



# Animal health and veterinary public health : an important global issue

Animal diseases control in family livestock farming in the Global South : addressing issues relating to One Health

1.

## **Animal diseases : major consequences for smallholder and national economies, and for public health**

Around the world, livestock diseases are a major issue because they can have an impact at multiple different levels.

Those diseases pose a threat to **the food and material security** of small-scale livestock farming families, who make up the majority of the 1.3 billion people worldwide who depend on livestock for their subsistence (FAO, 2015). Livestock products (meat, milk, eggs, etc.) are important components in the nutritional balance of a family's diet, but are also often sold. By selling those products, families can buy other foods and basic necessities, and gain access to basic services, such as health and education. Livestock farming is also essential because it provides organic manure for crops and draught animal power for tillage, sowing, and transporting products to market. Livestock farming is vital when it comes to helping agricultural systems transition to agroecology and reducing dependence on external inputs<sup>[1]</sup>.

At the macroeconomic level, livestock diseases also cause considerable losses of income, estimated at more than \$100 billion worldwide over the past decade<sup>[2]</sup>. The WTO estimates that 20% of animal production is lost each year as a result of animal diseases<sup>[3]</sup>. Some countries do not have access to international markets because they are unable to export animal products for sanitary reasons [e.g. foot-and-mouth disease, tuberculosis, brucellosis]. As a result, they suffer direct losses and are vulnerable to imports from countries offering better sanitary guarantees. Such impediments severely hinder the contribution that livestock farming can make to a country's economy and food resources, and they can therefore limit an entire society's access to **food and economic sovereignty**. It is smallholder farming, however, that is most capable of helping achieve this crucial objective in the Global South – especially if conditions allow for satisfactory productivity – thanks to the large number of people who are actively engaged in the sector.

Another particularly significant consequence of animal diseases is the potential danger it poses to **public health** in many different ways. This falls within the scope of **veterinary public health (VPH)**.

<sup>[2]</sup> Source : " Poor livestock producers, the environment and the paradoxes of development policies ", World Organization for Animal Health (OIE) 2017.

<sup>[3]</sup> Source : WTO information note : " Future resilience to diseases of animal origin: the role of trade ", 2020.

<sup>[1]</sup> See "Des élevages paysans au Nord et Suds !" – AVSF position paper, May 2021.

According to the Académie Vétérinaire de France, veterinary public health is defined as “all actions directly or indirectly linked with animals and with their products and by-products, so long as they contribute to the protection, conservation, and improvement of the physical, mental, and social well-being of humans.” Veterinary public health covers areas relating to animal health and protection, food safety, and environmental preservation.

Zoonoses are at the forefront of VPH. These diseases are common to both humans and animals, and can be transmitted more or less directly to humans from animals and vice versa. Sixty percent of existing infectious human diseases are **zoonoses** (rabies, brucellosis, parasitosis, etc. – the list is long !). **In 2011, well before COVID-19, the World Organization for Animal Health (OIE) estimated that at least 75% of emerging human diseases were of animal origin (SARS, Ebola, certain types of highly pathogenic avian influenza, HIV, etc.).** An “**animal reservoir**” (or “reservoir species”) is an animal that hosts human pathogens, which it passes on to humans without necessarily being affected itself. This is the case, for instance, when a dog carries rabies or when a bovid carries bovine tuberculosis.<sup>[4]</sup>

Zoonoses are transmitted in a number of ways. Contamination can occur through direct contact between humans and animals (brucellosis, rabies), through vectors (flying insects for West Nile fever, or arthropods for Lyme disease), or through air contamination (Q fever) or contamination of the surrounding environment (paratuberculosis) by pathogenic germs.

Animal diseases also poses another major danger to public health : the potential transmission of zoonoses through the consumption of contaminated food of animal origin. Livestock farms with poor hygiene practices therefore present a serious potential risk for consumers (brucellosis, salmonella infection, mad cow disease, foodborne illnesses, parasitosis, etc.).

Inadequate sanitary practices are also linked to the spread of animal diseases that are not zoonoses but that are transmitted through the sale of food of animal origin : foot-and-mouth disease via milk, swine fever via meat (including processed meat), etc. Animal health and the consequences it has on production are therefore regularly affected.

Lastly, animal diseases can affect public health through the use of resources to combat pathogens that are common to both human and veterinary medicine. The most alarming example to date has been the appearance of bacterial strains that are **resistant to antimicrobials**, as this could result in an inability to combat certain human diseases requiring the use of antibiotics.

It is also important to point out the environmental impacts of certain molecules used in veterinary medicine. Animals treated with antiparasitics<sup>[5]</sup>, for instance, release those antiparasitics into the environment, causing a significant impact on the soil microbiota, which is essential to maintaining soil balance and fertility. Antiparasitics, biocides, and pesticides can also lead to a build-up of resistant genes (antibiotics) and chemicals that are poisonous to other animals, such as insects (including bees, which in turn contaminate the bee products that humans consume) and aquatic animals. As a general rule, we must always remember that environmental contaminants (especially those which may be linked to livestock farming) can eventually affect human health, whether directly or indirectly.

<sup>[4]</sup> A 2012 study conducted by the International Livestock Research Institute estimated that 56 zoonoses are responsible for 2.5 billion cases of human illness and 2.7 million human deaths each year. Source: WTO information note : “ Future resilience to diseases of animal origin: the role of trade ”, 2020.

