

METHODOLOGY REPORT FOR



A CASE OF BENIGN NEGLECT

KNOWLEDGE GAPS ABOUT SUSTAINABILITY
IN PASTORALISM AND RANGELANDS



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1 Introduction

This document is an annex to the United Nations (UN) Environment’s report “A case of benign neglect – Knowledge gaps about sustainability in rangelands and pastoralism” (available here: <http://url.grida.no/gapan>). The report is the outcome of a project that was a follow-up to one of the resolutions of the United Nations Environment Assembly (UNEA) in May 2016, Resolution 2/24 “Combating desertification, land degradation and drought and promoting sustainable pastoralism and rangelands”. The resolution calls upon nations to raise global awareness on sustainable rangelands and pastoralism. By comparing available and accessible data about rangelands and pastoralists, the project conducted a gap analysis and identified recommendations for improving information for decision-making that will enhance the sustainability of pastoralism and the sustainable use of rangelands. This document contains a more detailed description of the methodology than could be included in the report.

The gap analysis was conducted in 2017–2018. The report explores what data and information are available about rangelands and pastoralists, as well as what level of confidence different actors have in the data and information. It looks into types of technical support provided by multilateral agencies and by Official Development Assistance (ODA) through OECD¹ countries. The report assesses different sources of information: assessments, datasets, project information and scientific publications. The gap analysis is also informed by a survey of different organisations’ and pastoralists’ perspectives, which included issues such as how they use and collect information, their perception of confidence level or gaps in information, as well as provision of technical support for pastoralists and rangeland management.

2 System boundary – subjects covered by the gap analysis

The gap analysis project had two main objectives: a) to identify gaps in information and data about pastoralists and rangelands, and b) to identify gaps in the provision of technical support to pastoralists. The full overview of the topics covered is given in Figure 1.

2.1 Gaps in information and data

The system boundary was determined by a conjunction of: 1) the mandate of UN Environment, 2) the intent of Operative Paragraph 9 UNEA Resolution 2/24, and 3) the Sustainable Development Goals with its integrated framework (environment, economic, social and governance).

The system boundary and the temporal span of the study was discussed and endorsed by a stakeholders’ working meeting in Arendal, Norway, on 31 October–2 November 2017. The purpose of this meeting was to identify and agree on what issues fall within and without the system boundary. The meeting participants agreed that the gap analysis would include material published since year 2000.

¹ OECD: Organisation for Economic Co-operation and Development

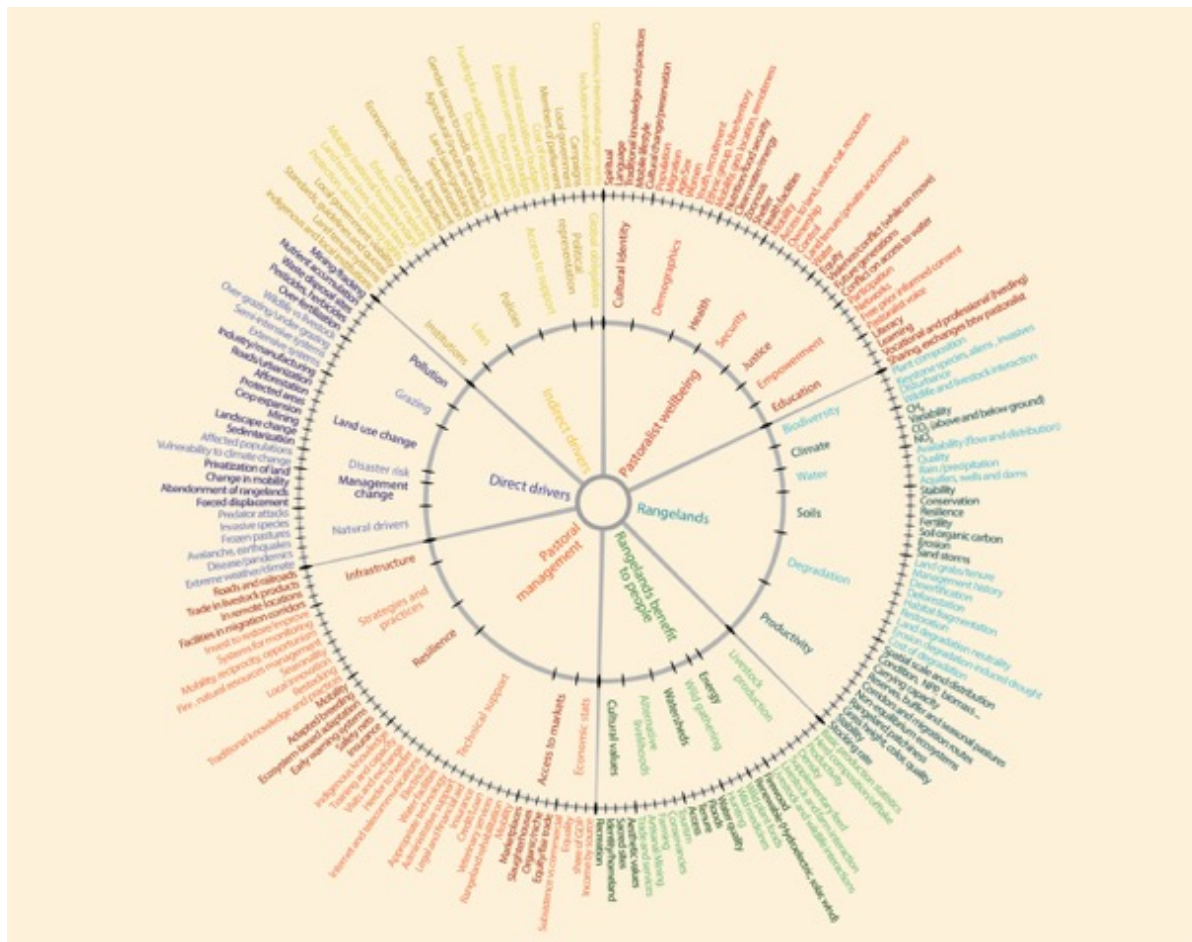


Figure 1: System boundary of the gap analysis. A high-resolution version of the figure is available here: http://url.grida.no/gapan_thematic

