COMPETENCY MODEL FOR
SUSTAINABLE LIVESTOCK KEEPING

20
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Mongolian Agenda for Sustainable Livestock

MASL

Food and Agriculture Organization of the United Nations — SUSTAINABLE DEVELOPMENT GOALS

ХҮНС, ХӨДӨӨ АЖ АХУЙ ТОГТВОРТОЙ ХӨГЖЛИЙН ЗОРИЛГУУД

ХЭНИЙГ Ч ҮЛДЭЭХГҮЙ - ИЛҮҮ НЭХ

1 ЯДУУРЛЫГ УСТГАХ
Ядуу хүн амын 80% хөдөө орон нутагт амьдардаг

2 ӨЛСГӨЛӨНГ ЗОГСООХ
Бүгдэд хангалттай хүрэх хоол хүнс үйлдвэрлэдэг ч, 800 сая гаруй хүн өлсгөлөнд байна

3 ЭРҮҮЛ МЭНДИЙГ ДЭМЖИХ
Эрүүл мэнд шим тэжээлээс эхтэй

4 ЧАНАРТАЙ БОЛОВСРОЛЫГ ДЭМЖИХ
Шим тэжээлтэй хүнс нь суралцах чадварыг дэмжинэ

5 ЖЕНДЭРИЙН ЭРХ ТЭГШ БАЙДЛЫГ ХАНГАХ
Эмэгтэйчүүд хоол хүнсний үйлдвэрлэлд ижил оролцоотой ч тэдний газар өмчлөх эрх хязгаарлагдмал байна

6 БАТАЛГААТ УНДНЫ УС, АРИУН ЦЭВРИЙН БАЙГУУЛАМЖААР ХАНГАХ
Тогтвортой хөдөө аж ахуй үйлдвэрлэл нь усны хомсдлыг шийдвэрлэх боломжтой

7 СЭРГЭЭГДЭХ ЭРЧИМ ХҮЧИЙГ НЭВТРҮҮЛЭХ
Орчин үеийн хүнсний үйлдвэрлэлд шатах ашигт малтмалын оролцоо хэт их байна

8 ЗОХИСТОЙ ХӨДӨЛМӨР БА ЭДИЙН ЗАСГИЙН ӨСӨЛТИЙГ ДЭМЖИХ
ХАА нь хөгжиж буй орнуудын ДНБ-ний 1/4 эзэлдэг

9 ИННОВАЦИ БОЛОН ДЭД БҮТЦИЙГ ХӨГЖҮҮЛЭХ
ХАА-н өсөлт нь бага орлоготой улс орнуудын ядуурлыг 2 дахин бууруулах боломжтой

10 ТЭГШ БУС БАЙДЛЫГ БУУРУУЛАХ
Газрын шинэчлэл хийж алс, хөдөө нутгийн газрыг хууль ёсоор ашиглах боломжтой

11 ЭЭЛТЭЙ ХОТ, ИРГЭДИЙН ОРОЛЦООГ ДЭМЖИХ
Хөдөө орон нутагт хөрөнгө оруулж хотжилтийн асуудлыг зохицуулах боломжтой

12 ХАРИУЦЛАГАТАЙ ХЭРЭГЛЭЭГ ДЭМЖИХ
Үйлдвэрлэсэн хоол хүнсний 1/3 нь хорогдож эсхүл хаягддаг

13 УУР АМЬСГАЛЫН ӨӨРЧЛӨЛТИЙН ҮР НӨЛӨӨГ БАГАСГАХ
Хөдөө аж ахуй нь уур амьсгалын өөрчлөлтийг бууруулахад чухал үүрэгтэй

14 ДАЛАЙ ТЭНГИСИЙН НӨӨЦИЙГ ХАМГААЛАХ
Загас нь 3 тэрбум хүний өдрийн хэрэгцээний уургийн 20%-ийг хангадаг

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Дэлхийн хуурай газрын биологийн төрөл зүйлийн 80% нь ойд оршин байдаг

16 ЭНХ ТАЙВАН, ШУДАРГА ЁСЫГ ЦОГЦЛООХ
Өлсгөлөнг зогсоох нь энх тайван, тогтвортой байдалд нэмэртэй

17 ХӨГЖЛИЙН ТӨЛӨӨХ ТҮНШЛЭЛИЙГ БЭХЖҮҮЛЭХ
Түншлэл нь өлсгөлөнг зогсоох дуу хоолойг илүү хүчтэй болгоно

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INTRODUCTION

Mongolia has a longstanding tradition of pastoralism and livestock can rightly be considered the lifeline of Mongolia. The country one of most livestock-reliant developing countries in the world, with almost half of its population directly depending on transhumant livestock husbandry. Yet, the livestock sector faces numerous challenges and has changed much since the country opened for liberal markets in the 1990s. In addition to the problems Mongolian herders share with smallholders worldwide, pastoral systems must cope in particular with conflicts for land and water, economic and political exclusion, social (including gender) inequity, poor animal health and high risks of zoonotic diseases[1].

©instagram.com/erdenebulgan_photographer
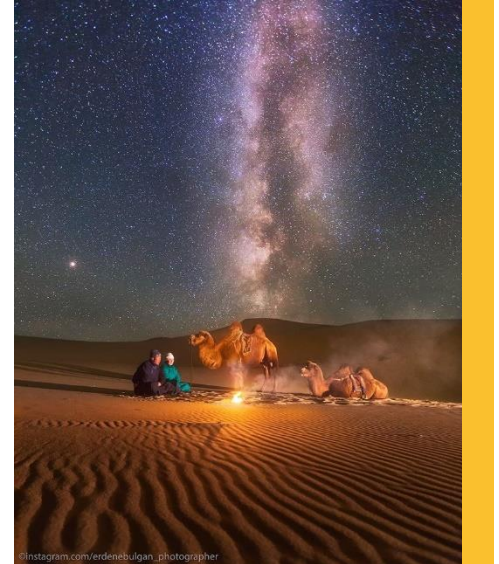
The challenges include in particular:

A Increasing frequency and severity of climate shocks including dzud and droughts in particular. Gradual warming and drying.

B Weak management and institutions for improving pasture.

C Exceeded livestock numbers and wide-spread overgrazing respectively leading to pasture degradation.

D Increasing urbanization including a lack of young herders in rural areas to preserve the cultural heritage of pastoralism.

E Neglecting traditional eco-friendly herding.

F Lack of knowledge and extension services for herders to adapt to changing environment and produce more sustainably.

? How to prepare herders for this fast-changing environment and the associated challenges ?

[1] https://ec.europa.eu/knowledge4policy/sites/know4pol/files/hlpe-report-10_en.pdf

Regulations of Mongolian transhumant livestock systems and pasture use rights and they had been found that closer relationship between the pastoral land use pattern and the political and economic changes of the country. Indeed the livestock husbandry and pasture use right regulators were granted by nobles, and lastly the national socialist central government. Strongly regulated socialist livestock husbandry system ended when Mongolia entered into democracy and open market economy in the early 1990s.
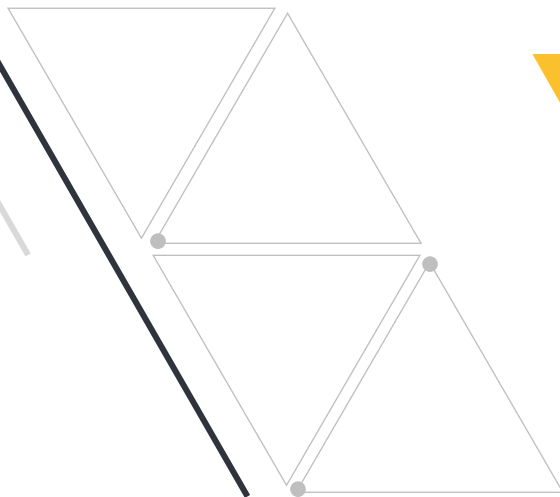
BRIEF HISTORY OF HERDING IN MONGOLIA

Mongolia is one of the few pastoral countries in the world with a 2000 to 3000 years old nomadic tradition. Livestock have been and still are an important sector in terms of social, environmental and economic development of the country.