<sup>[5]</sup> The most well-documented example is ivermectin, a molecule used to treat internal and external parasites in bovines. The molecule's toxicity to soil fauna has been clearly demonstrated. Its toxicity to dung beetles (which help break down organic matter) has a direct impact on the natural recycling of cow manure on pasture.

## 2.

### **Animal health and smallholder livestock farming : the double challenge of providing a local service and integrating that service into a coherent national animal health system**

The various issues presented above clearly show that careful management of animal health is an essential aspect of livestock farming. But in most countries in the Global South, the State has relinquished its prerogative to support smallholder farmers (often through structural adjustment policies), which has had the following consequences on livestock farming :

→ insufficient (or total lack of) basic animal health services in the field (Galière, 2017<sup>[6]</sup>), which makes it difficult or impossible for centralized services to understand the herds sanitary status and develop a suitable and coherent animal health policy ;

→ lack of an epidemiological surveillance chain from the highest-level state services all the way down to smallholders, which makes it impossible to effectively implement any sort of collective animal health strategy.

To address these deficiencies, a number of organizations (particularly NGOs such as AVSF) have provided training for livestock farmers in : how to organize and run disease-prevention campaigns; basic techniques in veterinary medicine and care; pharmacy and inventory management for drugs; how to reduce the systematic use of drugs; and how to develop alternatives to drugs. This has resulted in the creation of the **Community-Based Animal Health Worker (CAHW)**, which is “a local stakeholder approved by his or her community who provides care and performs basic zootechnical procedures, and who uses and manages a stock of veterinary products deemed to be non-dangerous. This individual is remunerated by the beneficiaries of his or her services, and his or her training consists in a series of short-term courses developed in accordance with an objectives-based pedagogical approach” (Bangui Conference, IEMVT/GTZ, 1988<sup>[7]</sup>).

All CAHWs have received adequate **training**, which is essential to ensuring that they are able to provide a **quality service**. But as the training programs are limited in time and can therefore provide only a certain amount of knowledge, they must be carefully selected and adapted to each specific context. Certain topics such as basic concepts in epidemiology, pharmacology, and general hygiene should be included in all training programs. Others (such as controlling animal diseases) should be scaled based on the sanitary status of the national/local herd, specific missions assigned to CAHWs, etc. Defining the training curriculum for CAHWs is therefore a very important part of the process.

<sup>[6]</sup> Galière, Margot, “ Enquête sur les dispositifs de santé animale de proximité dans les pays d'intervention des ONG du réseau VSF International ”, Veterinary Thesis, École Nationale Vétérinaire de Toulouse, Université de Toulouse, AVSF-VSF International, 189p., 2017.

<sup>[7]</sup> IEMVT/GTZ, “ Towards a new structure for animal health in Africa ”, summary report of the Bangui Conference, 1988.



***In Madagascar, for example, the curriculum that AVSF designed in partnership with the Ministry of Livestock and the Order of Veterinarians alternates theory with hands-on practical experience, offering two work placements with seminars every other week for a total of nine weeks (270 hours). Manuals covering topics presented in the program are distributed to the future CAHWs. An exam is administered at the end of the program to make sure the trainees have mastered the topics covered, and diplomas are awarded.***

— Petit (2013)

CAHWs are also **members of the communities** they serve. Often, they volunteer themselves for the role and are then chosen by the community. This helps ensure that CAHWs meet the criteria for the role :

- **proximity** : CAHWs live with their family in the village they serve, and often have their own farm ;
- **legitimacy** in the eyes of their peers : CAHWs are chosen by their peers ;
- **longevity** of service : CAHWs have strong local roots from both a social and professional standpoint. It may also be a good idea to integrate women, who are sometimes more stable in their community.

**Below are a few examples of criteria that may be used to select future CAHWs prior to training : “ Stable in the town ; Chosen by the community ; Willing and motivated to perform the function; Engaged in livestock farming; Sufficient availability ; Committed and helpful. Generally, individuals, who are selected, are stable in their town, meet certain community-specific criteria, and, if possible, have received homogeneous education. Great care is taken to avoid social bias in the selection process. ” (Tourette, 2010)**

CAHWs are **remunerated** in cash or in kind by the beneficiaries of the services they perform. In addition to the social recognition of their new role in the community, the remuneration also helps ensure **longevity** of service, by providing them with motivation in the form of additional income and incentivizing them to dedicate time to this activity. But as it is a secondary activity and not a full-time role, it should not constitute their sole source of income. This helps keep the service affordable.

***In the area around Madagascar’s Lake Alaotra, where AVSF trained some forty workers in 2004, each worker covers an area comprising at least 600 head of cattle. They perform, on average, 20 to 30 procedures a month, dedicate 11 days a month to their CAHW activity, and earn about twenty euros a month (which is more than what an agricultural day labourer makes).***

— Tourette (2010)

In the actions carried out by AVSF and the other members of the VSF-International network, CAHWs are always **supervised or placed under the responsibility of a qualified animal health professional** [veterinary doctor or veterinary para-professional]. Supervision is vital, as the CAHWs have limited training and knowledge. It helps improve the **quality and safety of the drugs administered** and the services provided for the animals receiving treatment and for public health – both areas being closely interdependent, as previously mentioned.