2.2 Gaps in provision of technical support and perceived impact

The participants in the working meeting agreed that “technical support” can be confined to the support needed for sustainable rangelands and pastoralism. The following issues were identified as critical for such technical support:

- Veterinary inputs
- Primary education
- Vocational training
- Capacity building
- Institutional development
- Exchange between communities
- Credit/loan
- Marketing
- Energy
- Information and communication technology (ICT)
- Water
- Health
- Veterinary services
- Supplemental feed
- Rangeland improvement
- Watershed management
- Biodiversity conservation
- Carbon capture

3 Data collection

The identification of gaps and opportunities was made through a combination of questionnaires, website searches and reviews of documents that contain *pastoralism and*

rangeland aspects. This approach is similar to one conducted by Davies *et al* (2014).² The study included both quantitative and qualitative data and information.

3.1 Online searches

3.1.1 Boolean searches

Boolean searches were used to identify available information in online **peer-reviewed publications** through Scopus. In these searches, we did not collect meta-data, but we collected the number of hits for the keywords for which we searched. Results were recorded for statistical analysis.

3.1.2 Screening and meta-data

For the **assessments, databases and project documents**, we screened the samples more thoroughly to identify relevant information about rangelands and pastoralists. This approach allowed us to screen the sources for more disaggregated data than in the Boolean searches. Meta-data and keyword hits were entered into an Excel spreadsheet for analysis.

We assumed that aid organisations have accessible databases of all projects they fund, or regional databases for projects, although it might still be difficult to find disaggregated data for pastoralists. This assumption regarding accessible databases was not correct. Therefore, we focused on the Global Environment Facility (GEF) project portfolio, which was public.

3.2 Questionnaires

In addition to screening online sources of information, we conducted a survey using a set of questionnaires. We approached **pastoralist organisations, civil society organisations, scientists and governments**. The aim was to collect information from various sources, perspectives and knowledge systems that are not easily available through web searches. The questionnaires gathered information regarding the existence and quality of data and technical support and the use of local and indigenous knowledge and technology (LIKT), and they asked for recommendations for filling information gaps and advice on how to involve pastoralists and other stakeholders in the follow-up to the gap analysis. The questionnaires were in English, and had a combination of open questions and predefined options. The respondents to the questionnaires are anonymous.

3.3 Keywords, synonyms and metonyms

Words used to address rangelands and pastoralists differ from region to region and between stakeholders. Acknowledging this, and in order to more effectively identify relevant information, we identified synonyms and metonyms referring to the subjects (system boundary) of the gap analysis that we used in the electronic searches in online sources.

We categorised the keywords related to rangelands and pastoralists as *first-tier*. Further, we identified keywords that reflect the key concepts within the system boundary of the study. These keywords were categorised as *second-* and *third-tier*, where the second-tier words were

² Davies, S., A. Hjort, H. Boyer, and S. Sheridan. 2014. *Gap analysis of national and regional fisheries and aquaculture priorities and initiatives in Western and Central Africa in respect to climate change and disasters*. FAO. Available at <http://www.fao.org/3/contents/dd445f4f-6cfd-42fd-a655-714e37ee4067/i3753e00.htm> Accessed 29 March.

more general terms (e.g. culture, health) and the third-tier words were more specific (e.g. language, nutrition). Altogether, 462 keywords were identified:

Subject	First-tier keywords	Second- tier keywords	Third-tier keywords	All keywords
Pastoralists & rangelands synonyms & metonyms	48			48
Pastoralist wellbeing		7	78	85
Nature of rangeland		6	72	78
Rangeland benefits to people		6	42	48
Pastoral assets		5	59	64
Direct drivers		5	39	44
Indirect drivers		5	48	53
Technical support		4	38	42
	48	38	376	462

A selection of these were used when searching in Scopus. When reviewing Scopus, we searched for different keywords in combination with first-tier keywords. The combination of first-tier keywords was the same every time. For example, when searching for relevant literature on *disasters*, the Boolean search was: (disaster AND (agro-pastoral* OR "settled herd*" OR "intensive grazing" OR "livestock herd*") OR (pastoral* OR transhuman* OR rancher OR grazier OR bedouin OR nomadism) AND (rangeland OR steppe OR savanna OR grassland OR tundra OR dryland OR pastureland))

The 81 second- and third-tiers keywords used for the Scopus review were:

- large-scale land acquisition
- extreme weather
- land grabbing
- management change
- pollution
- displacement
- disaster
- land degradation
- land use change
- wild gathering
- wild harvest
- alternative use
- natural value
- water regulation
- cultural value
- tourism
- grazing animal
- harvest
- ecosystem services
- energy
- grazing
- habitat
- CBD
- CCD
- SDG
- convention
- law
- agreement
- institution
- policy
- carrying capacity
- non-equilibrium OR nonequilibrium OR disequilibrium
- international obligation
- political representation
- tax
- sedentarisation³
- biodiversity conservation
- wildlife
- diversity
- productivity
- degradation

³ The search was only done for the English spelling of this word.