It is important to understand that herders face various socioeconomic and environmental risks. Given that livestock are so closely linked to their livelihood, many herders search to mitigate those risks by increasing their livestock numbers. While this may appear as temporary relief, it often is only aggravating the vicious circle of overgrazing and environmental degradation, which threatens the very foundation of pastoralism in the long term.

Based on the MASL[2] action plan and aforementioned partners, we translated the MASL policy approach into practise on the ground. We received strong support, first and foremost, from the many herders themselves along with academicians, farmers, veterinarians, agronomists, policymakers and other experts in the livestock sector within and outside Mongolia. Thanks to their efforts, this document was possible and sets out the core competencies we consider crucial to keep livestock as lifeline for Mongolia alive. As such, this document is the first attempts to develop a normative document that aims to guide competency-based curricula and capacity building for herders in Mongolia.

These competencies were developed in a participatory manner and "tested against reality" by herders in the field[3] in their own working context. We are aware that the practises in pastoral livestock systems vary greatly within Mongolia and even more around the world. As such, this document does not claim to be comprehensive and applicable to all ecoregions of Mongolia, but we consider this a foundation to facilitate planning and implementation of capacity development for herders in the future. Related didactic approaches exist already on global level and can facilitate the development of curricula and training packages.

Principles

LEARNING
Learning is self-directed, problem-based and relevant in line with adult learning principles.

HERDING
The herd and the landscape are the main learning environments.

DISCOVERING
Discovery-based learning tools trigger a spirit of curiosity and innovation.

TRAINING
Trained facilitators guide the learning process, not by teaching but facilitating.

Naturally, this document relies on collective knowledge and innovation that we have gathered through a participatory learning approach. It will require the same though to be relevant and up to date in the future.

[2]You can connect with us at http://masl.mofa.gov.mn
[3]For example: Farmer field schools for small-scale livestock producers (FAO, 2018). The authors would like to add that the factor of mobility should be duly considered in capacity building activities for pastoralists as it bears on aspects such as the frequency and location of meetings.

How to prepare herders for the fast-changing environment and the associated challenges was the key question for the current document. Although many entities and their respective strategies are already committed to building a sustainable livestock sector at policy level, we noted the lack of consensus on core competencies for herders that allow for sustainability on the ground . The foundation of our efforts was the Mongolian Agenda for Sustainable Livestock (MASL), a high-level action plan developed through a multi-stakeholder process with support from the Global Agenda for Sustainable Livestock (GASL). The action plan was approved by the Ministry of Food, Agriculture and Light Industries and came into force in 2018. The action plan was unique in its nature since it was the first attempt to define livestock sustainability at policy level and bringing together local with global knowledge taking into account the UN Agenda 2030. Orchestrated through the action plan, a number of different partners came together including MoFALI, GAVS, UNDP, FAO, UNIDO, IFAD, SDC, GIZ, World Bank, ADB, JICA, SFA, Mercy corps, MULS, NAEC, NFPUG, WCS, WWF, CPR, GEF, KOICA, GCF, VETNET, and MoSARD.

DESK REVEIW

A desk review was undertaken between August and October 2020 and identified 42 different training programs for herders. The implementing entities included nine governmental organizations, 25 private organizations such as associations, non-governmental organizations and companies, and eight international organizations. These training institutions have different levels of training programs.

19%   21%

60%
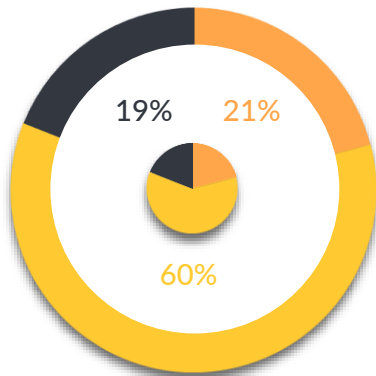
60% Non-governmental organization;
21% Governmental organization;
1 9% Project and Program implementation units

Trainings were conducted irregularly mostly during summer and autumn seasons. These training institutions have different levels of training programs. From the surveyed 42 organizations, 22 organizations are licensed to conduct vocational and business training, including the Technical and Vocational Education and Training Center (TVET), the Polytechnic College, some companies, NGOs, and other training centers. They issue "Certificates of Competence" to their graduates to certify that they have acquired the skills and competencies. The other 20 organizations do not have training licenses, but provide short-term animal husbandry training to local people and herders and issue certificates to participants.

The General Department of Labor and Welfare, an implementing agency of the Government of Mongolia, is organizing short-term capacity building trainings for young herders through its Labor and Welfare Service Departments in 21 provinces and 9 urban districts.

The National Center for Lifelong Learning (NCLC) has 355 branches nationwide, including 8 in the capital city, 19 in aimags, and 328 in soums. The NCLC provides life skills education to local citizens and herders in wide range of topics.

The Agriculture Research and development center (R&D center) under MoFALI's regulation operates agricultural extension (training-introduction-consulting) services across the country. The center has developed recommendations, handouts, and books for herders, and delivering them to herders throughout its local focal points.

Technical, Vocational Education and Training centers (TVETs) and **Polytechnic Colleges** are located in all provinces and densely populated soums and provide vocational education and training. Here, long-term training for "Herders" and "Farmers" is provided by professional lecturers/advisors in the form of classrooms and practical classes are organized in the field.

In addition, this type of training is organized by the School of Animal Science and Biotechnology of **the Mongolian University of Life Sciences**. The training participants are usually of mixed age groups, such as those who have been discharged from the military, or who are of military age, or interested in herding, or who want to become herders even after dropping out of school. International organizations mostly organize short term trainings via their specific pilot projects for herders with subjects of animal husbandry, environment and personal development.

Most trainings aimed at improving herders' knowledge related to pasture management, livestock health, feeding and intensive livestock management. A few trainings additionally covered household business development, small-scale entrepreneurship, and livestock breeding.

METHODOLOGY

This document was developed through a participatory approach with herders and a consensus process involving subject matter experts from the aforementioned MASL partners. In October 2020 the partners established the MASL Competency Model Development Workgroup. Based on consultations and a literature review, the partners agreed upon nine core competencies in the first stage. These competencies were based on the existing MASL goals and activities.

From there, the workgroup designed the structure of the model, developed descriptions of each core competency and defined competency domains, subdomains, and specific performance indicators[4]. The set of verbs describing observable and measurable actions within the indicators of performance are based on bloom's taxonomy[5]. The resulting model was piloted with herders in ider soum in zavkhan aimag (province) before and reviewed by relevant technical experts in Mongolia before finalization*.

SCOPE

The purpose of the document is to outline the essential competencies needed by herders to manage livestock sustainably in the Mongolian context. However, we recognize that there are additional and often very specific learning needs for pastoralists[6]. This document is not covering all livestock systems but those in the selected pilot area in Mongolia. The document further addresses herders and not the entire community, but we recognize that pastoral livestock systems involve a great amount of manual labour that is frequently performed by the entire family (men, women and children). Lastly, this document has been written for pastoralists as previously defined. However, we are aware of the debate on the

term given the growing sedentarisation as the result of various factors including non-adapted policies, strict political constraints and an often inevitable modernisation process or an adaptation to changed frame conditions. However, we do not consider the settlement a crisis of pastoralism but simply another approach to cope with a changing environment[7]. The document takes into account the five principles of sustainability (FAO) and ten elements of agroecology[8] (Agroecology Knowledge Hub) as well as the One Health approach and the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security[9].

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[4]The authors recognize that the performance indicators are by far not comprehensive. We consider them starting points and used on purpose specific examples and resources to ensure a common understanding and to facilitate the development of related training material.

[5]http://www.northeastern.edu/nuolirc/wp-content/uploads/2018/01/Blooms-Taxonomy-Handout.pdf

[6]Such as access to education, changing food consumption patterns, mobility, health services, etc.). A good introduction into the topic can be found here: https://unesdoc.unesco.org/ark:/48223/pf0000232422

[7]We would like to highlight though that the "changing environment" is not given as such, but comes from" human "choices, like policies. More information about this and the 'end of nomadism' has been well researched for inner Asia by Caroline Humphrey and David Sneath (1999): https://www.dukeupress.edu/the-end-of-nomadism.