Lastly, because of their local roots in the communities they serve and their network in the field, CAHWs have an important role to play in epidemiological surveillance. CAHWs are in daily contact with livestock farmers and their herds. They are therefore the most capable of identifying the outbreak or spread of an animal disease in their area, and relaying that information to their veterinary supervisor. They are the first link in the chain of epidemiological surveillance. For instance, CAHWs played a fundamental role in eradicating rinderpest by detecting and relaying information when the last outbreak occurred in Kenya in 2001.

**In Cambodia, for instance, where there are no private veterinarians in rural areas and where the only animal health professionals are civil servants from decentralized state services, AVSF has developed over the years a network of CAHWs in the field, which is now well structured and highly effective. Each CAHW works under the responsibility of the district “veterinarian” (a veterinary para-professional in the vast majority of cases) with whom they are in close contact and to whom they regularly report. Experience has shown that one of the keys to the success of this organizational structure lies in the quality of the relationship between both parties, which is an objective that must be pursued day after day over the long term**

— Min Sophoan, H.Petit (2014)

They also play a key role as the last relay in the **application of an official animal health strategy**, passing on information from veterinary supervisors to livestock farmers and helping the supervisors implement measures decided by the administration, such as the coordination and implementation of national vaccination campaigns. In Ethiopia, for instance, CAHWs play an important role in combating Peste des Petits Ruminants (PPR) in Afar, and anthrax in South Omo (VSF-I, 2018).

**Under the conditions described above, if there is a lack of animal health supervisors (veterinary doctors, veterinary para-professionals), CAHWs can provide a response that meets the three above mentioned criteria: (i) provide a local service, (ii) relay epidemiological information from the field, and (iii) support the application of the official animal health policy.** Ideally, recognized by the private veterinary profession and officially by the state, CAHWs should be part of the **triad of the national system for animal health and veterinary public health**, as illustrated in the diagram below. In the performance of their duties, CAHWs should maintain relations with: the livestock farmers in their community (who are their “clients” and who give them their legitimacy); veterinary practitioners, if there are any (who are their technical advisors and who supervise their work); and public veterinary services (with whom they collaborate on veterinary public health).

There are a **number of challenges**, however, when it comes to creating effective and sufficiently dense networks of CAHWs capable of promoting sustainable public health.

On the one hand, **the training provided to those agents is not standardized** at international level (content, duration, pedagogical objectives/requirements, teaching staff, evaluation). Consequently, there are large variations between countries, and sometimes even within individual countries, regarding the content and duration of training, which create great disparities in the abilities of CAHWs from one region to another.

**Also, there is no internationally harmonized nomenclature for CAHWs**, and in certain countries several different names are sometimes used (CAHW, “livestock workers”, “village vaccinators”, village livestock agents, etc.). This is confusing for the people they serve – mainly public services and livestock farmers – and hinders transparency and the recognition of their mandate.

**Large disparities have also been noted regarding the supervision of CAHWs** (proximity, frequency, strictness of their supervision), creating large variations in the quality of the