- water
- climate
- condition
- soil
- corridor
- buffer
- vegetation
- over-grazing OR overgrazing
- under-grazing OR overgrazing
- traditional use
- co-management
- facilities
- rotation
- traditional knowledge
- community-based
- subsistence
- natural resource management
- resilience
- mobility
- market
- income
- gender
- education
- participation
- security
- health
- culture
- conflict
- adaptation
- population
- access to development
- rangeland improvement
- technical support
- institutional development
- capacity building
- extension service
- cost of inaction
- aid effectiveness
- credit OR loan
- veterinary

[Appendix 1](#) presents the full list of keywords, synonyms and metonyms identified for the study.

We also tried to search for translations of certain keywords and their metonyms in French and Spanish (see the table below), but searches for translated keywords were not included in the study.

English	French	Spanish
Rangeland	Parcours	Tierras de pastoreo
Grassland	Prairies	Praderas
Pastoral livestock sector	Secteur du parcours élevage	La granaderia de pastoero
Livestock health and breeding	Sante et reproduction animale	La salud, la cria de ganado
Indigenous peoples	Populations indigènes	Pueblos indigenas
Indigenous knowledge and technology	Savoir et technologie autochtones	Los conocimientos y las tecnologias indigenas y locales
Access to markets	Access au marche	El acceso a los mercados
Neutrality	Neutralité	Neutralizacion
Safety net programmes		Los programas de redes de seguridad
Early warning	Alerte précoce	Alerta temprana
Disaster risk reduction	Réduction des risques de catastrophes	Reduccion del riesgo de desastres
Drought	Secheresse	La sequia

4 Sampling of data sources included in the study

The stakeholders' working meeting considered reducing the long list of data sources, but agreed that the study should aim at being as comprehensive as possible in order to show all gaps. It was decided to screen the following sources of information during the study:

- UN Statistics/global databases/global assessments
- Government
- Scientific publications
- Donor and project information
- Pastoralist communities and civil society organisations
- Business

However, during the source of the project, we had to make new priorities as data collection was more time consuming and challenging than anticipated. The result was that we screened the following sources of information:

- Global assessments
- UN Statistics/global databases (statistics and data sets)
- Project information from multilateral agencies
- Academic publications
- The rangelands and pastoralism community (through a survey)

We developed a sampling method for each of the information sources identified above that balanced availability of time and resources with the need to be comprehensive and verifiable.

4.1 Global assessments

A search was made for the existence of global environmental or integrated assessments since the year 2000 relevant to rangelands and pastoralism. The assessments were identified in three ways: a simple Google search using keywords, a search through the websites of FAO and UNEP, and through questions targeted to survey respondents, workshop participants, the Advisory Board, the Steering Committee for the International Year of Rangelands and Pastoralists (IYRP) – a total of 73 eminent researchers and stakeholders. Furthermore, some assessments were identified through the search on databases. Due to resource limitations, a sample of 13 global environmental assessments more relevant to pastoralism and rangelands was identified for in-depth review (see the list of assessments in Appendix 2)⁴. The review was done by searching through the assessments for the first-tier keywords and reading carefully through the sections with hits. After that, all sections with related information (for example, deserts, dryland forests, cropland) were also reviewed.

4.2 Databases and websites

A list of databases and websites was drawn up through two methods: a Google search using the term “database” and by consulting a set of researchers and stakeholders chosen because of their affiliation with the International Rangeland Congress, the Commission for Nomadic Peoples, the World Initiative for Sustainable Pastoralism, the FAO Pastoralist Knowledge Hub, and the Steering Committee of the IYRP⁵.

⁴ However, there are many other global assessments that focus on wellbeing issues that would be relevant to pastoralism, such as UNICEF's State of the World's Children reports, or WHO reports on health matters.

⁵ See <https://globalrangelands.org/international-year-rangelands-and-pastoralists-initiative>

Through this process, 100 databases and websites were identified and screened. The databases and websites were categorised according to the format of the information they provided: 81 datasets and statistics, three Geographic Information Systems (GIS) portals and 16 knowledge repositories. Out of the 100 databases and websites, only 33 provided hits for keywords related to pastoralism and/or rangeland. These were assessed further. Eight sources were inaccessible. (See the list of databases in Appendix 3.)

The study also examined the texts of 14 conventions, protocols and targets. These were:

- Aichi Targets
- Sustainable Development Goals (SDGs)
- Basel Convention
- Stockholm Convention on Persistent Organic Pollutants (POPs)
- Rotterdam Convention
- Kyoto Protocol
- Paris Agreement
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)
- Ramsar Convention
- United Nations Convention to Combat Desertification (UNCCD)
- United Nations Framework Convention on Climate Change (UNFCCC)
- Convention on Biological Diversity (CBD).

4.3 Scientific publications

An increasing number of academic papers on rangelands and pastoralists are published online. We limited our study to examine relevant publications available in Scopus. Scopus is the largest abstract and citation database of peer-reviewed literature. According to the Scopus website, it includes over 71 million records from scientific journals, books and conference proceedings.

