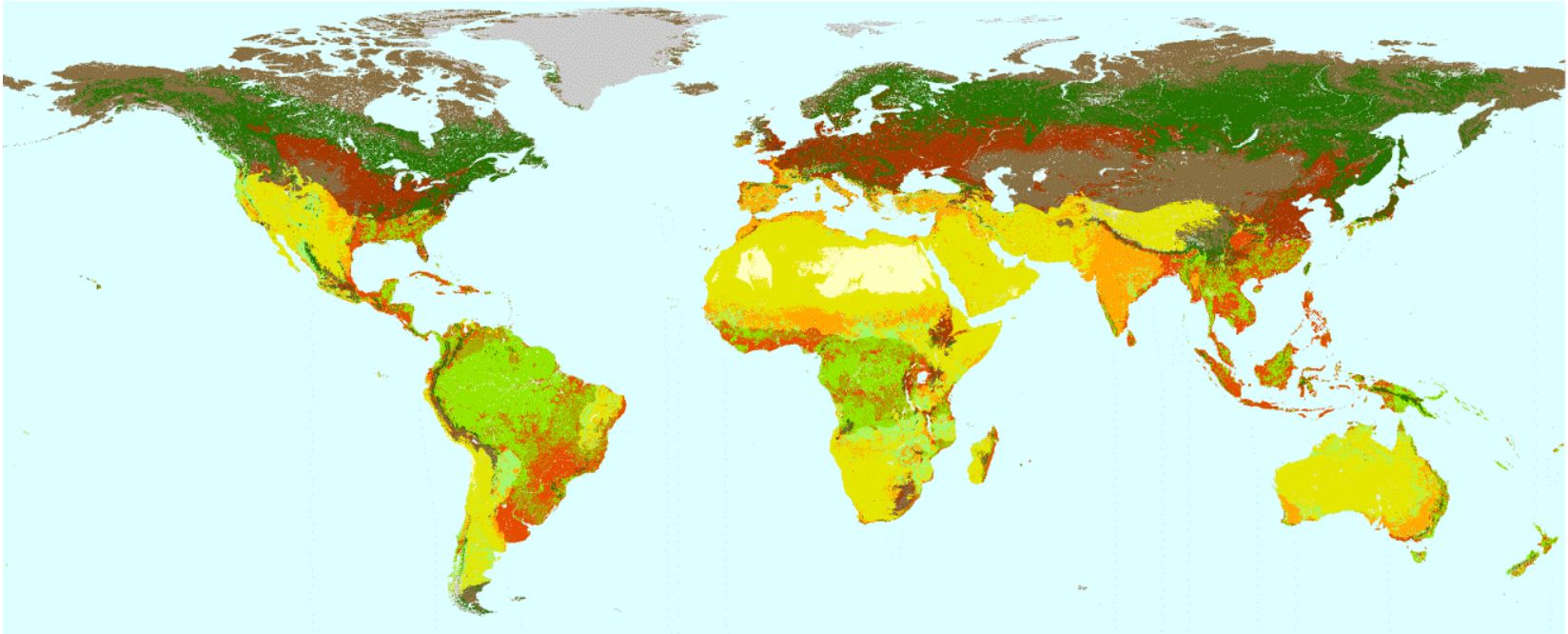
ECOSYSTEM SERVICES PROVIDED BY LIVESTOCK SPECIES AND BREEDS, WITH SPECIAL CONSIDERATION TO THE CONTRIBUTIONS OF SMALL-SCALE LIVESTOCK KEEPERS AND PASTORALISTS

by
Irene Hoffmann, Tatiana From and David Boerma

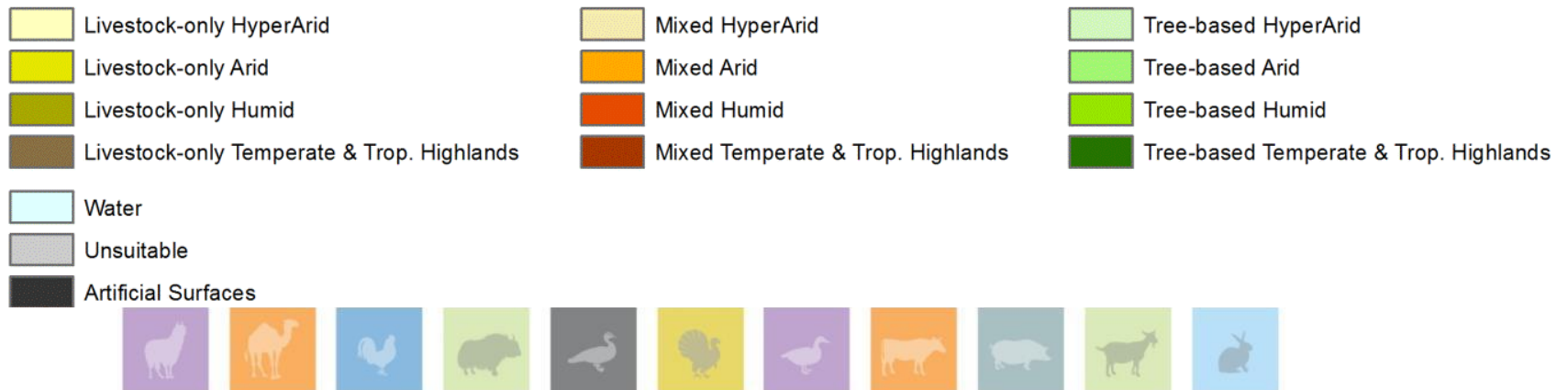
This document has been prepared at the request of the Secretariat of the FAO Commission on Genetic Resources for Food and Agriculture, and in close collaboration with the FAO Animal Production and Health Division, to facilitate the Commission's deliberations when it will review key issues in ecosystem services provided by livestock species and breeds at its Fifteenth Regular Session. The content of this document is entirely the responsibility of the authors, and does not necessarily represent the views of the FAO or its Members.