[8]Agroecology is an integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. http://www.fao.org/documents/card/en/c/I9037EN

[9]http://www.fao.org/cfs/home/activities/vggt/en/#:~:text=The%20Voluntary%20Guidelines%20on%20the,poverty%2C%20 20supporting%20sustainable%20development%20and

INTENDED USE

We would like to encourage everybody to share their experiences[10] and convince all those involved in workforce development in the livestock sector to consider these competencies in the design of training programmes and curricula.

This includes also bodies responsible for the accreditation of sustainable livestock worldwide that may find inspiration and want to integrate these competencies into their practises and curricula requirements.

Furthermore, the Model can be used by national authorities from all sectors and disciplines, including by policy-makers, regulatory agencies and educational institutions, as well as other stakeholders such as donors, nongovernmental organizations and private sector organizations. The Model may be particularly used for:

Workforce development: as a standardized reference for capacity building for herders

Programme development: as a foundation for learning programmes directed at herders

Specific job descriptions: as guidance in writing standardized job descriptions (by implementers)

Needs assessment: as guidance in developing a tool for self-assessment, observer assessment or a combination of both to identify individual or group needs and guide staff development planning.

Self-assessment: as guidance for individuals (herders, trainers, livestock professionals, etc) in assessing their current level of knowledge, skills and abilities, identifying areas in need of improvement, and planning for achieving higher levels of proficiency.

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[10]Knowledge sharing culture is the bread and butter of an organization, regardless of whether it's a small business or a well-organized team. https://www.knowledgebase-script.com/kb/article/how-to-encourage-knowledge-sharing-at-workplace-214.html

MODEL DESIGN
CORE COMPETENCIES

1		Managing Natural Resources
2		Managing Pastureland
3		Taking Care of Livestock
4		Processing Livestock-Based Products
5		Using Innovative Technologies
6		Becoming an Entrepreneur
7		Building and Maintaining Partnership
8		Managing Risks
9		Thinking Globally

Each competency model is structured as

CORE COMPETENCY DESCRIPTION:

A combination of the knowledge, skills and abilities that are critical to perform a task effectively (for example, "1. Managing Natural Resources").

DOMAIN:

A discrete component of a core competency (for example, "Water").

SUBDOMAIN:

A subcomponent of a domain (for example, "Water cycle").

PERFORMANCE INDICATOR

The capability to apply an integrated combination of knowledge, skills and attitudes to perform a task in a given context.
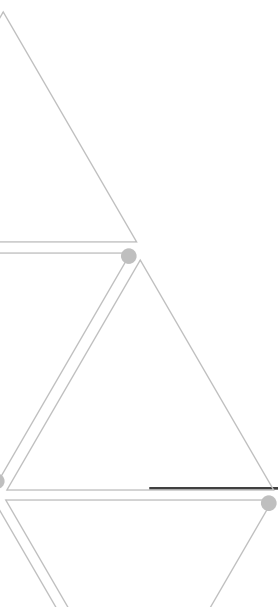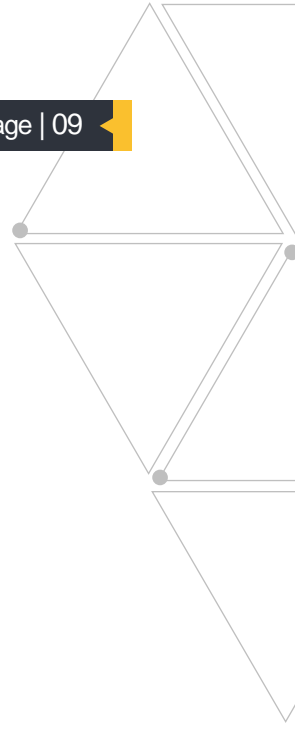
COMPETANCY 1
MANAGING NATURAL RESOURCES

Knowledge, skills and abilities to manage natural resources such as water, soil, and nutrients. This includes principles of sustainability, climate change and the institutional environment. Pastureland is covered separately under competency 2.

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
1.1 Resource principles	1.1.1 Natural resources	a. Define a natural resource and give examples from your local context. b. Distinguish renewable and non-renewable resources. c. Explain or show which natural resources are particularly important for herders.
	1.1.2 Ecosystem	a. Define an ecosystem and give examples of ecosystem services (e.g. clean water, air and food). b. List living and non-living components of an ecosystem (e.g. animals, plants, air, water, sun, soil) c. Provide an example of disruptions in food webs in your local context (e.g. deforestation for livestock → decrease in bird population → increase in insects/rodents on pasture). d. Discuss how livestock can affect ecosystems and provide positive and negative examples in your local context.
	1.1.3 Ecosystems under changing climate	a. Explain how climate change can affect ecosystems and the natural resources around you. b. Give examples of implications and priorities to fight climate change in Mongolia[1]. c. Explore comparative advantages of livestock production in your local context (e.g. pastoral systems are more adaptable to increasing climate and environmental variability as opposed to other systems rooted in the ground, i.e. immobile livestock or cop-based systems).
	1.1.4 Biodiversity	a. Define biodiversity and explain why it is important for herders. b. Identify examples of a positive and negative impact of herding on biodiversity and related ecosystem services (e.g. soil formation, nutrient storage and cycling).

[11] https://www.greenclimate.fund/sites/default/files/document/mongolia-country-programme.pdf

1 Managing Natural Resources

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
1.2 Water	1.2.1 Water cycle	a. List the main stages in the water cycle (evaporation, condensation, precipitation and collection). b. List three ways of how water moves across and through the land (surface runoff, infiltration, evaporation). c. Explain how precipitation and evaporation can effect herding.
	1.2.2 Water management	a. Describe consequences of excessive water flows (for example flooding, erosion, pollution or mudslides) and the lack of water (drought). b. Identify possible ways to use water more efficiently in your local context (e.g. rainfall capturing, contour trenching, trees, healthy soil, dams). c. Develop an example of how to organize a river water usage with respect to upstream and downstream users.
1.3 Soil		a. Identify different types of soil (sand, silt, clay and loam) and explain their main characteristics. b. List causes for soil erosion (weather, slopes, poor soil cover, soil type, excessive use). c. Measure the top soil (e.g. by digging a hole) and interpret the result. d. List livestock herding factors than can affect the soil positively and negatively (e.g. grazing intensity, timing, livestock types, stocking rate, manure management). e. Discuss sustainable soil management practices in your local condition. f. Propose one new example for improving soil organic matter management in your local context (e.g. dead plant soil cover, mulching).
1.4 Pasture		a. Explain how farming and pasture developed over history in relation to grazing animals. b. List criteria that can be used to evaluate pasture (e.g. soil type, plant growth, biodiversity, morphology, water, pest abundance). c. Share your opinion about the state of pasture in Mongolia[12] and in your local context. d. Discuss solutions for herders in the case of pasture degradation.
1.5 Other resources	1.5.1 Wildlife	a. Explain the importance of wildlife conservation in an ecosystem. b. Give examples of connections between wildlife and livestock (e.g. grazing overlapping, predators taking out sick animals).

[12] https://www.eda.admin.ch/dam/countries/countries-content/mongolia/en/Mongolia-Rangeland-health-Report_EN.pdf

1   Managing Natural Resources

1.5 Other resources	1.5.2 Forests	a. Explain the role of forests in an ecosystem. b. List opportunities of forests for livestock herding (e.g. trees as forage, carbon sequestration, silvo-pastoralism[13]). c. Discuss strategies for reforestation and using existing forests more sustainably in your local context.
1.6 Nutrition cycles		a. List important nutrients in an ecosystem (e.g. water, carbon, nitrogen). b. Illustrate a nutrient cycle of importance in your local context (considering connections between soil, plants, animals, food/feed, manure, etc.)
1.7 Resource depletion		a. List examples of resource depletion (e.g. groundwater depletion, deforestation, mining for minerals, pollution or contamination of resources, slash-and-burn agricultural practices, soil erosion). b. Describe signs and risks for soil depletion (e.g. bare soil, gullies, exposed plant roots, heavy rain turns streams muddy). c. Discuss practical ways to tackle resource depletion in your local context.