We screened for first-tier and second-tier keywords (see Appendix 1) within the title, abstract and keywords for the publications within Scopus in order to identify to what degree issues related to rangelands and pastoralists were covered within scientific writing. We identified 96,414 records that cover issues related to rangelands or pastoralism; 79,245 records concerned only rangelands; 19,133 concerned pastoralism and 1,644 agro-pastoralism. Only 2,658 publications covered both rangelands and pastoralism/agro-pastoralism. Given the integrated nature of the system boundary of this gap analysis, it was decided to further review the 2,658 publications that covered both topics. The sample was screened through Boolean searches for the second-tier keywords.

4.4 Donor and project information

Projects gather information, develop know-how and provide technical support. The study assessed the online project portfolio of ten multilateral agencies, and consulted 585 documents. By searching for first-tier keywords, we identified projects relevant to pastoralists and rangelands, the thematic focus of these projects and their budgets and target countries. The following multilateral agencies were screened – in alphabetical order:

- Food and Agriculture Organization (FAO)
- Global Environment Facility (GEF)
- International Fund for Agricultural Development (IFAD)
- United Nations Development Programme (UNDP)
- United Nations Environment (UN Environment)
- United Nations Educational, Scientific and Cultural Organisation (UNESCO)
- United Nations Children's Fund (UNICEF)
- World Food Programme (WFP)
- World Health Organization (WHO)
- World Bank (WB).

In addition, we explored the project database of the International Livestock Research Institute (ILRI) and the International Council for Research in Agroforestry (ICRAF), also known under the brand name “World Agroforestry Centre”, as well as the International Center for Agricultural Research in the Dry Areas (ICARDA). These sources were included in the analysis on account of their strong focus on supporting smallholder farmer and pastoralist livelihoods and drylands in the Global South.

As donor agencies are sometimes partners in projects, there is a possible overlap in their project portfolios. Therefore, we decided to further explore the project portfolio of the GEF for the gap analysis.

4.5 Survey

In order to include stakeholders’ perspectives in the gap analysis, we developed an online survey to explore how different organisations regarded available information about, and technical support for, pastoralism and rangelands. The survey also asked questions about the organisations’ use of LIKT, and it invited the respondents to make recommendations on how to address potential gaps in data on rangelands and pastoralism, provision of technical support and inclusion of LIKT.

A questionnaire was prepared and distributed to 20 pastoralist organisations and 16 government representatives. A slightly revised questionnaire was distributed to approximately 300 additional email addresses to individuals interested in issues related to pastoralism and rangelands. In total, we received 58 responses, therefore 18% coverage.

Appendix 4 lists the 20 pastoralist organisations that were invited to participate in the survey. Appendix 5 gives a full overview of all recommendations given by the survey participants.

4.6 Sources not included in of the study

4.6.1 *Selected country reports to multilateral environmental agreements*

Originally, the gap analysis included a review of sampled country reports to the 14 conventions, protocols and targets. (These are listed in the full gap analysis report). However, this turned out to be a very difficult exercise due to language, non-parties, infrequent reporting and a general lack of reports. As we did not have representative findings, we decided not to include country reports as a data source in the report.

4.6.2 Business

The initial idea was to approach and interview Chief Executive Officers (CEOs) or Corporate Social Responsibility (CSR) persons of a handful of multinational large-scale corporations working on issues related to rangelands and pastoralists. The purpose of approaching the corporations was find out if they collect information on pastoralists and rangelands and, if so, what kind of information, and whether they offer technical support to pastoralists. The thinking was that the corporations were likely to have a sustainability agenda and therefore might be collecting data on pastoralists and rangelands. Information from the business sector could have complemented information screened from other sectors but, in the end, there was difficult to identify relevant corporations and no time to approach them.

4.6.3 Other data sources

Grey literature from civil society organisations, unpublished literature and material that is not peer reviewed were not part of the study. These sources of information are vast and difficult to sample. Moreover, the participants in the working meeting had a relatively low level of confidence in the information coming from these sources. The study also did not include publications available only in hard copy as these are difficult to search on key words, or the media because the information was often not detailed enough nor was it well referenced.

Appendix 1: Full list of topics with their associated keywords

First-tier keywords: Rangelands and pastoralists

Pastoralist	Rangeland	Agropastoralist
nomad transhumant rancher herder shepherd grazier bedouin open+range+livestock+breeder extensive+livestock+producer extensive+livestock+keeper	mountain+meadow savanna native+grassland prairie marsh+grazing tundra+grazing veld steppe+grazing shrubland+grazing taiga+grazing dryland+grazing arid+semiarid+land+grazing	livestock+farmer settled+herder confined+livestock+breeder settled+livestock+keeper sedentary+livestock+producer
Pastoralism	Pasture	Agropastoralism
nomadism transhumance ranching herding shepherding extensive+grazing open+range+livestock+breeding extensive+livestock+producing extensive+livestock+keeping extensive+animal+husbandry	pastureland alpine+pasture grazing+land pastoral+land	livestock+farming settled+herding intensive+grazing confined+livestock+breeding settled+livestock+keeping sedentary+livestock+production intensive+animal+husbandry

Second- and third-tier keywords: Topics to be covered in the gap analysis

The red words are typically associated with non-equilibrium understanding of rangeland ecosystems, a thinking that has emerged over the past couple of decades. The non-equilibrium thinking recognises the inherent resilience of rangeland ecosystems which operate under varying degrees of ecological disequilibrium. It argues that in rangeland ecosystems, a high variability in precipitation has a greater influence on vegetation growth than grazing. It also points out additional factors that affect the use and state of rangelands, such as wildlife grazing, land-use conflicts between herders and farmers, and political changes in people's access to grazing and water resources.⁶ As such, the non-equilibrium understanding of rangeland ecosystems challenges the land degradation discourse and the concept of 'carrying capacity', which refers to the notion of applying climax vegetation stages and optimal grazing to preserve or reverse land degradation and reach equilibrium.