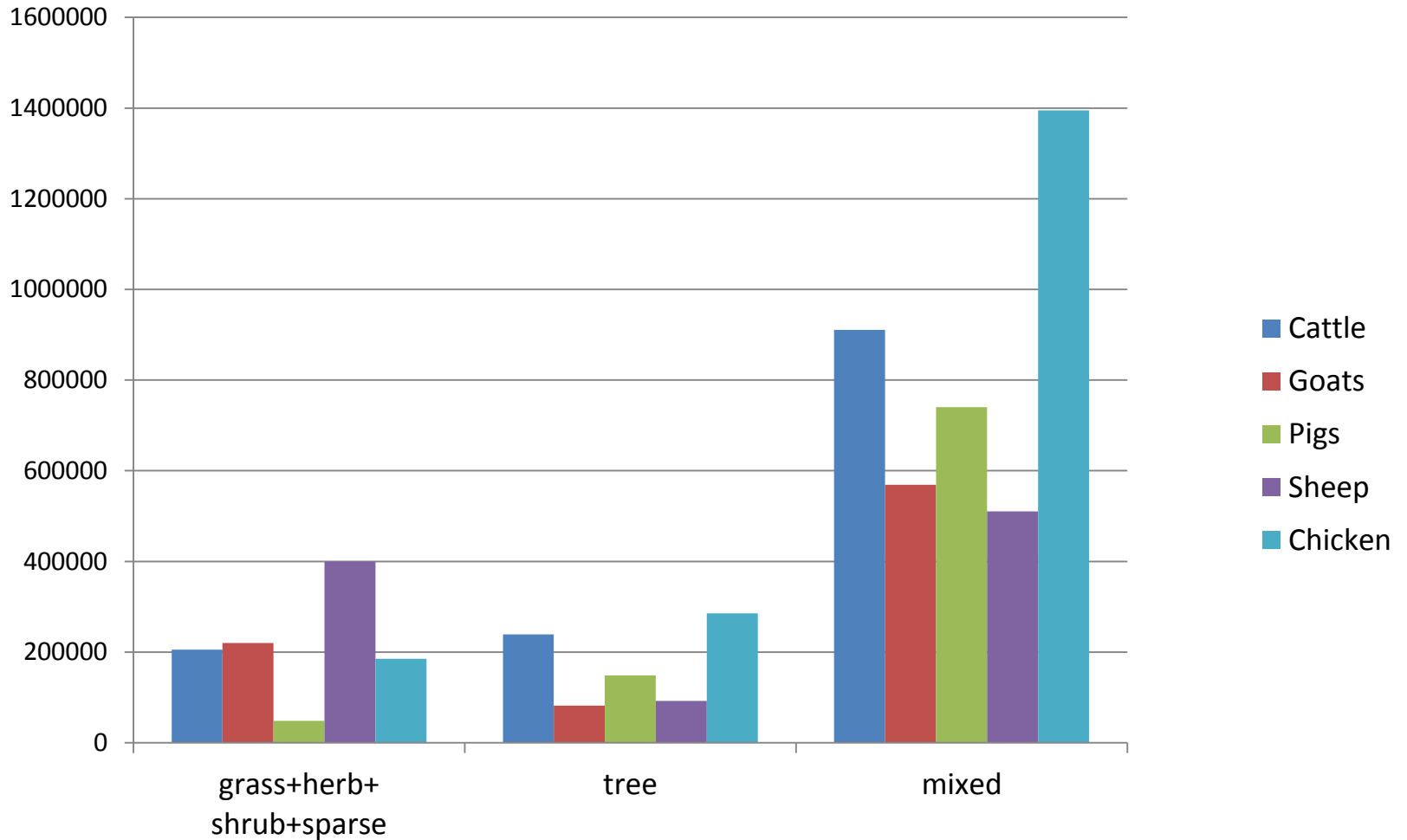
Global livestock production systems



Global Livestock Production Systems based on a modified version of the GLC-Share (FAO, July 2014)



Global livestock numbers in different land cover/systems, by species



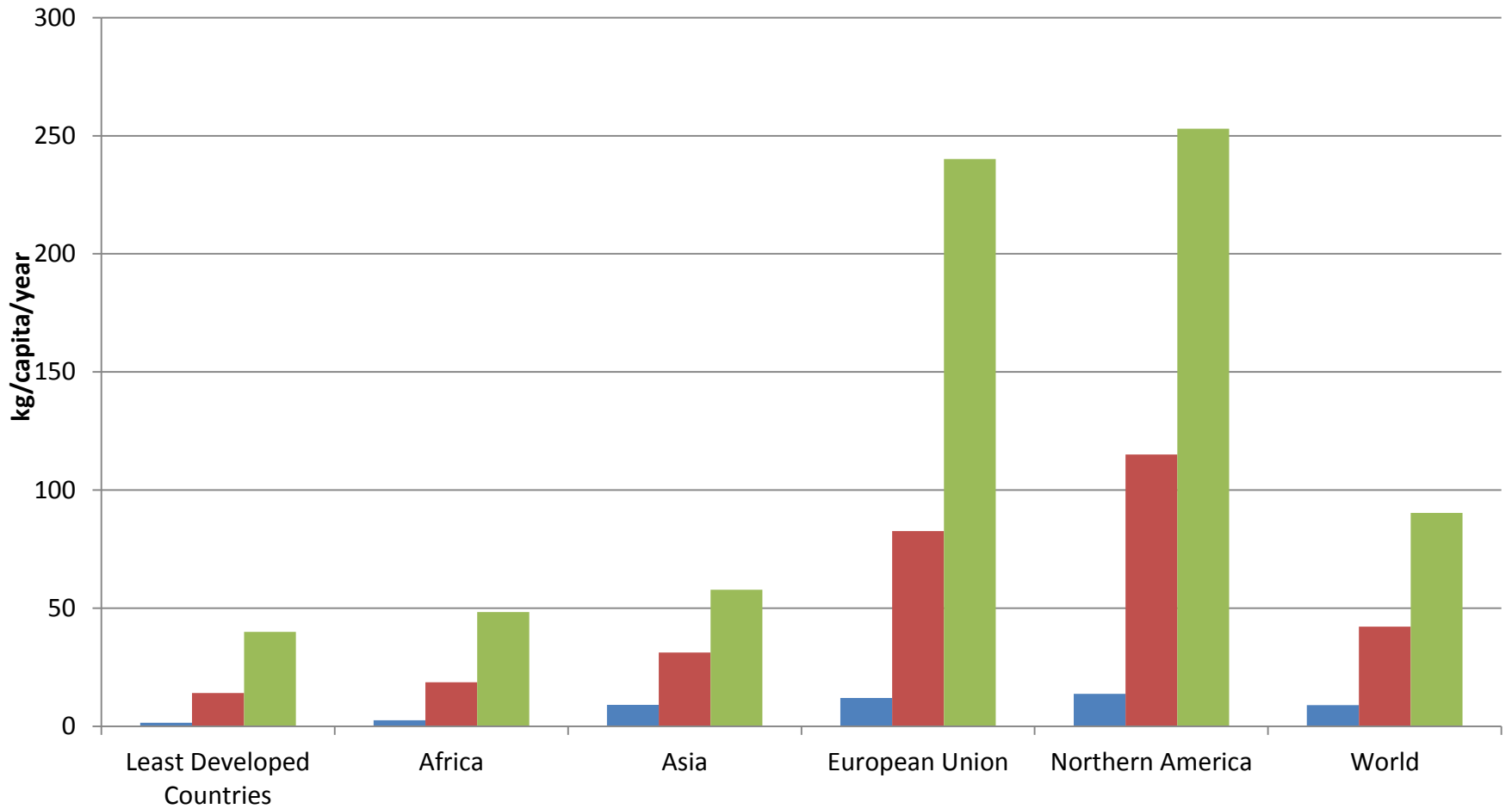
units: cattle, sheep, goats and pigs (1000 heads); chicken (10.000.000 heads); data source: Robinson *et al.*, 2014



Livestock provisioning services - Food



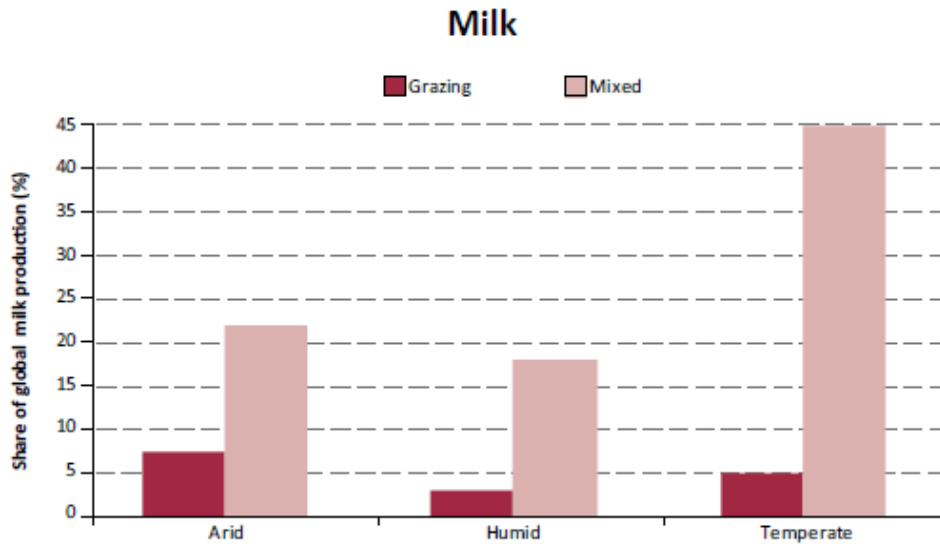
Provisioning services: Supply of animal sources food



■ Eggs ■ Meat ■ Milk

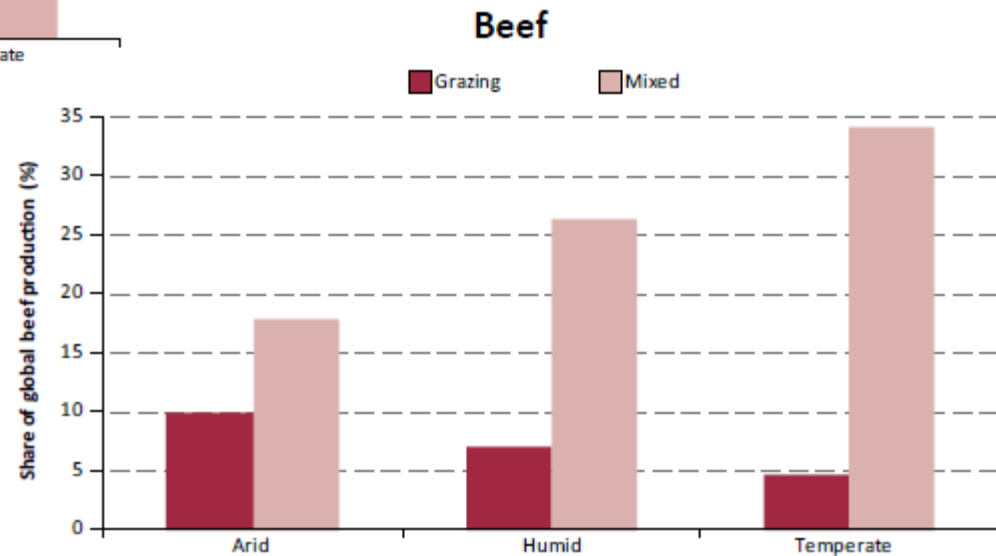


Contribution to total cattle milk and beef production by production systems and agro-ecological zone