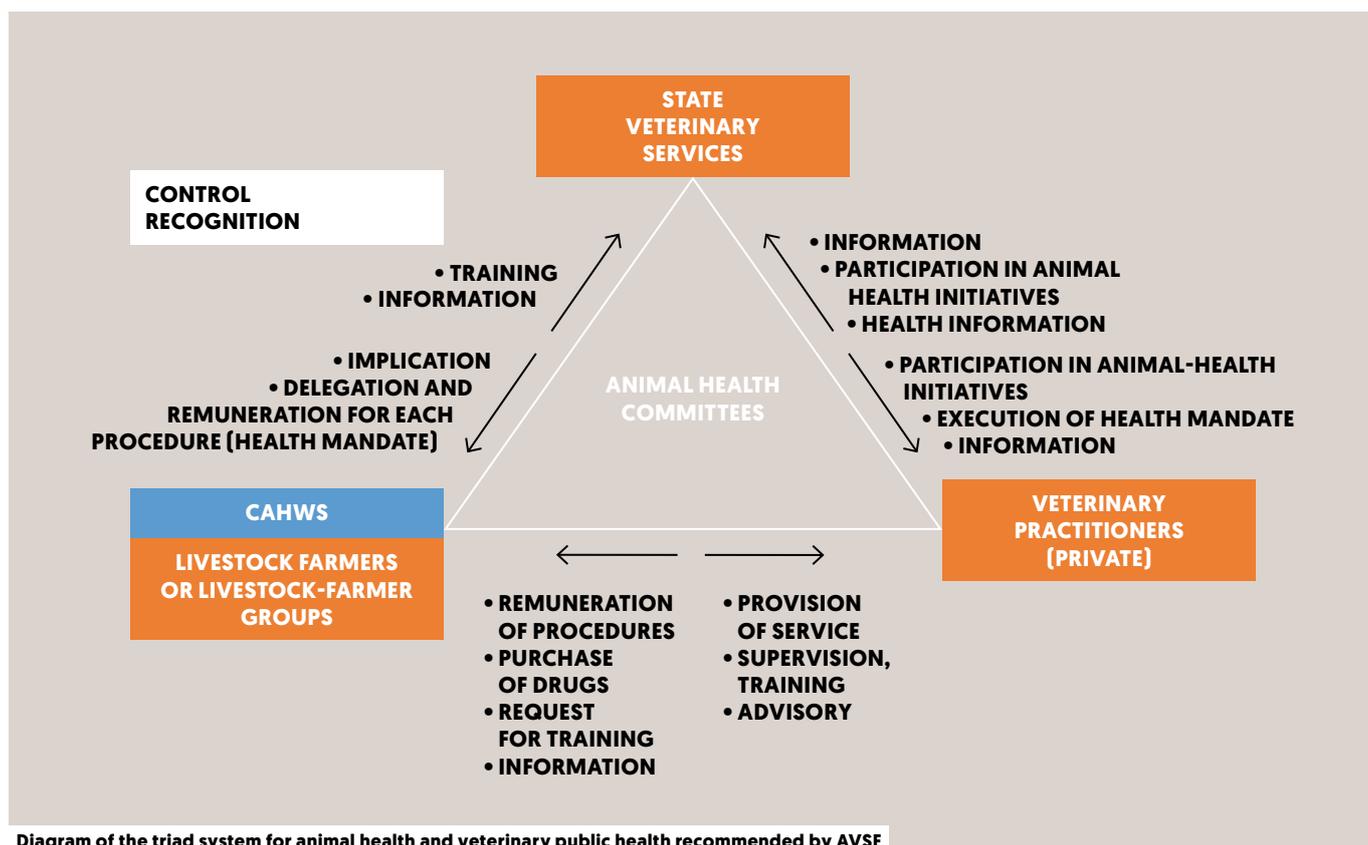
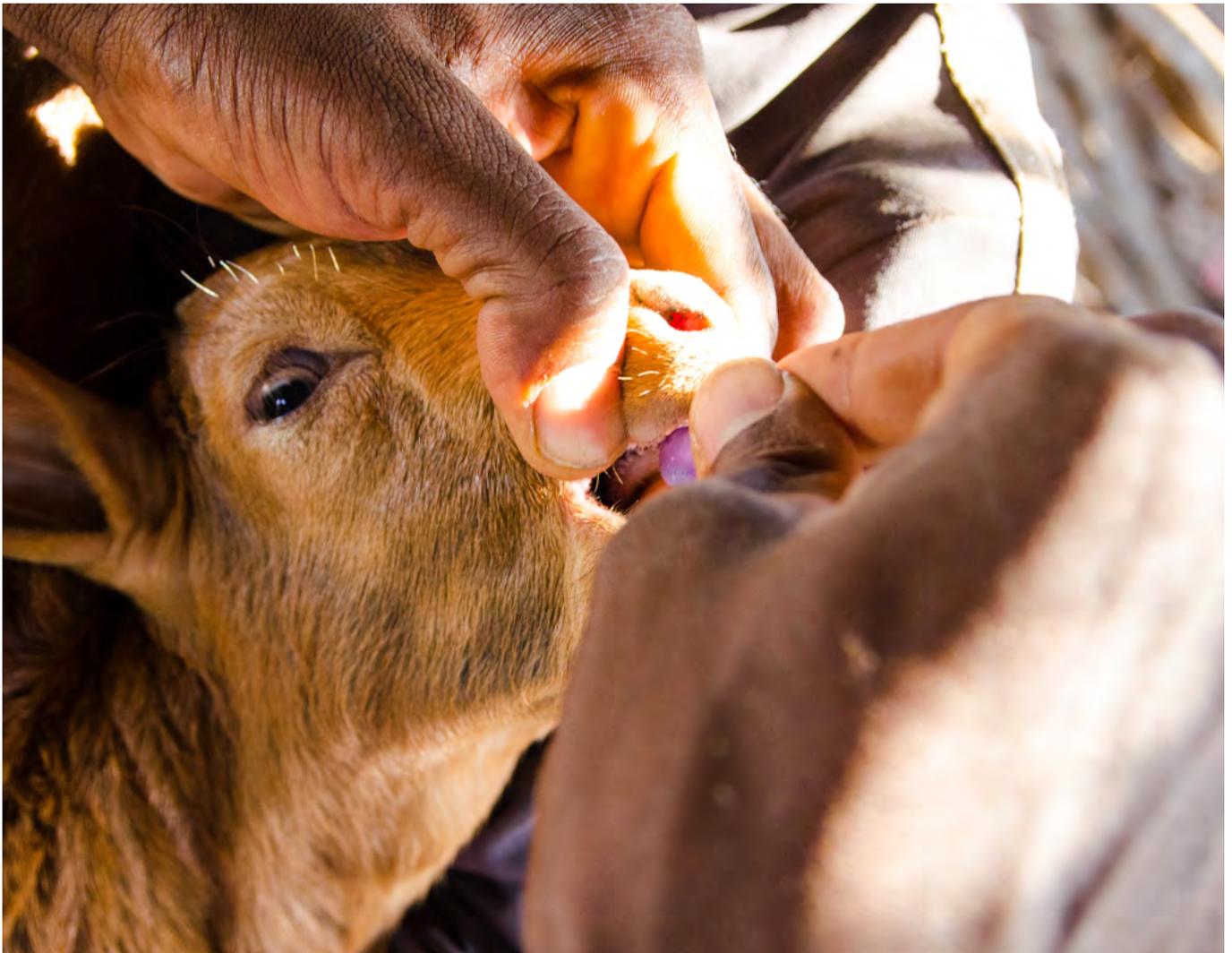


Diagram of the triad system for animal health and veterinary public health recommended by AVSF



services they provide, and in their ability to effectively address the issues mentioned above. For example, without adequate and continuous support, veterinary drugs may be misused, creating a potential public-health risk. Such situations are often linked, at institutional level, to an insufficiently precise positioning of CAHWs among all animal health personnel, and to relations with them that are poorly supervised by the authorities – or not at all.