⁶ Little, P.D. 2003. "Rethinking interdisciplinary paradigms and the political ecology of pastoralism in East Africa." In *African savannas: Global narratives and local knowledge of environmental changes*, edited by T. Bassett and D. Crummey, 161 –177. Oxford, UK: James Currey Publishers.

Second-tier keywords	Third-tier keywords			
culture OR cultural	change	identity	Language	
	technical+	knowledge+	local/traditional +	indigenous
	document(ation)	preservation		
	mobil(e/ity)			
population	size	demograph		
	number	women	youth	
	ethnic+	tribe	community	
	“degree of mobil(e/ity)”			
	location	remote		
	migrat(e/ion)	exit	recruit	
health	nutrition	“food security”	gender	
	access+	clean+	water OR energy	
	zoonosis			
	shelter	gender		
	access+	health+	service	gender
educat(e/ion)	learn(ing)	litera(te/cy)		
	train(ing)+	profession(al) OR	vocation(al) OR	herding
	knowledge+	shar(ing) OR	exchang(ing)	
	intergeneration(al)	uptake	gender	
participat(e/ion)	empower	network		
	“free prior informed consent”			
	voice	gender		
conflict	access+	court or legal+	service	equit(y/able)
	water	land	gender	
	mobil(e/ity)			
	farmer+	herder		
security	land+	tenure OR	own(ership) OR	control
	access+	water		
	access+	“natural resource”		
	land+	private		
	land+	common OR	public	
	gender			

Nature of rangeland/rangeland condition

Second-tier keywords	Third-tier keywords			
divers(ity)	habitat	loss OR	fragment(ation)	
	species+	loss OR	extinct	
	“alien invasive”			
	mobil(e/ity)+	species		
	wildlife+	livestock+	competition OR	complement
climat(e/ic)	methane+	livestock OR	land	
	carbon+	emission+	storage OR	sequest(er/ratio n)
	nitrous+	oxide		
	rainfall+	variab(ile/ility)	drought	
	change+	impact		
water	available	distribut(e/ion)	sufficien(t/cy)	
	quality	pollut(e/ion)		
	drought	flood		
	dam	aquifer	water+well	manage(ment)
soil	organic+	carbon+	stock	
	fertility	resilien(t/ce)		
	erosion	“sand storm”	stability	
	conserv(e/ation)	restorat(e/ion)		
degrad(e/ation n)	desertif(y/ication)	deforest(e/ation)	Drought	
	“land degradation neutral(ity)”			
	restorat(e/ion)	rehabilitat(e/ion)		
	“cost of degradation”			
	land+	grab(bing)		
productivity OR condition	grass+	abundance OR	composition	
	biomass	“carrying capacity”	“stocking rate”	“stocking density”
	“non-equilibrium”	“rangeland patch(y)ness”		
	seasonal(ity)	variab(ile/ility)	mobil(ity)	
	reserve	buffer	corridor	

Rangeland benefits to people

Second-tier keywords	Third-tier keywords			
“grazing animal”	domestic	“semi-domestic”	wild	
	species+	“herd composition”		
	productiv(e/ity)	mortality	offtake	
	“stocking rate”	“stocking density”		
	meat	dairy	hide	

	supplement OR	“crop residue”+	feed	
energy	firewood	manure	fuel	
	renewable	solar	wind	hydro
“wild harvest” OR “wild gathering”	plant+	food		
	medicin(e/al)			
	hunt(ing)			
“cultural value”	sacred+			
	spiritual	religio(n/us)		
	homeland	identity		
“alternative income”	tourism	trade		
	wildlife+	conserva(ncy/tion)		
	artisanal+	mining		
	market	butcher		
“water regulation”	supply	sedimentation		

Pastoral assets

Second-tier keywords	Third-tier keywords				
income	livestock	alternative	complementary		
	GDP	household	women		
	“cost benefit analysis”				
	subsistence	commercial	absentee		
	equality	inequality			
market	access(ibility?)	slaughter	facilities		
	“fair trade”	by-products			
	organic+	niche			
“natural resource manage(ment)”	strateg(y/ies)	innovation			
	indigenous OR	local OR	traditional+	knowledge	practice
	seasonal+	movement OR	mobility		
	reciprocity	opportunism			
	rotation	“non rotation”			
	restocking	drought	monitor(ing)		
	investment	restoration	rehabilitation	improvement	
	fire				
resilien(t/ce)	insurance	“safety net”			
	mobility	adaptation	breeding		
	“early warning”				
facilit(y/ies)	infrastructure	inputs	services		
	migration	corridors			
	transport	meat	milk		
	access+	road OR	railroad	remote	

