



Managing the interfaces between livestock and nature produces win-win-win outcomes for nature, people and animals

People and nature are healthier when the environmental hazards of livestock keeping and wildlife interaction are reduced and the positive impacts of livestock on soil, biodiversity and carbon sequestration are enhanced.

Key Messages

New infectious diseases that threaten people's lives and livelihoods can emerge as a result of a complex interplay between people, livestock, wildlife and the environment. In particular, rapid changes in land use across the world, including clearance of forests and wilderness areas to make way for agricultural production, have led to an increasing incidence of disease (zoonoses) jumping species from wild or domestic animals to people.

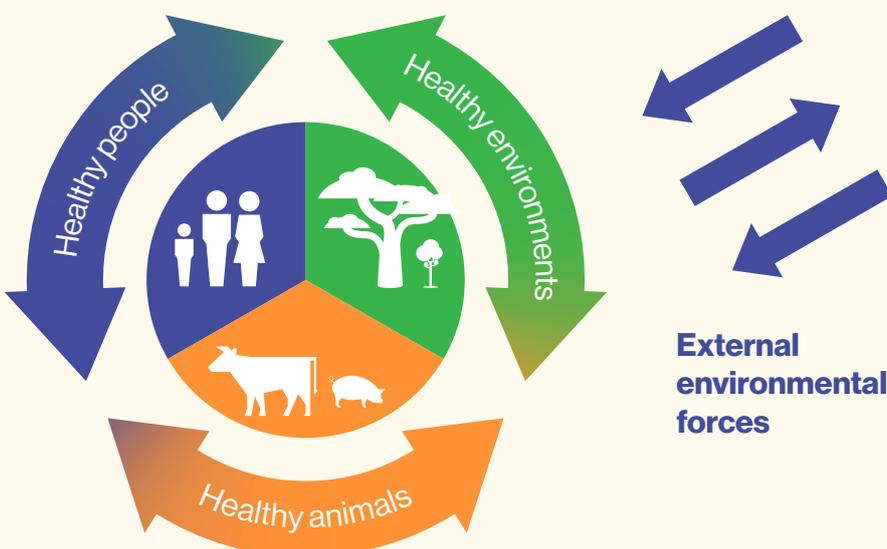
Such incidents, known as disease spillovers, now occur on average once every four months.

Medical and public health experts are called on to tackle the health risks and results of such infectious diseases. Animal health specialists also have important roles in understanding and breaking these disease cycles. Investing through One Health strategies offers a way to bring animal and human health experts together, along with ecologists, conservationists and wildlife managers, to provide holistic surveillance and solutions.

Facts

- The demand for animal-source foods in Africa and Asia could double by 2030, potentially pushing livestock production into non-agricultural areas.
- Land-use change is the single biggest driver of new infectious diseases that jump species from animals to people.
- More than half of new infectious diseases that jump from animals to people are associated with agricultural factors. More than 30% of them are linked to land-use changes.
- Rangelands and pastoralists are an important but often over-looked part of the agriculture sector. They cover almost 50% of the world land surface with an estimated 500 million people relying on pastoralism for their livelihoods
- Livestock production generates large quantities of waste that can be productively used but can also pollute inhabited areas and natural environments.

The One Health triad



There is often a perception that livestock are major contributors to land degradation and biodiversity loss. However, people, wildlife and domestic animals interact in complex and often beneficial ways. Integrated crop-livestock are crucial farming systems in the developing world (and increasingly recognized in the developed) and livestock play an important role in nutrient recycling through controlling crop residues and fertilizer from manure. Likewise, sustainable livestock grazing increases rangeland productivity in many grazing systems.



Cattle and wildlife at the ILRI Kapiti Research Station. Photo credit: ILRI/Paul Karaimu.

Environment, people and livestock

People, animals and the natural environment are constantly interacting. Nutrient recycling is a good example of this, with nutrients used by plants returning to the soil through the direct return of crop residues and the application of organic fertilizers derived from plant material or animal or human excreta. Without this nutrient recycling soils would become depleted, leading to crop failures and unproductive pastures – and ultimately less healthy people.