Lastly, **there is the crucial question of the formalization and legal recognition of their status.** The World Organization for Animal Health [OIE], which develops international standards, does not yet attribute any status to them. It does, however, set specific rules applicable to veterinary doctors and veterinary para-professionals for its member states. Some countries, such as Togo, Ethiopia, and Cambodia, have decided to formalize CAHW activity from a regulatory perspective and/or officially grant them extensive prerogatives, sometimes even going so far as to define their training. And yet, the status of those agents remains undefined in too many countries, which leads to confusing situations sometimes resulting in competitive or contentious relations with others working in animal health <sup>[8]</sup>.

<sup>[8]</sup> After a long process of advocacy and dialogue initiated and supported by AVSF, VSF-International and the World Organization for Animal Health [OIE] concluded an initial three-year partnership agreement on December 28, 2020. One of the agreement's main objectives is to allow both entities to work together in order to create a harmonized international framework for CAHWs and establish guidelines and training "curricula" just like those currently in place for veterinarians and veterinary para-professionals.

### 3.

## **Giving priority to the One Health approach : an important issue for the future and a powerful driver of development**

As previously mentioned, animal health in "least developed" countries must be understood within a particular context where resources are much more limited than in "developed" western countries, or middle-income countries. It is therefore necessary to completely rethink how to control, prevent, and monitor livestock diseases. It appears to be important to undertake a collective approach to managing livestock, which involves considering the health of the herd as a whole, as opposed to focusing on individual animals. In general, this practice is not widespread in these countries. The implementation of a broad prevention strategy, from national level all the way to herd level, therefore appears to be more suitable, more effective, and less costly than applying curative measures. From this perspective, the holistic approach of the **One Health concept** is particularly relevant.

Formalized in the early 2000s (following the emergence of the global epidemic of highly pathogenic avian influenza, or "avian flu"), the One Health concept recognizes **the strong interdependence between human health, animal health, and ecosystems.**

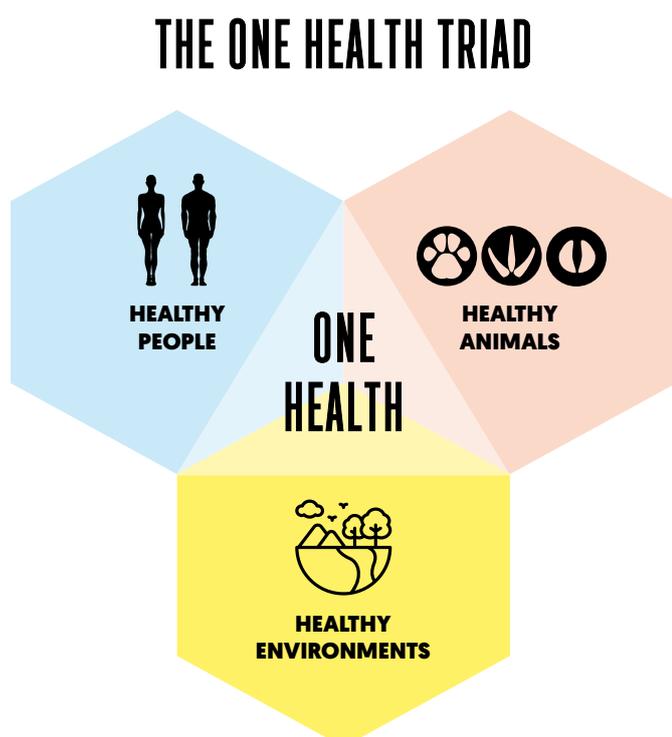
It promotes a global collaborative, multidisciplinary, and multi-sector approach in order to better understand the complex interactions between those three aspects of health, and therefore better anticipate and manage health risks to humans and animals (both domestic and wild), and threats to the ecosystems that they depend on and that are home to the main pathogen reservoirs, with a view to helping communities and health systems become **more resilient**.

EcoHealth is a complementary concept that underscores the importance of going beyond those three aspects to address the idea of health in all its complexity and to take into account and act on other essential parameters in order to define and steer health policies at regional level and within rural communities: socio-economic conditions of communities, access to land and natural resources, possibility of developing agroecology, etc.

**The One Health concept** is now widely recognized and discussed within the international community, **but it is still rarely taken into account and rarely implemented in the field. Because implementation of the One Health approach has been far too slow, AVSF and the VSF International network are pushing for its actual integration into state policies and the development programs and funding priorities of international organizations**<sup>(9)</sup>.