Direct drivers

Second-tier keywords	Third-tier keywords		
“extreme weather”	drought	flood	
	freeze		
	cyclone	tsunami	hurricane
disaster	disease	pandemic	
	predator		
	avalanche	earthquake	
	risk	vulnerability	
“management change”	forced+	displac(e)ment	abandonment
	“change of mobility” OR	“reduce mobility”	
	“over grazing”	“under grazing”	
	privatization+	land	
	cooperative+	land	
“land use change”	sedentaris(e)ation		
	landscape+	conversion	
	“strip mining”	fracking	
	“protected area”	“crop expansion”	
	afforestation OR	reforestation	
	urbanization	industry	manufactur(ing)
pollution	“waste disposal site”		
	nutrient+	accumulat(e/ion)	

Indirect drivers

Second-tier keywords	Third-tier keywords			
institution	indigenous OR	local OR	customary	
	land+	tenure+	system	
	standard+	“carrying capacity” OR		grazing
	government+	local	viab(ile)ility	effective(ness)
law	“grazing right”	“grazing quota”	pasture	
	access+	protect/ion		
	mobil(ity)	transboundary	“cross border”	movement
	enforcement+	capacity		
	formal OR	customary		
policy	tax	investment	subsidy	trade
	sedentaris(e)ation	settlement	villagization	
	land+	sale		
	gender+	access+	credit+	land
“political representation”	“member of parliament”			

	pastoralist+	campaign		
	pastoralist+	women+	youth	
“international obligation”	“national plan”+	CBD	CCD	SDG
	convention			
	agreement+	regional	global	

Technical support

Second-tier keywords	Third-tier keywords			
“technical support”	veterinar(y/ian)	water	electricity	internet
	appropriate	equit(y/able)		
	access+	health OR	education OR	market
	“herder to herder”	exchange	visit	
	administration	voting	legal	
	financial+	credit	loan	
“ecosystem service”	certification+	(eco)tourism	“traditional products”	
“access to develop(ment)”	access+	extension	service	
	budget+	government	research	donor
	pastoralist+	association+	budget	
	“aid effectiveness”			
	“cost of inaction”			
	adaptive OR	applied+	research	
“grazing management”	mobility			

Appendix 2: List of global assessments reviewed

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Appendix 3: The databases and websites

Review conducted August 2018:

Availability	Database	Dataset	GIS portals	Knowledge repository
High (5)	Land Portal			X
	International Livestock Research Institute (ILRI)	X		
	Pastoralist Knowledge Hub			x
	Global Livestock Production Systems in Rangelands - (pdf)			x
	World Initiative for Sustainable Pastoralism			x
Medium (16)	Landscape Assessment, Inventory and Monitoring (AIM)	X		
	US Forest Service Geospatial Data	X		
	Legislation on Pastoralism			X
	Eurostat	X		
	AMMA-CATCH Observatory	X		
	Jornada Rangeland Research Program (DIMA)		x	
	WOCAT - Global Sustainable Land Management Database	X		
	FAOSTAT: Emission - Land use	X		
	FAOSTAT: Emissions - Agriculture	X		
	FAOSTAT: Input	X		
	Convention on Biological Diversity (CBD)			X
	World Agroforestry Centre (ICRAF)	X		
	The International Center for Agricultural Research in the Dry Areas (ICARDA)			X
	Global Rangelands			x
	United Nations Statistics Division (UNSD): Land and Agriculture	X		
	FAOSTAT: Agri-Environmental Indicators	X		
Low (12)	World Database of Key Biodiversity Areas	X		
	Organisation for Economic Co-operation and Development (OECD) Country data	X		
	Globally Important Agricultural Heritage Systems (GIAHS)			X
	UNESCO - World Heritage List	X		
	Agriculture Science and Technology Indicators (ASTI)	X		
	Threats to species and habitat, IUCN RedList	X		
	World Protected Areas	X		
	UN Environment live			x
	Malaria Database	X		
	International Food Policy Research Institute (IFPRI)	X		
	Nomadic Peoples Commission			x
No hits (59)	Statistical Data Warehouse - Food and Agriculture Organization (FAO)	X		
	AIDS Information database	X		
	Air Pollution Database	X		
	The African Union Inter-African Bureau for Animal Resources (AU-IBAR)			X
	Climate Research Unit (CRU) database	X		
	ILO Global Wage Database	X		
	National Accounts Main Aggregates Database, UNSD	X		
	United Nations Department of Economic and Social Affairs (UN DESA) - World Urbanisation Prospects	X		
	UN DESA Population Prospects 2017	X		
	UN Inter-agency Group for Child Mortality Estimation	X		

UN: Trends in International Migrant Stock Database	X		
UNESCO Institute for Statistics (UIS)	X		
United Nations Office on Drugs and Crime (UNODC): Crime and criminal justice database	X		
UNSD: Biodiversity	X		
World Health Organization - Global Health Observatory (WHO-GHO)	X		
Women in National Parliaments	X		
World Development Indicators (WDI)	X		
World Economic Outlook database	X		
OECD Aid GEG	X		
FAOSTAT: ASTI R&D	X		
FAOSTAT: Emergency Response	X		
FAOSTAT: Food Balance	X		
FAOSTAT: Food Security	X		
FAOSTAT: Forestry	X		
FAOSTAT: Investment	X		
FAOSTAT: Macro-Statistics	X		
FAOSTAT: Population	X		
FAOSTAT: Prices	X		
FAOSTAT: Production	X		
FAOSTAT: Trade	X		
World Energy Outlook 2016	x		
Greenhouse Gas Inventory, United Nations Framework Convention on Climate Change (UNFCCC)	X		
Mortality Database	X		
Carbon Dioxide Information Analysis Center (CDIAC) database	X		
Foreign Direct Investment Statistics	X		
Social Protection Database, International Labour Organization (ILO)	X		
Millennium Development Goals (MDGs) Indicators Database	X		
Emissions Database for Global Atmospheric Research (EDGAR)	X		
Employment by sector - ILO modeled estimates, Nov. 2016	X		
International Telecommunication Union (ITU)	X		
Montreal Protocol Data Access Centre	X		
UN COMTRADE International Trade Statistics Database	X		
UN Stats - Demographic and Social Statistics	X		
United Nations Development Programme (UNDP) Human Development Reports	X		
UNSD: Air and Climate	X		
UNSD: Air Pollution	X		
UNSD: Energy and Minerals	X		
UNSD: Forests	X		
UNSD: Governance	X		
UNSD: Inland Water Resources	X		
UNSD: Marine and Coastal Areas	X		
UNSD: Natural Disasters	X		
UNSD: Waste	X		
World Trade Organization: International trade database	X		
Resource Efficiency Indicator Database	X		
OECD - Official development assistance (ODA)	X		
AQUASTAT	X		