Grassland/tree-based systems

- 37 % of all cattle
- 22 % of global beef production
- 16 % of global milk production



Opio *et al.*, 2013



Global chicken and pig production in 2005 by production system

Pigs	Backyard	Intermediate	Industrial	All
Million tonnes pig carcass weight per year	22.9	20.5	66.8	110.2
Chicken	Backyard	Semi-intensive to industrial		All
		Layer	Broiler	
Million tonnes egg per year	8.3	49.7		58
Million tonnes carcass weight per year	2.7	4.1	64.8	71.6

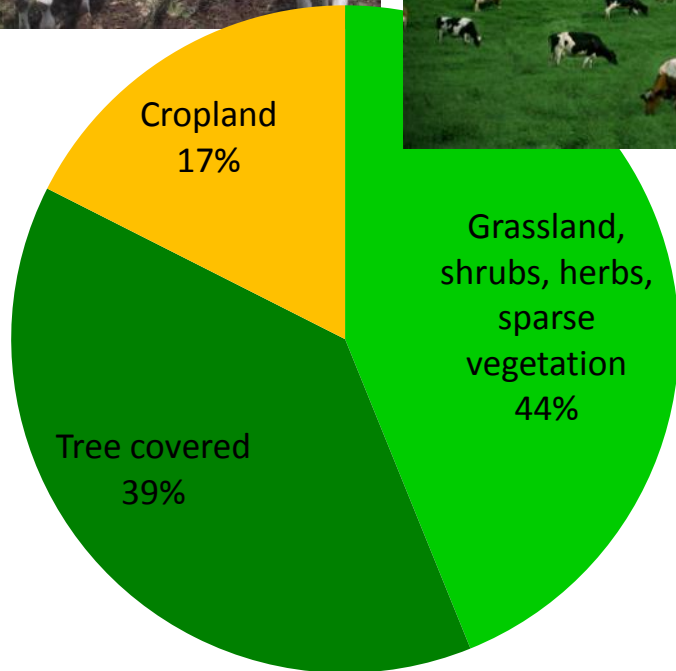
MacLeod *et al.*, 2013

> 80% of meat from exotic breeds or crossbreds

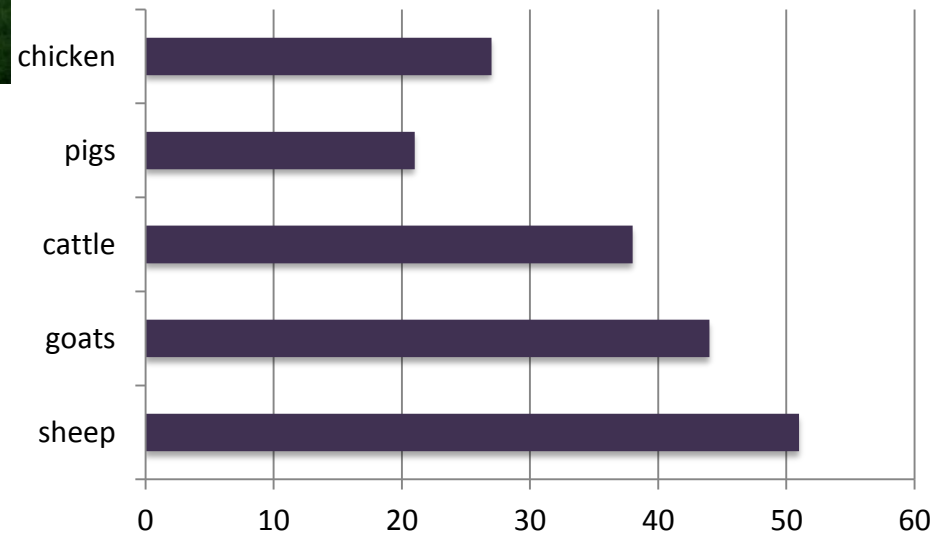


The global importance of grasslands

Terrestrial land cover by agriculture (72% of total)



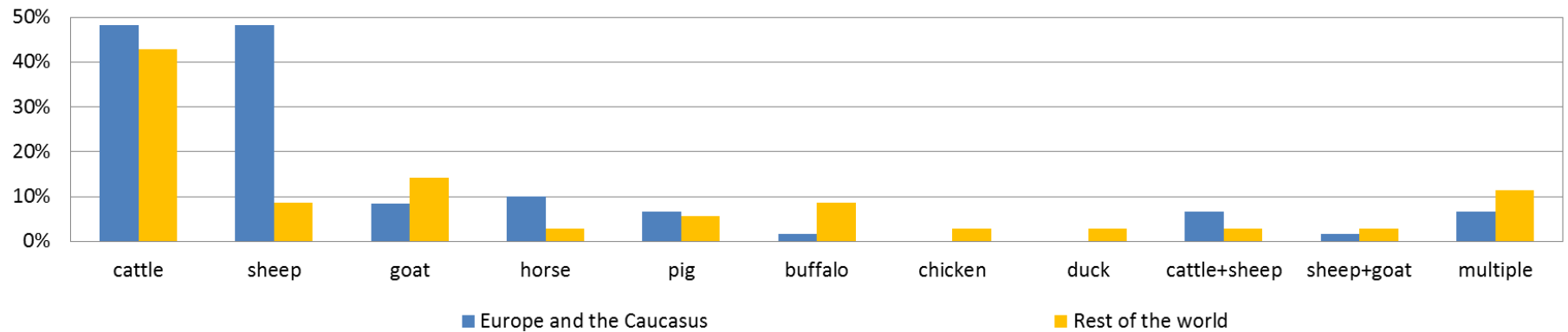
Majority of milk production is based on forage



% of livestock numbers that occur where locally adapted breeds thrive on grass and roughage



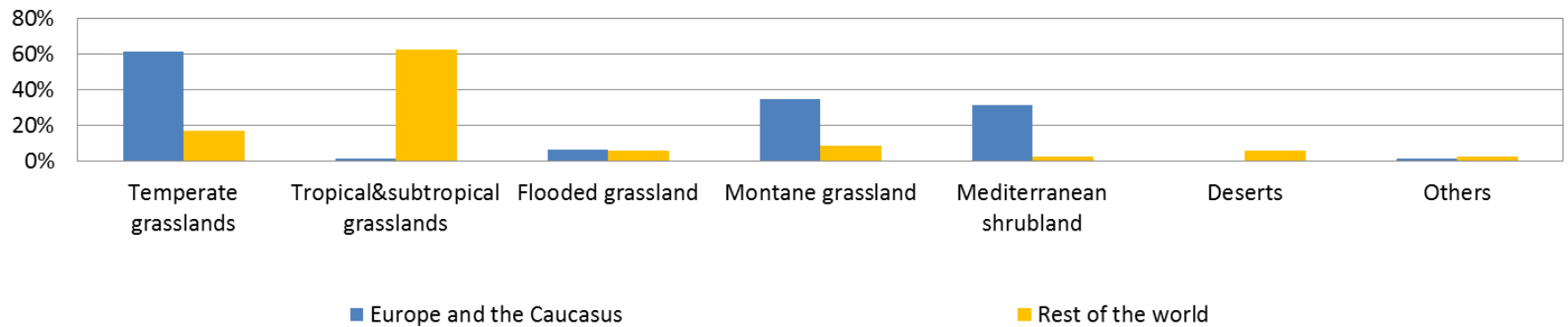
Survey results: Ecosystem services by species