AVSF, for its part, began working in an integrated manner on human and animal health in 2004, with the creation of mobile health services for humans and animals, serving pastoral communities in Niger and Mali. AVSF has been working since then to adopt a global approach for all of its technical actions relating to livestock farming and animal health that also takes into account the health and environmental issues that the communities in question are facing. It has also been working to identify all the conditions that must be fulfilled in order to ensure that such actions are successful, effective, and long-lasting.

<sup>(9)</sup> AVSF is therefore partnered with the One Sustainable Health Forum, which seeks to push for the effective operational implementation of the One Health approach in programs in the field, supported by funding that is sufficient for addressing these challenges.



The first condition is to identify and design **actions that are defined, prepared, jointly developed, and implemented in collaboration** with people from other areas, such as human health and environmental management (NGOs, organizations, and institutions specializing in human health and conservation). Based on a systemic approach that brings together all three disciplines in partnership, good coordination between the stakeholders in the three different sectors and the institutionalization of that collaboration are essential at all stages of the process. The shared objective is to simultaneously strengthen the capacities of human and animal health services and their relationship with environmental factors in order to provide quality services in the field, particularly in remote areas.

The idea is **to also establish close ties with local communities** during the design stage, and then during implementation of the actions, so that those communities can familiarize themselves with the processes and effectively identify their needs and how to meet them. Bringing together members of the administration, people with traditional roles (village leaders, traditional healers, midwives, etc.), leaders of livestock-farming organizations, etc. also helps ensure that ancestral experience and knowledge will be given a voice, as it is deeply instructive. Women and young people are particularly motivated and are potential sources of innovation. They are therefore always encouraged to participate, as their participation is seen as an important asset.

In those areas where the veterinary network is still largely insufficient, **strengthening local animal health systems by training CAHWs and helping them become established** is naturally the focus of actions to implement the One Health approach in order to build CAHW networks that coordinate with human health services and that are capable of playing a key role in epidemiological surveillance to detect sanitary risks early, alert others, and help implement necessary sanitary measures.

For the One Health approach to be effective, it is essential to provide **technical and financial support to smallholder livestock farmers**, who provide for the vast majority of smallholders throughout the world. Those farmers have a positive impact when it comes to issues such as combating poverty, ensuring food and nutritional security, and helping people become more resilient to climate risks, health risks, and instability on increasingly globalized markets. Supporting this type of livestock farming also helps combat concentration, which increases the risk of spreading pathogens, and move away from intensive production practices that are dangerous for human health and harmful to animals and the environment.

Lastly, any One Health approach, particularly in health-related initiatives, needs an **environmental pillar** to complement more frequent collaborations addressing only human and animal health (as was often the case in efforts to combat rabies). Livestock-farming systems and conditions, and the environment, should therefore be taken into account in an integrated manner, within the larger framework of the sustainable management of natural resources based on the principles of **agroecology**. **Monitoring and preserving ecosystems** is also essential in order to anticipate and limit the risk of epidemic outbreaks linked to growing urbanization and deforestation (more frequent contact between humans and wild animals, difficulty accessing clean drinking water). Lastly, it should always be ensured that the activities carried out in the different areas do not pollute or degrade the environment.

For example, the activities carried out as part of AVSF's One Health project targeting smallholder communities in two different districts within Cambodia's Prey Veng province are highly complementary in the three areas of "One Health":

- in response to smallholders' most pressing demand, technical/economic support was provided for small-scale family livestock farming (chickens, pigs, cattle) through training sessions on improved livestock-farming techniques – including animal health (vaccinations, anti-parasite treatments, etc.) –, educational tours, the provision of sires and small equipment, etc., and by strengthening the management capacities of livestock-farmer groups (to help them boost sales) and the village boutique for select, controlled, high-quality veterinary inputs. These activities have helped secure the participation of families and address other topics.
- With regard to human health, in addition to focusing on zoonoses transmissible by livestock (avian flu, parasitosis, etc.) in previous initiatives, an initiative to combat rabies, which is a real problem in Cambodia, was carried out through informational and awareness-raising sessions and a campaign to vaccinate pets (mainly dogs) against the disease. As pillars of animal health and public health, CAHWs trained and established in the field through previous AVSF programs have been offered special training modules to help them build on their basic knowledge in those areas. The modules cover the proper use of veterinary drugs, the risks of antimicrobial resistance, and what to do with waste (needles and sharp objects, used and expired bottles, whether empty or not, etc.).
- Lastly, the project has developed a broad environmental component which seeks to raise awareness and help the entire village community adopt best practices in public health and waste management. Communal bins for sorting waste have been installed at key locations in villages (schools, shops, etc.), and community incinerators have been built for non-recyclable waste.
- But the real innovation in this area was the organization of Community Health Days, which are events where information is provided on topics chosen jointly by the project partners, such as: general hygiene, zoonoses, waste management (including agricultural waste), etc. The events bring together the entire community (particularly schoolchildren, teachers, municipal councillors, etc.) and give rise to discussions between villagers of all ages. District veterinarians, environmental protection services, and health centres are also actively involved.
- All of these activities were effectively carried out thanks to the close collaboration between many different people from the three areas of the One Health approach as well as key actors in rural community life: CAHWs belonging to the Baphnom Meanchey agricultural cooperative, decentralized local public services (district veterinarians, district environmental service, health centres), teachers, municipal councils, and village leaders.
- The overall challenge is to combine theory-based awareness-raising actions with practical and participatory actions, and to encourage "tripartite" cooperation in order to ensure strong compliance at local level.