	WAHIS (World Animal Health Information Database)	X		
	Territorial waters claims	X		
	World Nuclear Association Database	X		
Under construction (4)	Global Agenda for Sustainable Livestock			X
	Sustainable Development Goal 16 Data Initiative			X
	Geoglam Rangeland and Pastoral Productivity		x	
	Land Resource Planning Toolbox			X
Offline (4)	Global Land Degradation Information System (GLADIS)		x	
	Emergency Events Database - EM-DAT - no access	X		
	P4D (Pastoralist-driven Data collection)	X		
	United Nations World Tourism Organization (UNWTO) - no access			x
	100	81	3	16

Appendix 4: Global and regional pastoralist organisations

Alliance for Food Sovereignty in Africa
Arabian Pastoralist Communities Network "Pasto-Arabic"
Asociación Internacional de Productores y/o Criadores de Camelidos Sudamericanos (International Association of South America Camel Producers & Breeders)
Association of World Reindeer Herders
Association pour la Promotion de l'Elevage au Sahel et en Savane (Association for Promoting Livestock Husbandry in the Sahel and the Savanna)
Association Tin Hinane
Confederation of Traditional Herder Organizations in Africa
Eastern and Southern Africa Pastoralist Association
European Shepherds Network
Pastoralists Assembly of Central Asia
Red Pastoraméricas
Regional Pasture Knowledge Exchange Network
Réseau Billital Maroobé (BM Network)
Réseau des organisations paysannes et de producteurs agricoles de l'Afrique de l'Ouest (Network of Organisations of Peasants and Agricultural Producers in West Africa)
Réseau des Peuples Pasteurs du Sahel (Network of Pastoralist Peoples in the Sahel)
South Asia Pastoralist Alliance
Tawaangal Pastoralisme
World Alliance of Mobile Indigenous Peoples
World Pastoralist Association
World Yak Herders Association

Appendix 5: Full recommendations from the respondents to the Survey Questionnaire

Recommendations for filling the gaps in information on pastoralists and rangelands

Enhance the availability of existing information

- Governments should make available basic disaggregated information about rangelands and pastoralists.
- Develop an online open-access platform that can facilitate knowledge management and information exchange between actors and make information widely available, also to pastoralists.
- Provide resources for bringing research information and workshop convenings, in a timely way, back to pastoralist communities affected.
- Find more efficient ways to disseminate information to pastoralists; for example, by sending information to people's cell phones. Information should target both genders and all generations, those who are illiterate and those who have started to lose touch with pastoralism.
- Require all publicly funded projects to disclose information they collect in an accessible and easy-to-search manner.

Broaden the understanding of pastoralism

- Increase awareness of decision-makers and the general public about the challenges of pastoralism and rangelands, the natural and cultural value of rangelands and pastoralism.
- Make available knowledge systems for rangeland management, including experience exchanges and good practice in land use and natural resource management.
- Better understand the effects of environmental change on pastoralist livelihoods and approaches to enhance the sustainability and resilience of pastoralism.
- Provide more information on the similarities and differences between pastoralist communities; present pastoralists as a heterogeneous group by showing the diversity in voices.
- Produce regular information booklets, brochures, and use of media including social media.
- Develop an accurate and up-to-date assessment of rangeland health/condition.
- Integrate and apply indigenous knowledge in all projects.
- Provide support for postgraduate studies collating, gathering and analysing information (MSc., PhD.)

Enhance pastoralists' voices

- Empower pastoral civil society and facilitate participation of pastoralists in local/ regional/ national decision-making.
- Build the capacity of pastoralist communities/organisations to collect, analyse, store and package information on pastoralism and rangeland management. Facilitate more interaction between researchers and pastoralists. [In this context, IFAD has a pilot ongoing with FAO Pastoralist Knowledge Hub and three pastoralist organisations in Chad, Mongolia and Argentina.]
- Include the voices of pastoralists in the design and implementation of projects in order to secure relevant and useful activities that can fill identified gaps in information and technical support.

Improve the quality of information

- Collect information through better and regular targeted surveys on the biophysical and socio-economic conditions of pastoralism and all types of rangeland, including distribution of pastures in time and space.
- Facilitate research and outreach that provide more accurate information on the most critical issues for pastoralists and rangelands.
- Facilitate more research on the distribution of resources within the pastoralist communities, e.g. who owns livestock.