FAO, 2014



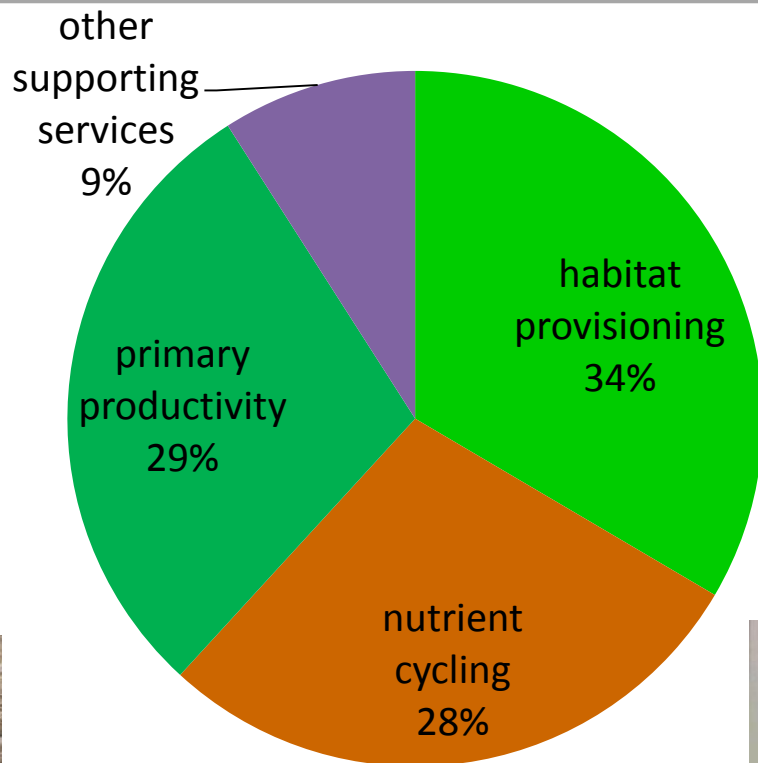
Survey results: Ecosystem services by ecosystem



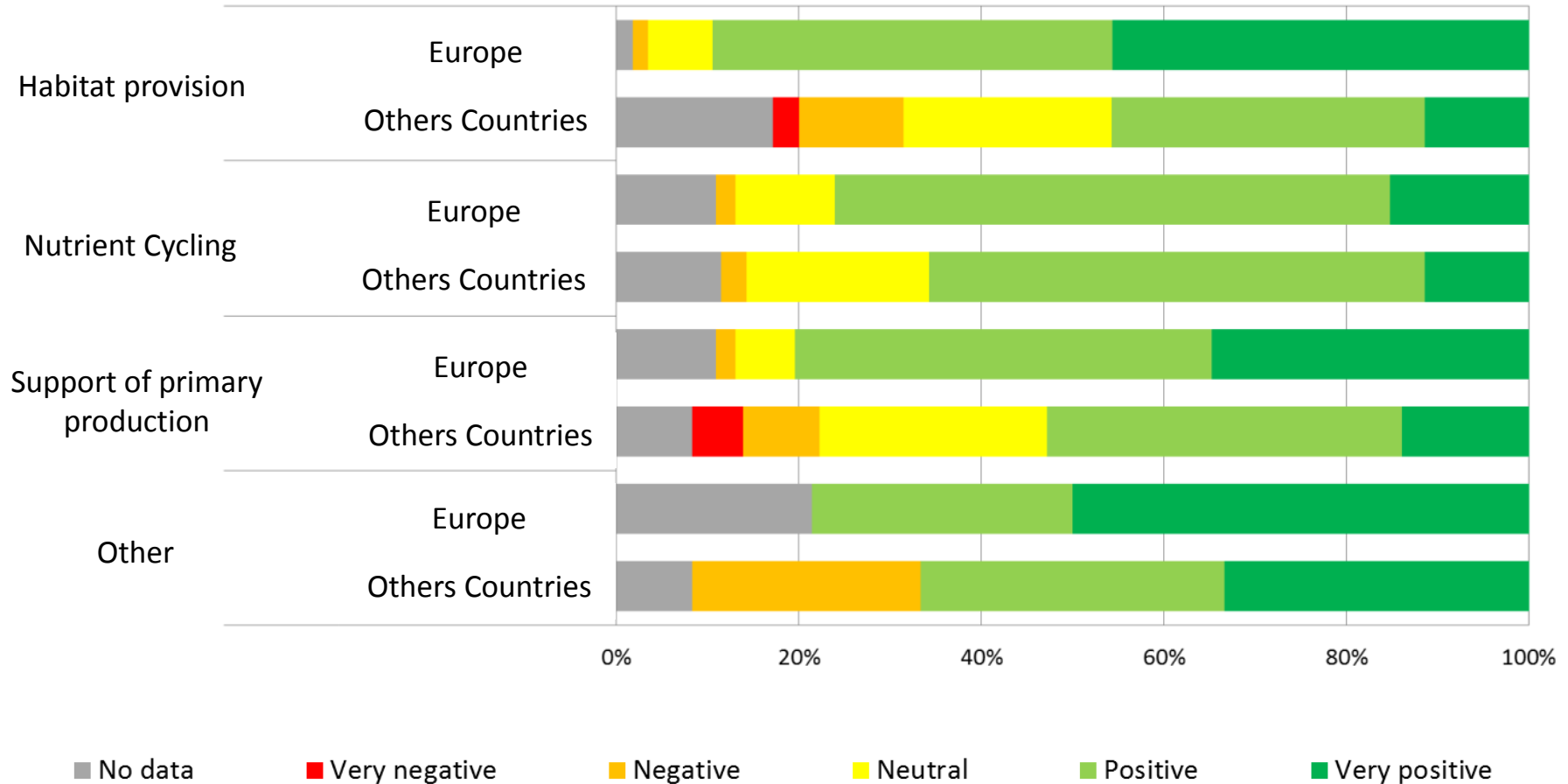
FAO, 2014



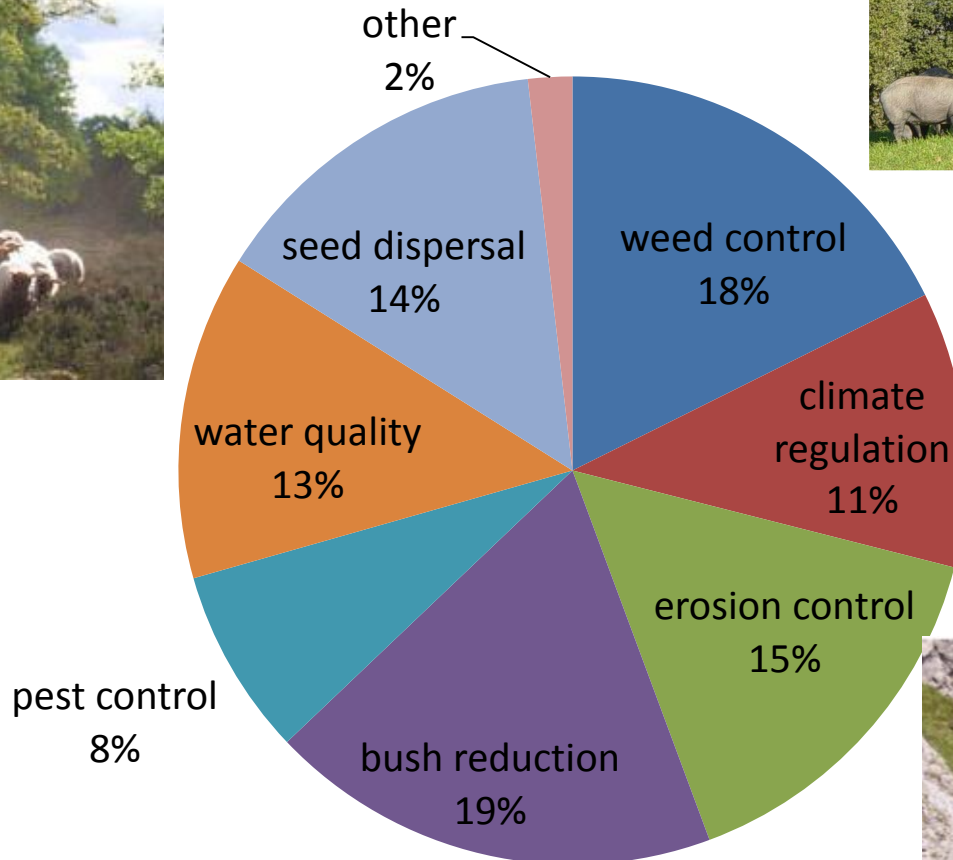
Survey results: Supporting services in different grassland types