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[13] http://www.fao.org/3/ca2792en/ca2792en.pdf

COMPETANCY 2
MANAGING PASTURELAND

Knowledge, skills and abilities to manage pastureland including plants, grazing management, protection and pasture improvements.

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
2.1 Principles	2.1.1 Plant diversity	a. List different plants commonly found on pasture. b. Explain the value of plant diversity (biodiversity). c. Identify desirable and non-desirable plants (weeds) in your local context. d. Give examples of pasture management practises that increase plant biodiversity.
	2.1.2 Plant growth cycle	a. Outline the seasonal plant growth cycle in your local context. b. Describe livestock species-specific preferences for plants (e.g. via plant palatability) and how it can affect plant growth.
2.2 Pasture improvements	2.2.1 Management specifics	a. Explain the differences between traditional and current pasture management approaches. b. List key factors for good pasture management (e.g. balance forage supply with livestock demand, distribute grazing pressure, exposure time, pasture resting). c. Define and calculate the pasture carrying capacity for a given scenario (also in sheep units). d. Define pasture rotation and explain its importance for pasture and livestock. e. Give examples of livestock species-specific differences in grazing behaviour (e.g. grazing frequency, cover zone, palatability). f. Explain general nutritional requirements for grazing different livestock species in your local context. g. Visualize different ways to organise pasture rotation in your local context. h. Discuss adaptions of pasture management in times of climate and environmental change. i. List common results of overgrazing (e.g. erosion, habitat destruction, soil compaction, reduced biodiversity). j. Discuss positive and negative examples of pasture management (e.g. pasture carrying capacity exceeded; incorrect exposure time between livestock and pasture pasture diversity disturbed; exceeded amounts of manure on pasture/corrals).

2 Managing Pastureland

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
2.3 Pasture conservation	2.3.1 Principles	a. Define pasture conservation[14] and explain how it is different from traditional pasture management (e.g. closer monitoring, selected grazing species). b. Evaluate different grazing species and their effect for pasture conservation and restoration. c. Discuss pasture conservation and restoration approaches in your local context.
	2.3.2 Pasture improvement	a. Explain the importance of reserve pasture. b. Discuss traditional methods to improve pasture conditions. c. Select criteria to measure the effectiveness of pasture improving methods.
	2.3.3 Resting/Otor reserve pasture	a. Explain why the pasture requires resting. b. Explain how to reserve a pasture used during winter and spring seasons taking into account regulations and legal requirements.
	2.3.4 Pasture hygiene	a. Explain why pasture hygiene is important (e.g. to decrease parasite pressure). b. List ways to improve pasture health (e.g. rotation, mixed species grazing, removal of droppings). c. Discuss how to organize pasture hygiene and management in the community (e.g. through pasture user groups, cooperatives or herder communities).
2.4 Institutional environment		a. Compare the current pasture management in your context against existing frameworks or guidelines (e.g. Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security[15]. b. Evaluate current regulations relevant for pasture management in terms of sustainability (e.g. transhumance restrictions may increase the risk for social conflict or overgrazing). c. Discuss how to improve the institutional environments including regulations and institutions (e.g. at local or national level).
2.5 Feed preparation		a. Explain how to harvest and store grass (e.g. hay, silage). b. Discuss why it is important to prepare and store feed.
2.6 Alternative fodder sources		a. List examples of alternative fodder crops to cultivate (e.g. alfalfa, barley, oat and maize). b. Discuss the feasibility and use of fodder crops in your local context.

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[14] A synonym for conservation grazing is "targeted grazing", a term introduced in this handbook:
https://www.webpages.uidaho.edu/rx-grazing/Handbook/ASITargetGrazingBook2006.pdf
[15] http://www.fao.org/3/i2801e/i2801e.pdf

COMPETANCY 3
TAKING CARE OF LIVESTOCK

Knowledge, skills and abilities to manage livestock including animal health, welfare as well breeding and feeding aspects.

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
3.1 Animal Husbandry	3.1.1 Principles	a. List the basic needs of animals (e.g. exert natural behaviour, clean housing, fodder, animal contact). b. Distinguish standard behaviour of different livestock species from abnormal behaviour and how it can be influenced by caretaking. c. Give examples of different animal husbandry systems and their respective use (e.g. meat, milk, hides, skins, fibre, transport, draught power).
3.2 Animal health	3.2.1 Principles	a. Assess the physical condition of an animal (e.g. through body condition scoring). b. Describe or demonstrate how to recognise unhealthy from healthy animals.
	3.2.2 Disease prevention	Give examples of ways to prevent animal diseases (e.g. cleanliness, housing, isolation of sick animals, vaccination, deworming, other medication).
	3.2.3 Common livestock diseases	a. List common livestock diseases (e.g. FMD, PPR, brucellosis). b. Select one disease relevant in your local context and describe briefly the aetiology, pathogenesis, clinical signs, diagnosis and treatment.
	3.2.4 Zoonosis	a. Define a zoonosis and give examples of zoonotic diseases. b. Illustrate the transmission cycle for a zoonotic disease in your local context including hosts and vectors (e.g. wildlife, insects, ticks, food).) involved in the transmission. c. Describe suspicious signs of zoonotic diseases in animals and human (e.g. for brucellosis). d. Discuss appropriate measures and reporting requirements in case of zoonotic outbreaks.
	3.2.5 Equipment	a. List standard equipment to ensure the health of livestock (e.g. thermometer, mastitis testing, hoof trimming, disinfectant/sterilizing material, castration rings, forceps, trocar). b. Select one item and explain when and how to use it.

3   Taking Care of Livestock

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
3.2 Animal health	3.2.6 Rational use of veterinary drugs	a. Give examples of situations in which veterinary drugs are indicated. b. Describe a situation of inappropriate use of veterinary drugs. c. Explain the risks of inappropriate use of veterinary drugs (e.g. increased severity of infection, legal implications of illegal purchase or self-medication, antimicrobial resistance, residues in livestock products). d. Discuss the current regulations and guidelines for responsible use of veterinary drugs.
	3.2.7 Antimicrobial Resistance (AMR)	See competency 9.
	3.2.8 Veterinary services and regulations	a. Describe the veterinary public health system in your local context (e.g. veterinary services, roles, schedules). b. List notifiable and reportable diseases and explain why reporting is important. c. List other relevant regulations for animal health, welfare and animal movement within and across soum[16] levels (e.g. law on animal health). d. Discuss important veterinary public health issues in your local context (e.g. transboundary animal diseases, foodborne diseases, food hygiene, emerging diseases).
	3.2.9 Animal welfare	a. Define animal welfare (e.g. OIE definition/codes). b. List signs of poor animal welfare (e.g. beating, permanent tethering, starving). c. List consequences of poor animal welfare (e.g. stereotypy/misdirected behavior; failure in sexual and/or parental behavior; apathy or hysteria). d. Explain why animal welfare is important (e.g. productivity, ethics, consumer demand). e. Discuss how you can improve animal welfare conditions in your local context.
	3.2.10 Biosecurity	a. Define biosecurity and explain why it is important for herders. b. Describe a situation in your local context that poses a risk for biosecurity (e.g. introduction of new animals or imported feed/swill, visitors). c. Give examples to reduce biosecurity risks (e.g. isolate new or sick animals, vaccination, limit contact with wildlife, report outbreaks, safe carcass disposal).

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[16] A soum (Mongolian) is a second level administrative subdivision of Mongolia (comparable to district in English)

3 Taking care of livestock

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
3.3 Animal breeding		a. Explain the purpose of animal breeding. b. Identify criteria to select a breeding animal (e.g. health, fertility, milk yield, locally adopted). c. Draw a comparison table with two given breeds and decide which one fits better into your herd. d. List cross-breeding methods. e. Describe briefly the breeding strategies approved by MoFALI[17]. f. Discuss the possibility of community-based breeding programs in your local context (as compared to centralized national breeding schemes). g. Create a nucleus and male flock management for cattle, sheep and cashmere goat. h. Explain the value of genetic diversity as compared to genetically homogenous herds (e.g. adaptive potential in face of climate variability and disease events, changing market preferences, cultural heritage). i. Compare the advantages and disadvantages of artificial insemination.
3.4 Animal feeding		a. Identify feed types relevant in your local context including forage (grasses and legumes) and fodder crops. b. Select appropriate forages/feed for each type of livestock and production stage respectively (e.g. pregnancy, growth). c. Explain the importance of mineral requirements for animals. d. Give examples of how animals can cover mineral requirement (e.g. naturally and supplementary). e. Describe the comparative advantage of ruminants from a feeding point of view (ruminants and their microbes are able to convert plant material into food products edible to humans).
3.5 Herd management		a. See competency 2 for principles in grazing management with livestock. b. List parameters to describe herd management dynamics (e.g. replacement rate, fertility, mortality) c. Discuss how to create a viable flock in the long-term (e.g. changing herd composition adopted to conditions; for example investing goats for short-term restocking and while camels provide more long-term viability).
3.6 Animal husbandry services	3.6.1 Livestock services	a. Give examples of livestock related services that exist in your local context. b. Select one service that may help to improve your herding.