Recommendations for filling the gaps in provision of technical support to pastoralists

Support education and capacity building

- Support all forms of education for pastoralists, including through post-secondary education and extension programmes.
- Organise informal sessions and small-scale hands-on workshops that also target pastoralists without formal education.
- Use exchange programmes, demonstration sites and household demonstrations as training tools for capacity building, for example, in livestock management.
- Develop veterinary credits programmes and training in holistic rangeland management for pastoralists.
- Develop rangeland management guidelines for pastoralists.

Strengthen empowerment and participation

- Enhance the capacity of pastoralist communities and organisations (especially with youth) to access technical knowledge and share it among their members.
- Develop training, exchange and inspirational programmes for indigenous pastoralist youth.
- Education of, by and for our people is key, so we educate our youth to stay in our communities and/ or in public management positions.
- Build local autonomous institutions operated by pastoralists (e.g. youth with pastoralist background and education) that can function as transboundary institutions between society and academia, between traditional indigenous knowledge and science, etc.
- Ensure that the voices of pastoralists are included and reflected in the design and implementation of projects and that the knowledge of the pastoralists is valued as much as the knowledge of external specialists in decision-making. [See the Ottawa Traditional Knowledge Principles of 2014, as jointly formulated by the indigenous organisations of the Arctic Council.]
- Build the capacity of locally based pastoralist organisations and enable them to establish and run self-sustaining service provision, for example, treatment and advisory centres.
- Develop mobile information resource centres that engage pastoralists where they live and work and that provide training in identified information gaps, for example, how to access markets/loans, how to complete applications, where to find different types of information.
- Recruit rangeland resources personnel from within the pastoralist communities.
- Ensure that pastoralists have a voice/say when decisions that concern them are taken.
- Get principal recognition from authorities that positive discrimination is a good means to achieve real equality – i.e. that extra measures towards pastoralists are needed.
- Put in place laws and policies that protect the rights of pastoralists.

- Herd structure and management etc. should principally be decided by herders, not “experts”, researchers or authorities.
- Enhance the role of pastoralism in a modern society in terms of culture, food and environment.
- Establish equitability between all pastoralists.
- Conduct the survey on pastoralists.

Improve coordination and relevance of support

- Use integrated approach to rangelands and pastoralists between different service providers (governmental and non-governmental).
- More long-term support and increased donor sensitivity and awareness of pastoral issues.
- Take local needs into account when developing support programmes.
- Share data among technical service providers to spend resources more efficiently.
- Increase support on M&E on pastoralism and rangeland.
- Participatory needs analysis / vulnerability analysis e.g. through Climate Vulnerability and Capacity Analysis (CVCA).
- More support needed for Coastal Countries Pastoralist Organizations.
- Provide a national-level helpline or knowledge hub.
- More specialist help.
- Follow modern learning approaches, such as the Pastoralist Field Schools (PFS) and the Agro-pastoral Field Schools (APFS).

Provide financial and legal support, markets and health

- Provide pro bono assistance for managing legal issues, including land title.
- Make more credit and resources available for pastoralist communities and organisations.
- Raise awareness of the need for investment in pastoralists and rangeland improvement.
- Increase allocations to veterinary care and market development and improve access to livestock markets and value chains.
- Long-term focus on primary health issues.
- Offsetting gaps with the economic impact they have on their systems.
- Make a comprehensive assessment of pastoralists’ dependence on subsidies.

Support rangeland improvement

- More focus on environmental protection, ecosystem restoration and enforcement of existing policies.
- Provision of sustainable rangeland, biodiversity management and watershed improvement.
- Support for a water and land information management systems programme.

Recommendations for how to involve pastoralists in the follow-up to this survey

Strengthen organisation and cooperation

- Build on existing knowledge and capacity of pastoralist organisations (that have access to Internet) and NGOs that work predominantly with pastoralists, avoid duplicating effort by creating new institutions where existing ones can play a relevant role, and focus on empowering pastoralist communities to “speak” and “act” for themselves. [FAO (Pastoralist Knowledge Hub) and IUCN (WISP) and to lesser

extent some NGOs/institutions (e.g. Savory Network) have developed networks/ newsletters/ mailing lists involving pastoralist organisations.]

- Work through in-country pastoralist networks and create local units that can be mentored by pastoralist organisations.
- Ensure pastoralists' true representation and ground-level inclusion in the identification of primary needs, planning action-oriented programmes, training of trainers, and as project partners.
- Conduct independent peer-reviewed scientific research in collaboration with pastoralists.
- Share information and maintain dialogue with pastoralist networks, grassroots organisations working on pastoralist wellbeing and development, local extension agents, livestock organisations and other pastoralism- and rangeland-related actors, e.g. the Arid and Semi-Arid Land (ASAL) Stakeholder Forum in Kenya, national drought management authorities.

Improve communication

- Conduct surveys in villages and in the native language, not online and in English.
- Establish country focal points who can translate reports and recommended actions into local languages and facilitate a two-way flow of information.
- Share the findings with pastoralist networks and resource centres, collect their feedback and engage them in brainstorming on the objectives that need to be achieved in order to ensure that their views are at the forefront of any development initiative in areas where they live.
- Share information through face-to-face workshops and meetings and make use of the strong informal networks within the pastoralist communities.
- Use social media, text messages, pastoralist cultural events, market places, etc. to share information and facilitate local discussions.
- Publish information in magazines targeting pastoralists.
- Use radio and telephones.