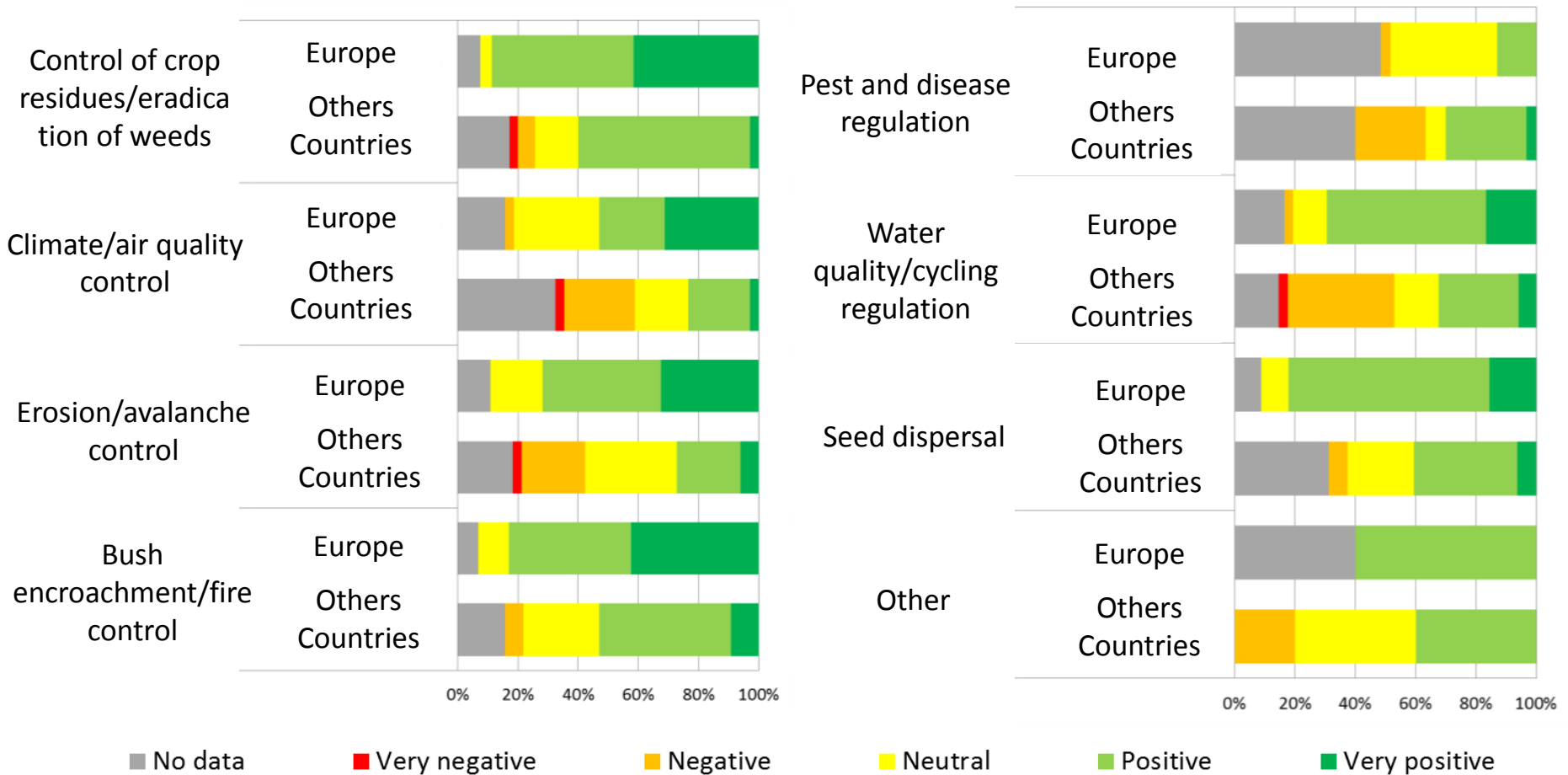
Rated effects of livestock grazing on supporting ecosystem services



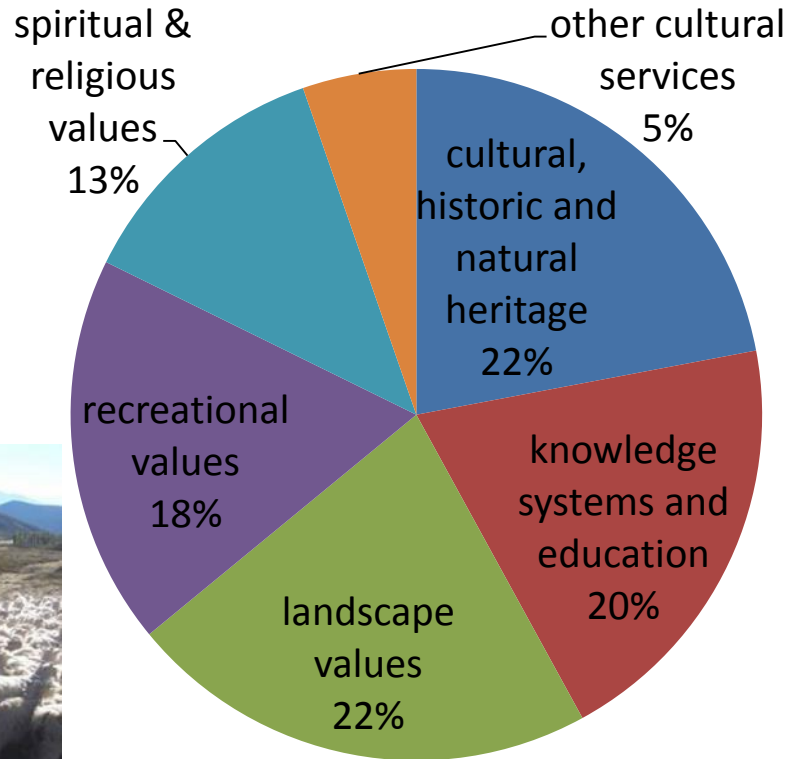
Survey results: Regulating services in different grassland



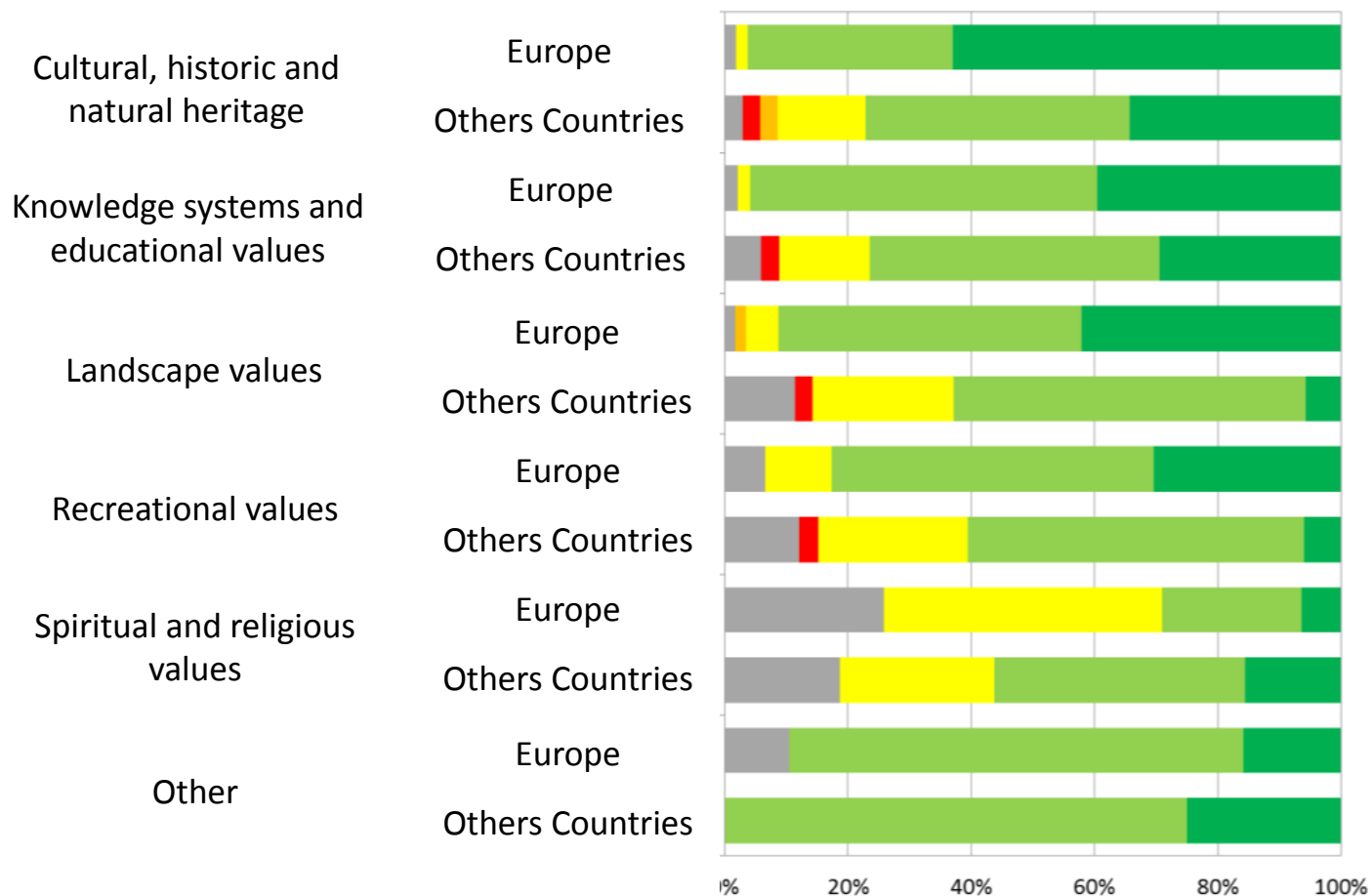
Rated effects of livestock grazing on regulating ecosystem services