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[17] Ministry of Food, Agriculture and Light Industry in Mongolia

3 — Taking care of livestock

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
3.7 Livestock handling, equipment and housing	3.7.1 Common practices	a. Demonstrate how to handle and restrain a livestock species of your choice in a safe manner. b. Select one common practise and explain how to perform it correctly (e.g. castrating, branding, taming, catching, restraining, birth assistance, administer medication, hoof care, dehorning). c. Explain the relationship between good handling and productivity (e.g. in terms of reduced stress, animal welfare, occupational safety, meat quality). d. Discuss how to minimise stress in livestock handling in your own context.
	3.7.2 Housing/ shelter	a. Describe the importance of animal shelter. b. List requirements for shelter for different livestock species (e.g. in terms of size, temperature, light). c. Describe portable corrals and discuss potential benefits in your local context.

COMPETANCY 4
PROCESSING LIVESTOCK BASED PRODUCTS

Knowledge, skills and abilities for the domestic processing of livestock-based products (food and non-food) with emphasis on slaughtering, processing, conservation and related safety and quality standards.

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
4.1 Livestock slaughtering		a. Describe how to prepare livestock for slaughter. b. List conditions that would contradict slaughter (e.g. drug withdrawal periods, visual sign of disease). c. Give examples of conditions before and/or after slaughter that may compromise the quality and safety of animal products. d. Describe and evaluate the use of a tripod stance for slaughter in your local context.
4.2 Livestock products processing	4.2.1 Meat	a. Describe common meat processing processes and products in your own context. b. List risks of domestic meat processing in terms of your own and consumer health. c. Discuss how to improve meat processing in your local context.
	4.2.2 Dairy	a. Describe common domestic milk collection and processing methods. b. List important aspects to ensure safety and hygiene. c. Discuss the possibilities to produce new dairy products in your local context (e.g. cheese, yoghurt). d. Evaluate the possibility for new dairy processing technologies at sum level. e. Give examples of making homemade dairy products more marketable (considering consumer preferences).
	4.2.3 Wool and hair	a. Describe common methods tio harvest fibres and evaluate advantages and disadvantages. b. Explain or demonstrate fibres shearing methods including traditional and non-traditional techniques[18]. c. Experiment with new fibres shearing techniques and machines. d. Give examples of methods to sort, package and grade different types of fibres. e. Explain why sorting is important.

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[18] https://learning.rdili.edu.mn/

4 Processing Livestock-Based Products

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
4.2 Livestock products processing	4.2.4 hides, skin & other products	a. Describe common methods and evaluate advantages and disadvantages for skinning animals. b. Give examples of methods to improve the skinning process (e.g. tripod stance, proper knifes). c. Preserve (curing) and prepare hides and skins for tanning. d. Discuss how to improve the use of hides, skin and other livestock products such as bones, horn, etc. (e.g. for leather, bridles and saddles, fertilizer, buttons).
4.3 Food Safety and Quality	4.3.1 Principles	a. Define food safety and quality. b. Recognize safety and quality requirements for meat and dairy products. c. Give an example of unsafe food preparation and a related foodborne disease in your local context. d. List simple measure towards safer food (e.g. keep clean; separate raw and cooked; cook thoroughly; keep food at safe temperatures; use safe water and raw materials[19]).
	4.3.2 Food packaging	a. Describe the use of food packaging and labelling. b. List potential ways to package, label and store food for the market and in your local context.
	4.3.3 Traceability	a. Describe traceability in the context of livestock and related products. b. Discuss the benefits of traceability for livestock.
	4.3.4 Legal environment	List relevant standards and regulations for anybody operating with food (including as producer, processor or trader[20]).
4.4 Waste management		a. List pollutants that can arise from livestock keeping (e.g. carcasses, manure, fat, hides as well as contaminated water, air, drug residues) b. Explain why proper disposal of animal carcasses is important. c. Describe the proper discharge of wastewater from slaughter, tanneries or dairy processing[21]. d. Give examples of negative impacts from livestock related waste in your local context (e.g. poorly managed manure, eutrophication water bodies) e. Select a waste management issue in your local context and discuss potential solutions. f. Discuss how to build an environmentally friendly toilet. g. Describe the impact of poorly managed manure on the environment and list exampels to use manure more sustainably (e.g. active manure management, application, composting, anaerobic digestion for biogas production, fuel).

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[19] https://www.who.int/publications/i/item/9789241594639

[20] This may include national, regional or international references (e.g. trade agreements, Codex, etc.)

[21] http://www.fao.org/3/X6114E/x6114e03.htm#b5-1.2.1.%20Wastewater

COMPETANCY 5
USING INNOVATIVE APPROACHES

Knowledge, skills and abilities to apply innovative approaches to the management of livestock, including specifically digital devices and services as well as concepts of continuous education.

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
5.1 Principles		a. Describe innovation and why it is important. b. Give example of innovation in pastoral context (at technological but also other levels such as social or economic levels). c. Discuss barriers and obstacles to innovation as well as resources and opportunities in your local context.
5.2 Approaches	5.2.1 Climate-smart agriculture	a. Describe climate-smart agriculture[22]. b. Outline ideas that you could use in your local context to increase resilience to climate change[23] and related shocks.
	5.2.2 Low carbon livestock	a. Describe low-carbon livestock[24] and why it is important? b. List the three main greenhouse gases emitted by livestock. c. Give an overview of practical actions to reduce the carbon footprint in your local context (e.g. improving efficiency through feeding, diversify pastures and forage supply, adjust grazing pressure, improve recycling, integrate by-products).
	5.2.3 E-agriculture	a. Describe information and communication technologies (ICTs). b. Explain the benefits of ICTs in the wider context of e-agriculture[25]. c. Give examples of e-agriculture related activities or ideas in your local context (e.g. GPS tracking devices for livestock, remote-sensing services, mobile access to information, cloud computing). d. Highlight concerns that may arise with e-agriculture (e.g. dependency, cybersecurity, data confidentiality, labour replacement, digital divide). e. Discuss possibilities to implement e-agriculture approaches into your local context. f. Outline livestock equipment and digital devices (e.g. GPS collars).
	5.2.4 (GAP) Good agricultural practice	Describe the concept of GAP[26] and list examples in your local context.