Rangelands and grasslands make up an important global ecosystem and make up nearly half the Earth's land surface. Rangelands provide many benefits to people (ecosystem services) of vital importance for local communities. Rangelands provide protected areas for many native plants and animals and provide important wildlife habitats and in-situ conservation of genetic resources. One billion animals are herded by pastoralists and support the livelihoods of almost 500 million people. They are key to food security in many areas where crop production is not viable.

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Zoonotic diseases and land-use change

Land-use change and disease emergence and spread are connected in ways we are still learning about. We know that land cleared of forest or other naturally occurring vegetation for agriculture can destabilize the natural dynamics of ecosystems. One way it can do this is by affecting the types and numbers of native wildlife species (biodiversity) in an area, which is known to affect disease transmission. For example, the distribution of ticks and mosquitos, which can spread zoonoses such as Rift Valley fever, can be affected by land-use change, particularly that dependent on irrigation.

We know too that the potential for viruses and other germs in wildlife to spill over to people via livestock – and vice versa – increases as natural barriers between people and livestock and wildlife break down.

Prevention and control programmes for zoonoses often focus solely on animal and human health risks and fail to pro-actively incorporate environmental considerations, missing out on opportunities for early warning and prevention. Indeed, driven by economic pressures, agriculture increasingly expands into previously untapped natural resources, fueling the emergence of zoonoses.

Livestock waste

The intensification of livestock production results in increased waste and pollution. This can include antibiotic waste and pollution, (see brief 3 on Anti-microbial resistance), manure from feedlots, and animal carcasses in slaughterhouses. This waste can pollute or contaminate the environment, particularly water supplies and soils. Improper handling and disposal of carcasses and other animal products can lead to disease outbreaks and sickness (see brief 4). Environmental considerations for large-scale livestock production and management need to be addressed at the planning stage.

What can be done

Implementing measures to integrate livestock and environmental planning can both stem disease outbreaks and boost positive outcomes for natural resource management.

1. Manage environmental and land-use changes

A landscape approach that balances competing land-use demands in a way that is best for human well-being and the environment is critical. Invest in land-use planning and governance that integrates – and if necessary restricts – rangelands and livestock grazing along with other agriculture and environmental concerns. While tackling obvious problems such as over-grazing or erosion caused by animals, policies should recognize the productive roles that rangelands and grazing play in natural resource management and local livelihoods. Policies should seek to integrate these roles rather than regulate or ban them.

2. Manage risks and hazards

Measures to effectively manage the boundaries between nature and livestock are good for both animal and environmental health as well as for human health. Direct interactions of livestock with wildlife can be limited by good biosecurity, improved risk awareness and careful land-use planning. Improved surveillance in wildlife and monitoring of potential disease carriers such as insects and ticks can also help to detect and manage risks.

3. Boost livestock's positive contributions to nature

Well-functioning rangelands and silvopastoral systems sustain and enhance the availability of soil, water and nutrients for plants. They provide carbon and water storage, prevent soil erosion (and the associated menace of dust storms), and support other ecosystem services such as tourism. Investments should focus on increasing mutual benefits to farmers and pastoralists that link sustainable livestock production to increased biodiversity. This can include increased tenure security as well as payment for environmental services.

4. Implement joined-up and community-based surveillance

Community-based management of natural resources is widely recognized as an essential prerequisite for sustainability and protection of the environment. Likewise, community participation and engagement in surveillance effectively ensures disease is detected at the point of emergence, saving time and resources in disease response.

References

To view all the references for this brief visit whylivestockmatter.org

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Investing in One Health directly tackles the wicked problems facing our health and the health of the animals and planet around us. One Health integrates and guides the collaborative efforts of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals and our environment. This series of briefs provides evidence-based information on how One Health can support development efforts.

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