Survey results: Cultural services in different grassland types



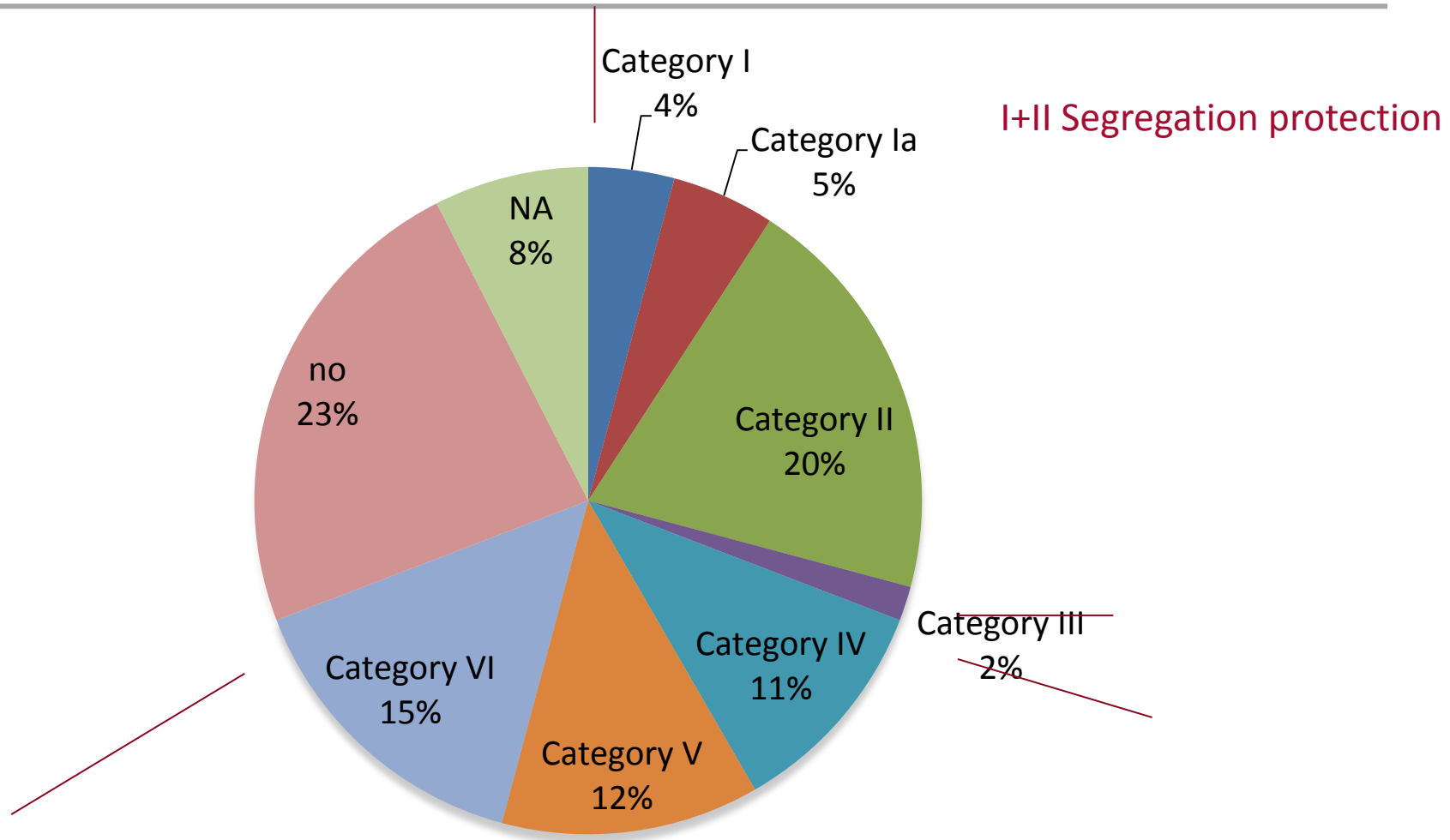
Rated effects of livestock grazing on cultural ecosystem services