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[22] http://www.fao.org/3/a-i4226e.pdfhttps://www.adb.org/sites/default/files/publication/31145/making-grasslands-sustainable-mongolia.pdf
[23] FAO e-learning course on climate change: http://www.fao.org/climatechange/67624/en/
[24] http://www.fao.org/3/ca7089en/ca7089en.pdf
[25] http://www.fao.org/3/a-i6909e.pdf; http://www.fao.org/3/ca4985en/ca4985en.pdf
[26] https://www.apo-tokyo.org/publications/wp-content/uploads/sites/5/Manual-on-Good-Agricultural-Practices-2016.pdf

5 Using Innovative Technologies

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
5.2 Approaches	5.2.5 Nutrition-sensitive agriculture	a. Describe nutrition-sensitive agriculture[27]. b. Give examples that underline the importance for more nutrition-sensitive agriculture (e.g. malnutrition, micronutrient deficiencies, diet-related diseases like diabetes). c. Discuss how to make agriculture and food systems more nutrition-sensitive in your local context.
	5.2.6 Organic agriculture	Describe the principles of organic agriculture (e.g. health, ecology, fairness).
	5.2.7 Renewable energy	a. Describe renewable energy[28] sources and explain why they are important. b. Give examples of current or new ways to integrate renewable energy into your local context.
	5.2.8 Participatory approaches	a. Describe participatory approaches[29] and give examples in your local context (e.g. learning, health surveillance, governance, resource management, rapid rural appraisal). b. Discuss opportunities to improve the participation of herders in public debate and decision-making process.
5.3 Digital Technologies [30]	5.3.1 Weather forecast	a. Explain the use and give examples of sources for weather forecast. b. Interpret weather forecast information and draw conclusions to plan your activities accordingly.
	5.3.2 Price information for livestock goods	a. Provide examples of price information sources (e.g. hotline 109 for herders) b. Access the current market prices for livestock products such as wool, cashmere, meat and milk.
	5.3.3 E-commerce	a. Describe e-commerce and give examples of how it is used (e.g. buying or selling online, cash transfer, supply chain management, marketing, data collection). b. Discuss the benefits of e-commerce in your local context[31] (e.g. sell foods or handmade products, find breeding animals).
	5.3.4 E-governance services	a. List different state organizations and their respective types of services online that are important in your local context.

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[27] http://www.fao.org/3/a-as601e.pdf

[28] http://www.fao.org/3/a-i5125e.pdf and https://gggi.org/site/assets/uploads/2017/11/2015-02-Strategies-for-Development-of-Green-Energy-Systems-in-Mongolia-2013-2035.pdf

[29] https://www.unescap.org/sites/default/files/pub_2308_part1.pdf

[30] http://www.fao.org/3/ca4887en/ca4887en.pdf

[31] Examples from Mongolia include https://www.taliinmongol.mn/product/available.html or https://www.facebook.com/khuvsgullake/?rc=p

5 Using Innovative Technologies

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
5.3 Digital Technologies	5.3.4 E-governance services	c. Demonstrate how to access services of the state organizations through e-governance services[32]. d. Describe the concept of Grievance Redress Systems[33]. e. Demonstrate how to use it for a given example in your local context.
5.4 Lifelong Learning	5.4.1 Principles	a. Describe lifelong learning and why it is important. b. Give examples of different ways to learn at an individual level. c. Explore your strong and weak spots and how to improve by learning.
	5.4.2 Peer learning	a. List examples of what young and older herders could learn from each other. b. Discuss different ways of peer-learning[34] to share knowledge among herders. c. Explain the approach of farmer field schools[35] and discuss opportunities to organize one in your local context (e.g. potentially as pastoralist field school[36]).
	5.4.3 Sources of knowledge	a. List local, national or international platforms available for herders to access knowledge[37]. b. Demonstrate how to access a platform in order to solve a particular challenge in your local context.

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[32] https://e-mongolia.mn/home
[33] https://www.adb.org/sites/default/files/institutional-document/32956/files/grievance-redress-mechanisms.pdf
[34] https://youngfoundation.org/wp-content/uploads/2017/02/Share-to-Know-summary-guide.pdf and https://savethechildren.mn/uploads/publication/201802/Save_the_children_JSDF_Final_Evaulation_report.pdf
[35] http://www.fao.org/capacity-development/news-list/detail/en/c/883112/
[36] http://www.fao.org/3/a-bl492e.pdf
[37] For example, the Pastoralist Knowledge Hub at global level: http://www.fao.org/3/a-i6410e.pdf.

COMPETANCY 6
BECOMING AN INTREPRENEUR

Knowledge, skills and abilities to recognize and develop market opportunities. This will include an understanding for trends, managing savings, access to micro-credit, marketing, job creation, organizational management and livelihood diversification.

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
6.1 Personal skills	6.1.1 Vision and goals	Describe your vision of the future of livestock herding in your local context and/or beyond.
	6.1.2 Creativity	a. List creative thinking techniques (e.g. mind mapping, scamper[38] , six thinking hats). b. Apply a creative thinking technique to evaluate your goal from another perspective.
	6.1.3 Self-awareness and self-efficacy[39]	a. Reflect on your needs, aspirations and wants in the short, medium and long term. b. Identify and assess your individual and group strengths and weaknesses. c. Evaluate your ability to influence the course of events, despite uncertainty, setbacks and temporary failures
	6.1.4 Motivation and perseverance	a. List ways to stay self-motivated. b. Differentiate intrinsic from extrinsic motivation. c. Demonstrate how to set a goal effectively. d. Characteristics of an effective entrepreneur (e.g. initiative, information seeking, risk-taking, persistence, goal setting, commitment to work, networking).
	6.1.5 Accountability	a. Describe accountability and give positive examples from your local context. b. Examine incidents in which you have blamed others for failure or made excuses for it. c. Recognize that shifting accountability disempowers you, by your relinquishing responsibility for outcomes.
	6.1.6 Ethics	a. Describe ethics and give examples of ethical and unethical behaviour from your own experience. b. Evaluate a given problem from an ethical point of view (e.g. local communities being relocated to access land for mining).

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[38] https://www.mindtools.com/pages/article/newCT_02.htm. This page provides valuable insights into a number of different techniques.
[39] http://ecosystemapp.net/wp-content/uploads/2017/08/6-Self-awareness-and-self-efficacy.pdf

6 🔦 Becoming an entrepreneur

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
6.1 Personal skills	6.1.6 Ethics	c. Discuss how to deal with potentially controversial subjects including corporate governance, bribery, discrimination, abuse of power, social responsibility).
6.2 Interpersonal skills		See competency 7.
6.3 Business	6.3.1 Principles	a. Define a livestock/farm business[40]. b. List important components to run a business (marketing, operations, finance, sales, legal). c. Describe different business models (e.g. focus on profit maximization vs social welfare). d. List stages in the livestock/farm business cycle (e.g. organizing, producing, monitoring, marketing). e. Understanding the difference between livestock business and livestock enterprise. f. List different types of enterprises (e.g. competitive, supplementary, complementary). g. Explain what livestock marketing is, and the different forms of livestock marketing.
	6.3.2 Diagnoses and planning	a. Describe a market and visualize your business in the stage of the supply chain. b. Develop a business plan for a given opportunity or scenario. c. List examples of questions that you need to answer before starting a business with livestock (e.g. related to suitability of land, market demand, knowledge gaps).
	6.3.3 Implementation	a. Describe key terms important during the implementation stage (e.g. contract appraisal, benchmarking, value addition). b. List ways to mobilize finance. c. Discuss what types of loans exist for herders and how they can access them. d. Practice of keeping livestock business records (e.g. production, labor, cash flow, home consumption, losses).
	6.3.4 Evaluation and re-evaluation	a. Assess the performance of the business plan. b. Undertake a SWOT analysis to your own or a business in your local context.
6.4 Risk	6.4.1 Principles	See competency 8.

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[40] http://www.fao.org/3/i2137e/i2137e00.htm

6   Becoming an entrepreneur

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
6.4 Risk	6.4.2 Business risks	a. Explain the concept of loans and list risks and benefits. b. Assessing and managing business risks. c. Describe what can affect livestock business profit (e.g. home consumption, market price, competitors, input cost, credit, technology). d. Define risks and possible risk mitigation strategies accordingly. e. Identify resource conflicts through analysing the relation of resource use and production in a given scenario. f. Manage risk of dependency on input suppliers (for seeds, fertilizers, machinery and pesticides).
6.5 Economic	6.5.1 Principles	a. Describe basic economic key terms (e.g. demand and supply, cost and income, choice and opportunity cost, productivity, input, output, interest, gross margin, externality). b. List inputs and outputs related to livestock systems (e.g. inputs: water, feed, vaccines, labour, capital; outputs: meat, milk, skin, animals, traction power, manure, wool). c. Define productivity and give examples of different productivity measures (e.g. live weight, milk yield, gross dietary energy). d. Distinguish fixed cost from variable cost in a livestock enterprise.
	6.5.2 Tools	a. List conventional analysis techniques (e.g. cost-benefit, willingness-to-pay, input and output analysis, gross margin analysis, enterprise budgets and whole-farm budgets). b. Assess profitability of your business or any given scenario by calculating the gross margin.
6.6 Financial principles		a. Discuss ways to finance your business including potential fundraising techniques. b. List different ways to save and invest. c. Draft a detailed budget to implement a business plan. d. Perform accounting for incoming and outcoming cashflows in a given scenario (e.g. livestock or household income and expenditures). e. Apply basic financial analysis to evaluate production and performance (e.g. break-even price or yield calculations).
6.7 Group business management		a. Describe group business management. b. List important considerations for working with others (e.g. input and cost sharing, joint decision making, transparency). c. Discuss potential group business management approaches in your local context.