— M. Miller, AVSF (2020)

## 4.

### Biosecurity and use of traditional knowledge : two tools at the heart of our work

As mentioned previously, preventive measures for animal health and veterinary public health have a particularly strategic position in the Global South compared with curative treatments. They require an integrated approach, such as One Health, because their success depends on a number of factors (material, human, environmental, etc.) beyond the bounds of veterinary medicine.

**Clearly, prevention depends first and foremost on livestock feeding and management practices that are adapted to the animals' needs, which includes ensuring that the animals are not injured or suffering and that they can express their natural behaviour.** For example, turning out animals early for grazing helps build immunity against parasites found in pasture, and specially adapted housing for livestock (e.g. improved traditional chicken coop) helps limit predation and contagion. From a One Health perspective, giving priority to preventive measures in animal health helps **reduce the volume of curative treatments.** In addition to being more economically efficient, such reductions are highly beneficial to human health and to the environment because **medicinal residues** can contaminate products consumed or used by humans, as well as the environment through animal excrement and carcasses. Another issue is **antimicrobial resistance**, which in recent years has become a major public health challenge worldwide. There are two main types of prevention – medical prevention and sanitary prevention – which may be used in isolation or in association with one another.

As its name indicates, medical prevention involves administering various substances to animals in order to protect them against certain diseases. Either it **targets** a specific disease – e.g. **vaccination**, where a vaccine is specially designed to protect against a particular pathogen –, or it is **untargeted** and aims "simply" to maintain an animal in an optimal state of health, particularly in terms of immunity, helping them more effectively resist pathological stresses. An individual's general immunity may therefore be improved using different active ingredients. For example, in the case of a heavy parasite infestation, the administration of antiparasitics is a type of medical prevention that improves the health and resistance of individuals. Some substances that improve resistance are well known to local communities (plant extracts, etc.), who have been using them traditionally for generations to combat disease – these types of healing are referred to as "**ethnoveterinary practices**".

Sanitary prevention, on the other hand, aims to prevent animals from being contaminated by pathogens. It is particularly important in the case of contagious diseases and is essentially based on the application of "**biosecurity measures**", such as the confinement or semi-confinement of livestock, housing livestock in a building during the night, the creation of natural barriers (hedges, grassed strips) between the animal and plant sections of a farm, disinfecting the habitat and immediate surroundings, quarantining newly acquired individuals before introducing them into the herd, etc. At country level, it also involves closely monitoring the movement of animals (particularly across borders) and the sale of food of animal origin, animal feed, food additives, biocides for veterinary purposes, and veterinary drugs, and preventing the smuggling of those products. If no vaccine or effective treat-



ment is available, then sanitary prevention and the application of biosecurity measures are the only option that can be used to protect herds against serious epidemics, such as African swine fever, which is currently decimating livestock throughout Asia and in parts of Europe.

**Lastly, in addition to the application of preventive measures, another way to reduce the use of drugs produced by the chemical industry – including antibiotics and antiparasitics – is to favour, wherever it is possible and justified, the use of alternative treatments from other fields, such as phytotherapy or aromatherapy, or based on traditional local knowledge, such as ethnoveterinary practices.** It is essential in the current global context to keep a record of such practices (which are often in danger of disappearing, as they come from an oral tradition), evaluate them on the basis of data available in the literature, and disseminate any practices that appear to be effective. These practices may be very useful alternatives to allopathic treatments, but they may not be very accessible (materially or economically). They may also be dangerous if heavily used or misused. But this does not mean that the use of allopathy must or may be totally banned. There are generally no contraindications to adopting both approaches simultaneously; on the contrary, these two types of medicine should be used complementarily, depending on the situation.

# Recommendations for better controlling animal diseases in livestock farming, and promoting One Health

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## → For competent international organizations (OIE, FAO, WHO, and other UN agencies)

- OIE : issue guidelines concerning CAHW activity and its integration into national systems for animal health/VPH.
- FAO, OIE : work more with existing CAHW networks for carrying out actions in the field, such as global campaigns to eradicate major contagious diseases (PPR, foot-and-mouth disease, rabies, etc.), promoting best practices in livestock farming (including biosecurity) in order to prevent the introduction and circulation of diseases, and actively participating in epidemiological-surveillance and crisis-response systems.
- FAO, OIE, WHO : work more with professional entities capable of promoting the One Health approach in the field, such as NGOs (VSF-I network, human health, environmentalists, etc.), with a view to pooling skills and engaging in joint development.
- FAO, OIE, WHO : continue efforts to inform member states about the importance of anticipating the outbreak and spread of contagious diseases affecting humans and/or animals at cross-border level, as well as at community and regional levels.
- OIE, WHO, UN : recognize the importance and support the validation of ethnoveterinary practices as sources of knowledge and potential alternatives to “ modern” pharmacopeia, for instance by declaring them “ global public goods ” (OIE, WHO) or classifying them as world heritage (UN).