No data
 Very negative
 Negative
 Neutral
 Positive
 Very positive



Protected areas across different grassland ecosystems

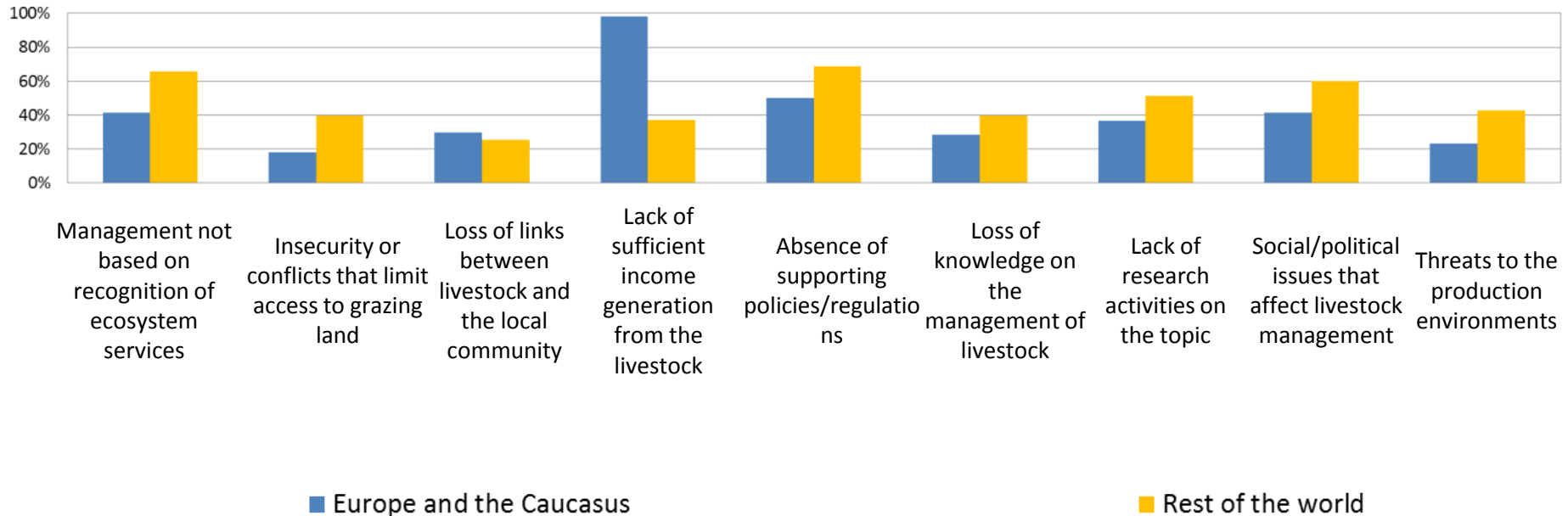


I+II Segregation protection

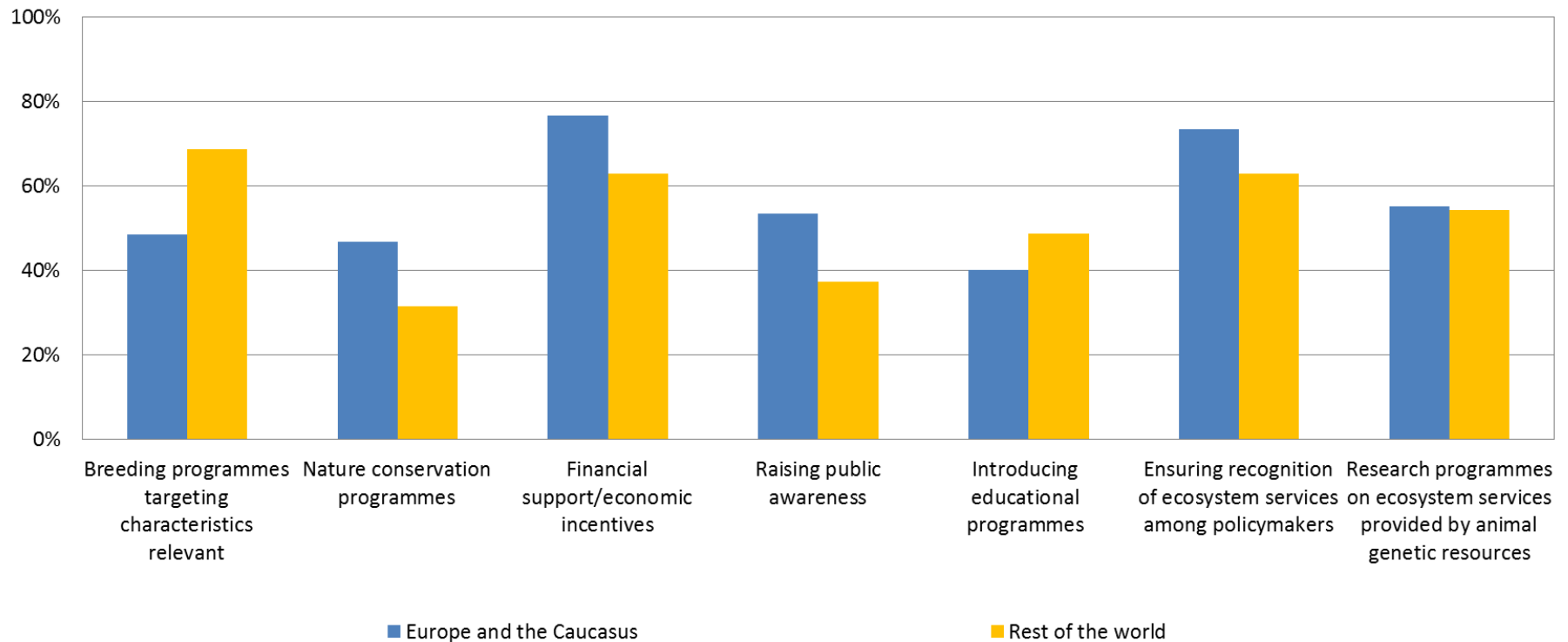
IV-VI Co-management



Constraints preventing livestock from providing ecosystem services



Opportunities for recognition of providing ecosystem services provided by livestock



Total economic values for ecosystem services

Total economic value for breeds at risk

(Int.\$/ha/year, 2007 price levels)

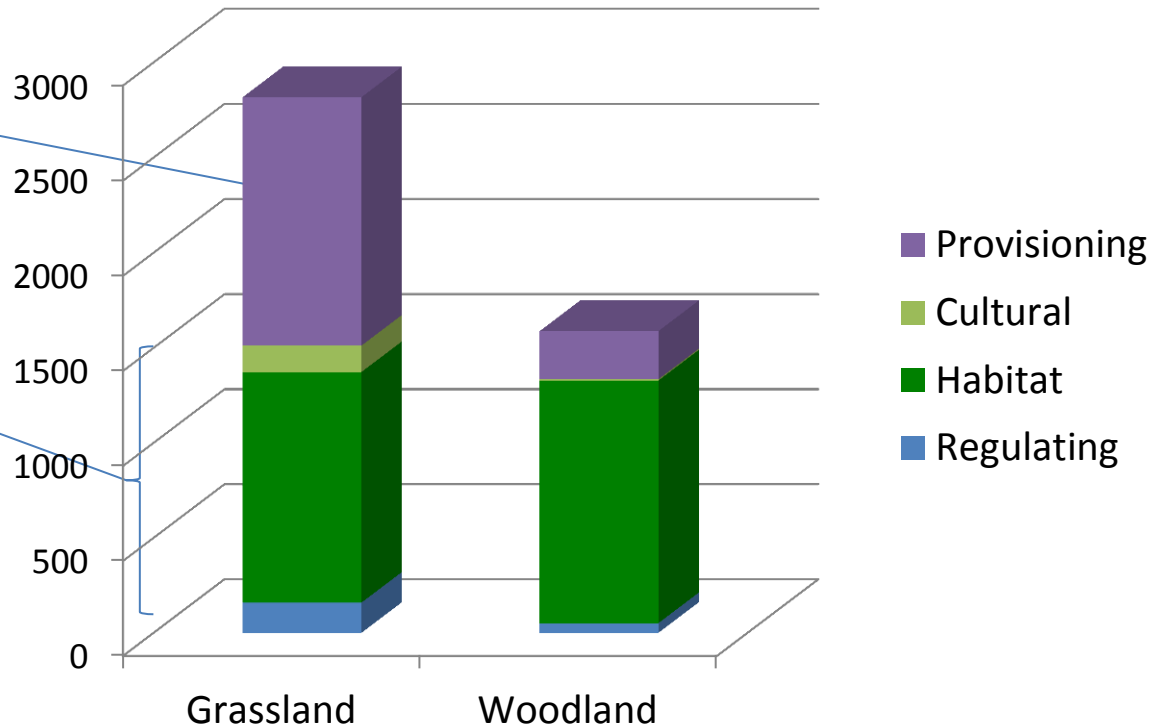
Source: De Groot et al., 2012.

Direct use values from product sales ~ 20%

All other values ~ 80%

Thereoff: Payment for ecosystem services (c-sequestration, water, biodiversity) ~ 20%

Gap: ~ 60%



Source: Bernues et al., 2014.



Incentives for ecosystem services (IES)