6 — Becoming an Entrepreneur

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
6.8 Alternative incomes	6.8.1 Agritourism	a. Describe agritourism and how it can be used by herders. b. List different types of activities that herders can officer to tourists. c. Assess what is needed to build and maintain an agritourism (e.g. advertisement, network with travel agencies, language requirements to communicate with tourists from abroad). d. Discuss how to build partnerships to establish agritourism in your local context (e.g. group business management, sum level agreements, formal cooperation with tourist agencies).
	6.8.2 Products and services	a. See competency 4 for domestically produced livestock products. b. List other products or services that may be of interest for tourists (e.g. lodging, riding, tastings, workshops in traditional food preparation). c. Discuss by-products from livestock production that are underused or may be improved for marketing.

COMPETANCY 7
BUILDING & MAINTAING PARTNERSHIP

Knowledge, skills and abilities to work with others and build networks to achieve a common goal. This includes competing views and nurture positive relationships as well as willingness to compromise and value the contribution of others.

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
7.1 Personal skills		a. See competency 6.
7.2 Interpersonal skills	7.2.1 Communication	a. List different ways to communicate (e.g. verbal, non-verbal, active listening). b. Explain a complicated message to somebody in simple terms. c. Use other forms than words to communicate a message to somebody (e.g. body language). d. Discuss important aspects of communication (e.g. target audience, timing, focus on key messages, attention spans, etc.).
	7.2.2 Trust	a. Discuss why trust is important and give examples in your local context. b. Give examples of trust-building measures (e.g. involve others in your through process, safe environment, admit when you are wrong, extend trust to others).
	7.2.3 Information-sharing	a. Describe the importance of information-sharing in relation to your local context (e.g. with family, herders, business partners). b. Discuss potential benefits of improved information-sharing (e.g. early warning of market shocks, disease emergence in animals, etc.).
	7.2.4 Empathy	a. Describe empathy and give an example from your own experience. b. Give examples of empathy-building measures (e.g. practice active listening by reformulating the message to the person who just said it, examine your biases, ask questions, request feedback).
	7.2.5 Negotiation	a. Describe negotiation and explain why it is important (e.g. achieve your goals, reduce stress, save time and money). b. List important factors to improve negotiation (e.g. compromise, giving credit, win-win approaches). c. Develop a negotiation strategy for a topic of your choice.

7   Building and Maintaining Partnership

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
7.2 Interpersonal skills	7.2.5 Negotiation	d. Describe a conflict example from the other's point of view. e. Discuss approaches to solve common conflicts in your local context.
7.3 Conflict resolution		a. Describe a conflict and give examples from your own experience (e.g. competing claims for land, competition for grassland and water points, seasonal camp location, blocked mobility). b. Recognize the signs for potential disagreement or conflict. c. Describe a conflict example from the other's point of view. d. Discuss approaches to solve common conflicts in your local context.
7.4 Mechanisms	7.4.1 Cooperatives	a. Explain what a cooperative is and what it can offer to herders. b. List the implications of becoming part of a cooperative (e.g. common resource management, member contributions, joint operations). c. Discuss the existing and potentially improved implications of a cooperative in your local context.
	7.4.2 Pasture User Groups	a. Describe the concept of Pasture User Groups (PUGs). a. b. Explain the institutional implications and supporting structures (e.g. Mongolian National Federation of Pasture User Group[41]).
	7.4.3 Other mechanisms	Think about other mechanisms for partnership that exist or could be beneficial in your local context (e.g. public-private partnerships, fair-trade initiatives, participatory guarantee systems for certification).
7.5 Social networks		a. Identify actors in your social network (e.g. family, friends, colleagues, potential partners, associations, national and international institutions). b. Discuss how to better use social networks to improve herding and potential livestock business.

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[41] http://prize.equatorinitiative.org/wp-content/uploads/formidable/6/MNPUGs-introduction-to-scope-of-activities-and-Organizational-structure.pdf

COMPETANCY 8
MANAGING RISKS

Knowledge, skills and abilities to manage risks including specifically the management of common human-induced and natural disasters such as drought and dzud.

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
8.1 Principles		a. Define a risk and give examples of different types of risk[42]. b. Distinguish a hazard from a risk. c. Give examples of risks for herders in your local context. d. List specific risks related to your livestock (e.g. weather chocks, variable prices for animal feed, disease outbreaks).
8.2 Decision-making		a. Give examples of decisions that involve risk and uncertainty. b. Describe important steps needed for good decision-making (e.g. gather information, identify alternatives, way evidence, evaluate outcome). c. List practical tools to analyze decisions (e.g. sensitivity analysis, break-even analysis, decision tree analysis and pay-off tables).
8.3 Hazards and risks	8.3.1 Natural	a. Describe different types of natural hazards (e.g. drought, dzud). b. Describe ways to mitigate the risk for a given hazard in your local context (e.g. prepare forage stocks to cope with harsh winter, income diversification, input independency, early warning). c. Discuss how to manage a particular risk for resource depletion in your local context (e.g. risk for wild fires or pasture degradation due to overgrazing).
	8.3.2 Human-induced	a. Differentiate between natural and human-induced risks in your local environment/context. b. Provide examples of human made hazards (e.g. armed conflict, market shocks, overstocking, no resting/otor, policies that restrict mobility and thus lead to poor herd rotation and unsustainable use of rangeland). c. Describe how herders can positively and negatively contribute to the risk for overgrazing and degradation of pasture.

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[42] http://www.fao.org/3/i0412e/i0412e02.pdf

8 ⚠ Managing Risks

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
8.3 Hazards and risks	8.3.3 Occupational	a. Describe occupational safety and situations in which it can be improved (e.g. motorcycle herding, accidents with animals, slaughtering with knife). b. List preventive measures to improve occupational safety (e.g. personal protection, tools, equipment, working habits).
	8.3.4 Household	a. List household related risks (e.g. in regard to nutrition, alcohol consumption, pollution, violence). b. Give examples of how to ensure your household's health and welfare (e.g. education about health and nutrition, access health care centers, regular medical check-ups). c. List services that may assist or help you in dealing with household related issues.
8.4 Agriculture risk manage-ment	8.4.1 Principles	a. Distinguish different ways to assess risks (e.g. informal or 'gut feeling' analysis vs formal risk analysis approaches). b. Describe risk management approaches (e.g. by mitigation, risk transfer or coping strategies). c. List tools to manage risk in agriculture[43]. d. Apply one tool of your choice to assess different control strategies for a given scenario (e.g. tick control vs no trick control; same examples may apply to vaccination, purchase of hardy vs productive breed). e. Give examples to manage risks at your local and community level (e.g. climate-smart agriculture; agricultural diversification, assets and income-based strategies). f. Give examples of finance-related risk management tools (insurance, weather index-based insurance; agricultural finance and microfinance). g. Discuss diversification as a strategy in mitigating risks for livestock herders.
8.5 Emergencies [44]	8.5.1 Principles	a. Describe an emergency and give examples for different types of emergencies in your local context (slow, rapid, and complex). b. Give examples for assessment and response options (e.g. destocking, veterinary support, feed/water supply, shelter and settlement, provision of livestock). c. Provide one example for a slow onset emergency (e.g. dzud) and identify response options.

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[43] FAO E-Learning course on "Agricultural risk management tools":
https://elearning.fao.org/mod/scorm/player.php?scoid=961&cm=777
[44] Livestock Emergency Guidelines and Standards: https://www.livestock-emergency.net/download-legs/

8 ⚠ Managing Risks

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
8.5 Emergencies	8.5.2 Disaster Risk Reduction	a. Describe and list principles of disaster risk reduction strategies (including preparedness, contingency planning, and early response). b. Give examples of different disaster risk reduction strategies (e.g. asset-based vs income-based). c. Evaluate herd maximization as risk reduction strategy in your local context (e.g. value of insurance against climate shocks versus driving resource depletion as contributor to climate shocks). d. List information sources to detect potential disasters (e.g. weather forecast, or global sources such as FAO's Global Information and Early Warning System). e. Discuss the value of index-based livestock insurance schemes. f. Propose early warning mechanisms to reduce risk for disasters in your local context[45].