## → For French and European public authorities

- Promote policies that favour smallholder crop and livestock farming and that recognize the importance of those models when it comes to addressing health, food, environmental, and climate challenges, and combating inequality, particularly by focusing on high-quality local services.
- Give priority to initiatives that are based on the One Health concept, in order to protect public health in both the Global South and North.
- Encourage preventive policies in animal and human health in the Global South, including recognition of CAHWs by partner countries in national systems for animal health when the national veterinary network is insufficient.
- Encourage the recording and preservation of ethnoveterinary knowledge wherever it is still alive.

## → For public authorities in the Global South

- As part of the implementation of the One Health approach, develop public policies in support of smallholder livestock farming that recognize the importance of those models when it comes to addressing health, food, and environmental challenges, and combating poverty in rural areas.
- Recognize CAHWs, and supervise their work through national regulations.
- Define an ad hoc training curriculum for CAHWs at national level.
- If the country’s veterinary and veterinary para-professional network is insufficient, organize the creation of CAHW networks in the field in order to provide local services for livestock farmers, perform epidemiological surveillance, and carry out initiatives in the field such as global campaigns to eradicate major contagious diseases (rinderpest, foot-and-mouth disease, rabies, etc.)
- Help put the One Health concept into operation in the field, for instance by creating local “ One Health cells ” (at district level, or at municipality/village level) of stakeholders at grassroots level in animal health, human health, and environmental protection.
- With regard to animal health and VPH, give priority to strategies that are based on a preventive approach for greater efficiency.
- Help support investment for local processing facilities that comply with the rules for quality and cleanliness.
- Organize the recording, preservation, and evaluation of ethnoveterinary practices at national level as part of scientific studies (universities, etc.).

# References

## ONE HEALTH PROJECT

### → One Health in Cambodia's farming communities

Supporting the integrated management of animal, human, and environmental health issues as part of the One Health approach for 133 families in 14 villages through the application of numerous preventive and biosecurity measures, and greater consideration of zoonotic diseases.

## ANIMAL HEALTH PROJECT

### → Village animal health workers in Cambodia

Offering training for over 2,000 village animal health workers, elected by their respective communities, who provide veterinary services for smallholder families in villages : epidemiology, preventing and treating diseases, and improving production.

## FAGNATSARA PROJECT

### → A harmonized, long-lasting animal health system in Madagascar

Strengthening the veterinary network in Amboasary and Tsihombe, in order to provide local animal health services to 1,850 smallholder families, and reorganizing the operational structure of animal health stakeholders at national level.

## NORTHERN MALI LIVESTOCK-FARMING PROJECT

### → Livestock farming and animal health in Timbuktu, Mali

Offering training for 50 livestock-farmer relays for a grassroots veterinary service, ensuring participation of mixed mobile health teams in the vaccination of ruminants, and supporting the creation of five innovation platforms for animal health in five towns in the Timbuktu region.

## ANIMAL HEALTH PROJECT IN MONGOLIA

### → Animal health service in the Mongolian plateaus

In partnership with the United Private Veterinary Clinics of Mongolia Cooperative (UPVCMC), monitoring herd health for 500 nomadic families in the province of Dornogobi, and supporting the training and organization of livestock farmers in animal health.

# Resources

→ *Dispositifs de santé animale de proximité et de qualité : les enseignements de l'expérience d'AVSF*, Isabelle Tourette-Diop & al, AVSF, 2010

→ *One Health implementation in the Global South: VSF-International Policy Brief*, Gomarasca Margherita, Miller Manuelle & al, AVSF-VSF-Int, 2020

→ *Innovative Action: One Health in Cambodia's farming communities*, Manuelle Miller, AVSF, 2020

→ *Les actions innovantes d'AVSF : Des agents communautaires de santé animale à Madagascar*, Miller Manuelle, Pleurdeau Grégoire, Rakotoarimanana Ravo, AVSF, 2020

→ *Les actions innovantes d'AVSF : Santé animale et groupements de défense sanitaire en Mongolie - An ex-post evaluation*, Dufour Barbara, AVSF, 2019

→ *How to integrate One Health approach into our cooperation?*, Mason Stefano, Miller Manuelle, AVSF – VSF-International, 2019

→ *Agents communautaires de santé animale (ACSA) : des gardiens de services de santé animale de proximité et de qualité dans les pays du Sud*, Gomarasca Margherita, Petit Hervé, Van Troos Koen, AVSF - VSF-International, 2019

→ *Les expériences innovantes d'AVSF : Aviculture villageoise et santé animale de proximité au Togo*, Lhoste Philippe, Mason Stefano, AVSF, 2016

→ *Innovative Experiences of AVSF: Proximity Animal Health Services in Cambodia*, Min Sophoan Petit Hervé, AVSF, 2014

→ *Les expériences innovantes d'AVSF : Soigner les Hommes et les animaux au Nord Mali*, Chapon Marc, Mason Stefano, Ragounandea Appolinaire Guéodiba, AVSF, 2013





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As a French association that promotes international solidarity, Agronomes & Vétérinaires Sans Frontières (AVSF) has been working with smallholder communities and organizations in developing countries for over 40 years to address food-related issues. We provide them with the professional skills they need in agriculture, livestock farming, and animal health: technical and financial assistance, training, access to markets, etc. AVSF carries out over 60 cooperation programs in 20 different countries in Central and South America, Asia, and Africa, working with smallholder communities where crop and livestock farming are essential to ensuring food security as well as social and economic development. AVSF is an officially recognized non-profit association in France.

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