Design and funding of incentives
for ecosystem service provision



Benefit distribution
and co-benefits



Ownership and negotiation
of agreement



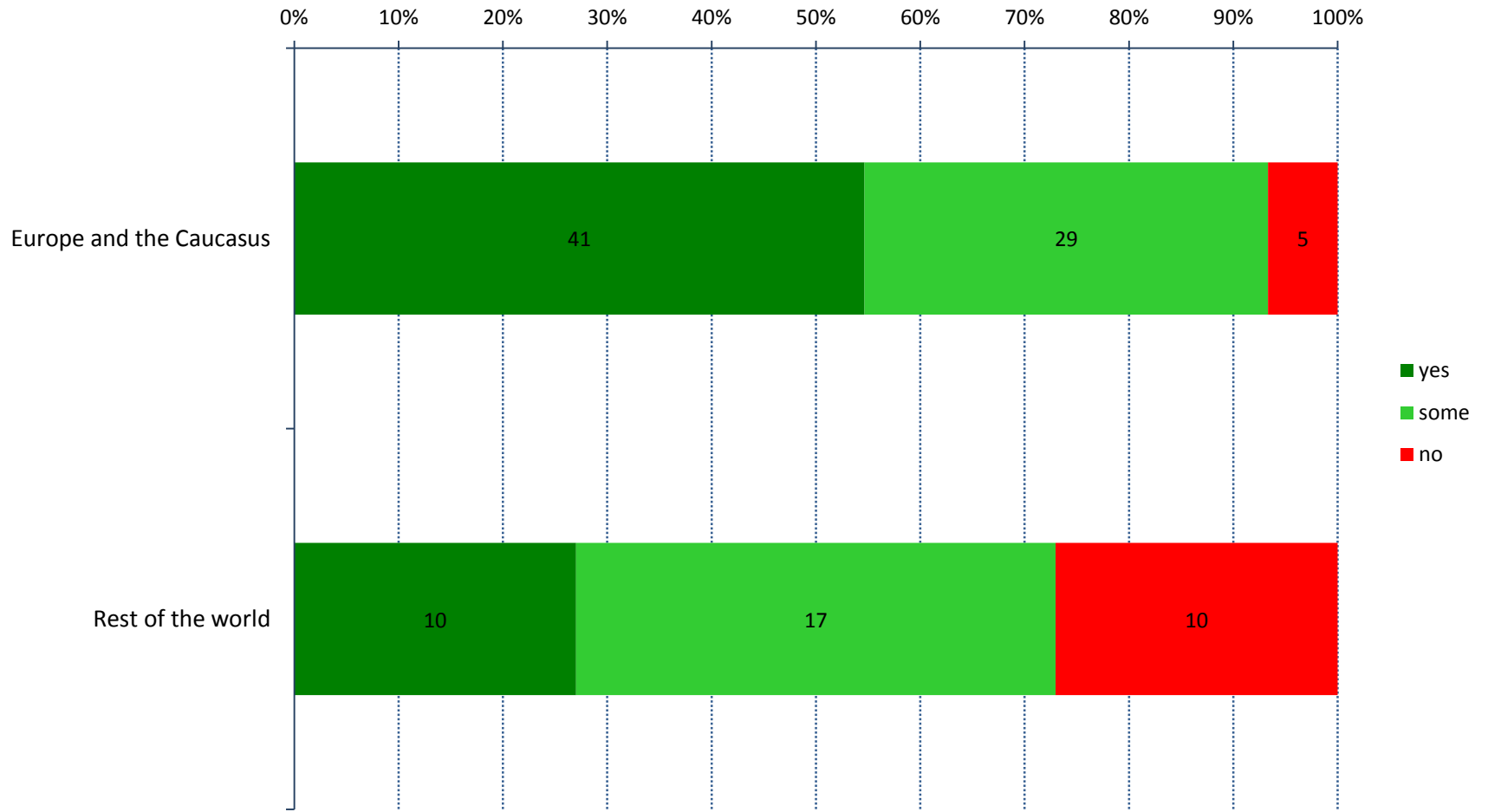
Impact assessment



IES-agreement and policy framework



Recognition of ecosystem services



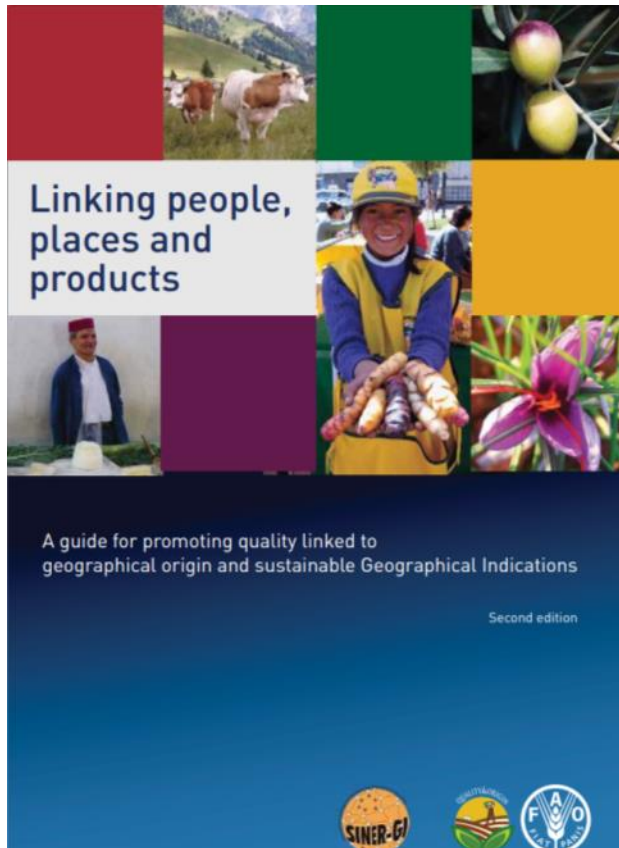
Number of cases receiving support for breed conservation and habitat management

	Cases receiving support for habitat management			
	No recognition	Poor	Yes	
Cases receiving support for breed conservation				Total
No data			1	1
No support	1		3	4
Some breeds among several		2	3	5
Yes, all breeds in the case	4		15	19
Total	5	2	22	29

FAO European survey



Voluntary standards

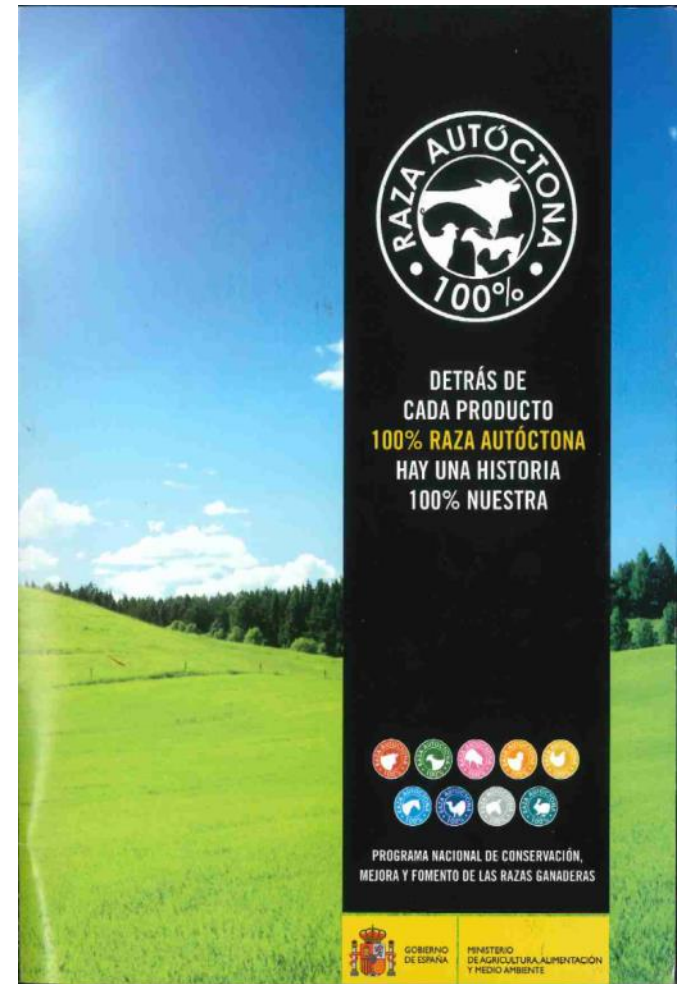


- Slowfood International Presidia
<http://www.slowfoodfoundation.com/presidia>
- Slowfood Ark of Taste
<http://www.slowfoodfoundation.com/ark>
- European Commission DOOR tool,
<http://ec.europa.eu/agriculture/quality/door/list.html;jsessionid=pL0hLqqLXhNmFQyFl1b24mY3t9dJQPflg3xbL2YphGT4k6zdWn34!-370879141>
- Cyber terroirs
<http://www.cyberterroirs.org/>
- IAMM/CIHEAM website
<http://www.iamm.fr/>



Labels

- Within the cases, 28 breeds are connected to 22 PDO/PGI
- European Commission decision defining new rules for using the optional quality term "mountain product" for food products coming from mountain areas (Regulation (EU) No 664/2014)



Conclusions

- non-provisioning ecosystem services are widespread and undervalued
- Spatial overlap of non-provisioning ecosystem services with vast marginal areas (rangelands/low-forest cover, mountains), and with marginalized people (pastoralists)
- Linkages between nature conservation and breed conservation
- EU most advanced region in recognition of ESS - BUT
 - CAP policy issue on definition of ‘grassland’ and recognition of wood pasture
 - Koblenz Declaration from European regional pastoralist meeting <http://shepherdnet.eu/?p=331>



Recommendations

Advocacy

- Strengthen the link between breed conservation and nature conservation
- Strengthen collaboration of the agricultural / livestock sector with the environment / wildlife / forestry sector,
- Need for IES and supportive policies
- Link to intl. frameworks/processes: Global Plan of Action for Animal Genetic Resources, African Union policy on pastoralism, UN Permanent Forum for Indigenous Peoples, VGGT, CBD, Mountain partnership, Soil Partnership, Global Agenda for Sustainable Livestock , etc



Recommendations

Research questions

- Mapping, scientific evidence at breed level, particularly in grassland-based production systems
- improve assessment methods for valuation and valorization, IES
- Outcome orientation: land and livestock management practices count - develop results-based incentive systems
- Social issues: stakeholders, benefit sharing, governance, tenure





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Thanks



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More
information:
[www.fao.org/ag/
anagr.html](http://www.fao.org/ag/anagr.html)



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