COMPETANCY 9
THINKING GLOBALLY

Knowledge, skills and abilities to understand national, regional and international developments, drivers and emerging concepts.

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
9.1 Global, regional developments	9.1.1 Global	a. List some relevant facts and/or drivers at global level (e.g. population growth, climate change, inequality, food waste, pressure on natural resources, emerging diseases, innovation). b. Describe how global changes can influence your daily life.
	9.1.2 Regional	a. List some relevant facts and/or drivers for Asia (e.g. demographics, consumption of animal sourced foods, transboundary animal diseases, market trends, consumer preferences). b. Evaluate regional demand for meat, dairy and other livestock products in light of the current situation.
	9.1.3 National trends	a. List some relevant facts and/or drivers for Mongolia (e.g. rural-to-urban migration; changes in temperature and precipitation; population ageing among rural population; rural labour force shortages; livestock overstocking; depleting natural resources). b. Discuss appropriate livestock management changes in light of current changes.
	9.1.4 Market trends	a. Describe specific markets trends relevant for the livestock sector (e.g. animal feed, livestock food and non-food products). b. Discuss how to take part actively in value chain and market dynamics relevant for the livestock sector.
	9.1.5 Livestock specific trends	a. Compare your production to market trends. b. Discuss opportunities that your production has over others in the country and region (e.g. particular breeds, yields, taste or grass-fed systems that may align with specific consumer preferences).
9.2 Concept of sustainability	9.2.1 Principles	a. Describe sustainability in your own terms (e.g. Brundtland definition or FAO [46]or UN[47]).

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[46] Five key principles of sustainability for food and agriculture (FAO, 2020): http://www.fao.org/sustainability/en/
[47] Sustainable Development Goals: https://www.un.org/sustainabledevelopment/

9   Thinking Globally

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
9.2 Concept of sustainability	9.2.1 Principles	b. Apply the three dimensions of sustainability (economy, society, and environment) in your local context with examples. c. Discuss practises in your local context that may contribute negatively or positively to sustainability.
	9.2.2 Externalities and public goods	a. Describe public goods and externalities. b. Give one example of an externality in livestock from your local context (e.g. release of animal waste into natural waterways that hurt others downstream or benefits gained by those who do not vaccinate against a disease from those who do vaccinate). c. List more externalities (positive and negative) specific to livestock production (landscape, biodiversity, carbon dioxide and methane emission, unpleasant odour and animal welfare). d. Discuss how to better manage public goods and externalities in your local context (e.g. negotiate among herders in the region or need for government to legislate).
	9.2.3 Opportunities in livestock	Describe livestock advantages in your local context and in general (e.g. provision of livelihood and food at local but also important role in conservation of landscapes or fighting hunger and poverty globally).
	9.2.4 Agro ecology	a. Describe and list ten elements of agroecology[48]. b. Evaluate your local livestock production context against the elements of agro ecology. c. Discuss potential synergies resulting from crop–livestock integration. d. Apply agro-ecosystem analysis (AESA) to better understand your field situation.
	9.2.5 Topics in public debate	Selected a topic in the public debate and identify at least three pros and cons for your position (e.g. livestock contribution to climate change, livestock feed versus food for people, animal welfare concerns, agricultural intensification).
	9.2.6 Conservation	a. Describe conservation and how it relates to pastoralists and livestock. b. Discuss and compare conservation initiatives around you.

[48] http://www.fao.org/3/i9037en/I9037EN.pdf

9 Thinking Globally

DOMAIN	SUBDOMAIN	PERFORMANCE INDICATORS
9.3 One Health Concept	9.3.1 Principles	a. Give examples of interrelatedness between your family, your animals and the environment they share. b. Give one example of a One Health issue from each of the three perspectives (human-animal-environment). c. Assess your local situation and give examples of risks for One Health issues.
	9.3.2 Antimicrobial Resistance (AMR)	a. Describe antibiotics and in which situations they are helpful. b. Describe the consequences of giving antibiotics to animals (e.g. residues in animal products, potentially resistant bacteria, withdrawal periods to respect). c. Describe the risks of antimicrobial resistance specifically to human health. d. List actions that livestock producers can take to avoid AMR (e.g. buy antibiotics only from licensed retailers and use only by prescription, respect withdrawal periods, never use antibiotics for growth promotion, keep animals clean and vaccinate and isolate sick ones to prevent the spread of disease). e. Discuss the motto 'prevention is better than cure' (e.g. benefits from different point of views, i.e. animal health, profit, time).
9.4 Ethical governance of commons		a. Explain the idea of "tragedy of commons" with an example from your local context. b. Discuss how to better collectively manage commons considering e.g. local agreements or voluntary guidelines[49].

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[49] Voluntary Guidelines on the Responsible Governance of Tenure:
http://www.fao.org/3/i2801e/i2801e.pdf

RECOMMENDATION
FOR IMPLEMENTATION

This Competency Model presents a large range of topics not only related to sustainable development of livestock sector in Mongolia but also to global general development trends. These topics are all essential for herders to make their herding as a business using natural resources sustainably and efficiently. The curriculum contains topics from very basics to combined approaches for both modern livestock development and traditional nomadic herding practice. Multiple topics also give numerous opportunities to include many different organization to implement the curriculum for their own purposes.

For example meat processing private company could selected domain four to educate their suppliers for providing with properly managed, good quality raw materials, which has benefits to enhance productivity of the private company.

Herders will receive adequate and beneficial domain and subdomains /lessons/ that imply learning activities and environments are chosen so that herders can acquire and apply the knowledge, skills and attitudes to situations they encounter in everyday life.

IMPLEMENTATION POLICY

The model was developed by collaboration of donor organization /FAO/ and nongovernmental organization /MoSARD/. Therefore the competency model needs to be submitted to the Ministry of food, agriculture, and light industry for potential approval by FAO Mongolia. Then the responsible department of the ministry can deal with presentations to the minister and other decision-makers. If the minister supports, the ministry of food, agriculture, and light industry should offer the competency model to ongoing and future projects and other organization who are working in the livestock sector to implement it at their pilot project areas. This is a strategy to successfully implement the model within a short period of time across the country since the it covers quite a range of topics.

TRAINING POLICY

This model is developed for learner-centered approach then training guidance needs to be herders centered by the trainer. The purpose of training is to deliver competencies to herder for solving problems, changing attitudes, and seeing issues broadly rather than competences.

The competency model is structured orderly. Since the model is dealing with sustainable livestock, the first domain contains basics about natural resources use which are main inputs then second domain covers pasture utilization including management specifics, conservations, and other preparations and third one explains the management of livestock including animal health, welfare and breeding, and feeding aspects. Those three domains are compulsory and others can be followed as optional. In other words, if an organization decided to teach the fourth domain to their pilot area they need to teach above mentioned three-domains first then can start with their selected fourth domain. Each implementer need to report about their training outputs and covered areas, numbers of trainees to the ministry of food, agriculture and light industry seasonally. This can bring an opportunity to check and plan the competency model implementation for the next season and year. Additionally, reporting has advantages for improving cooperation efficiency of the implementer organizations, local administrations, and the ministry of food, agriculture, and light industry.

The training environment should be at herders place rather than bringing them in the conference hall at to sum or province center. Also, training approaches need to be designed for adult learners with different educational backgrounds and herding experiences. The model gives chance to the learners to exchange their own knowledge and experiences to each other that are effective at their local areas during the fifth domain throughout the peer learning subdomain.

Each domain needs to have different trainers separately since they are covered many topics and the outputs of the training are knowledge, skills and abilities, and attitudes. The trainers also should be more global and business-minded, excellently experienced with development issues, and great understanding of the nomadic lifestyle.

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PROJECT TEAM

Mongolian sustainable agriculture research & development NGO

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