



Action for Animal Health

Senegal: The case for investing in animal health to support One Health

The world has seen the emergence of new zoonoses or new epidemic peaks. More than 75% of emerging infectious diseases have an animal origin.^{1,4} This has increased attention to the "One Health" approach to control global health threats such as zoonotic disease and antimicrobial resistance (AMR).

Despite this, investment in animal health is low in low- and middle-income countries. Senegal's animal health system suffers crippling shortcomings such as shortages and poor distribution of veterinary staff, unequal access to veterinary services, abuses in the circulation and use of veterinary medicines and vaccines, inadequacies in surveillance of animal diseases and low interest in animal welfare.

We make recommendations to public authorities, the private sector, donors, multilateral organisations to strengthen the animal health system, so that Senegal can fully play its role protecting global health.



Case study: Senegal

Senegal covers an area of 196,722 km² and is located on the extreme western tip of the African continent.³ In 2022, the total population of Senegal was 17,738,795, with an average age of 19 years. The annual GDP growth rate (2021) is 6.5% and the inflation rate is 9.7% (2022). The unemployment rate is 22% (2022) and the poverty rate was estimated at 37.8% in 2017.¹ Livestock farming is carried out by 32% of households. It accounts for about 28.5% of the GDP of the primary sector and 4.4% of the national GDP.¹ The number of livestock (excluding poultry) amounted to 19,883,875 head in 2021. Ruminants (sheep, goats and cattle) make up the largest population (93%). Industrial poultry has grown in recent years (30,953,261)* and is now overtaking traditional poultry. The number of animals per livestock household is 15, 18, 15, 11 and 2 for sheep, poultry, cattle, goats and horses, respectively.²

The total number of horses is 1,323,099 head, including 517,891 horses and 805,208 donkeys. Draught horses play a considerable socio-economic role in the service of the poorest populations. They are essential to transport of people and goods, in agriculture and in the transport of water in arid and semi-arid areas.⁶ Senegal has a directorate dedicated to equines, the Directorate of Equine Development (DDE). Equines are thus fully integrated into the animal health system, and annual vaccination against African horse sickness is mandatory.



32%

of households carry out livestock farming accounting for 28.5% of the GDP of the primary sector and 4.4% of national GDP.¹

22%

the unemployment rate in Senegal. The poverty rate was 37.8% in 2017.¹

6.5%

GDP growth rate in Senegal with inflation at 9.7%.

19 years

the average age in Senegal, out of the total population 17,738,795.

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Despite the efforts of the State, livestock farming remains largely underfunded in relation to its socio-economic contribution
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Fig.1
Livestock population
of Senegal
(in millions)



Overview of the animal health situation

The animal health sector is under the responsibility of the Ministry of Agriculture, Food Sovereignty and Livestock (MASAE). The MASAE has branches that carry out its missions at the decentralized level (SRELPA, SDELPA and veterinary posts). This public system is supplemented by a private system made up of veterinarians and veterinary paraprofessionals established in private practice.

Despite steady and continuous growth, the livestock sector continues to face endemic, emerging and re-emerging diseases, which hinder its full development. Diseases such as foot-and-mouth disease, pasteurellosis, peste des petits ruminants, Newcastle disease and zoonotic diseases such as rabies, bovine tuberculosis, avian influenza, Rift Valley fever, anthrax and viral haemorrhagic fevers constitute a heavy burden on the country, posing a threat to both animal and human health.

Access to animal health services

The need for veterinary services is high in Senegal. The main reasons for this are: the large number of animals, the intensification of livestock farming in some regions (industrial poultry farming, modern dairy sector, peri-urban and urban sheep farming), a clear increase in pet adoptions and the epidemiological context marked by endemic, emerging and emerging diseases (KI)

However, the lack of human resources in the public and private veterinary sectors (which we explore in the next section) is reflected both in the number of veterinarians and veterinary paraprofessionals available, but also in their distribution across the country, with rural areas being underserved.

The void is often filled by livestock auxiliaries (AEs), who are well integrated into the communities and fill the void left by the non-existence or remoteness of services. These AEs have rudimentary training based on the provision of basic services such as vaccination. As a result, they do not have the level of competence required for the proper practice of veterinary medicine and use of veterinary pharmaceuticals, which they are able to obtain

despite the existence of legislation prohibiting them from accessing them. Unlike other African countries that integrate AEs into the system to fill the human resources gap, they have no legal existence in Senegal, and attempts to make them full-fledged actors are met with hostility from other animal health professionals.

Another consequence is that the use of traditional treatments and the practice of self-medication are widespread among pet owners who are in areas far from services.

Unequal community access to animal health services leads to long-term weakening of the animal health system. The use of unqualified frontline providers does not guarantee the quality of care provided, and self-medication of antimicrobials increases the risk of spreading antimicrobial resistance (AMR). This also leads to shortcomings in the inspection of food of animal origin, endemicity of zoonoses, unmet vaccination targets, and subsequent difficulty in controlling priority diseases.

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Reducing the disparity in the geographical distribution of public and private veterinary services is a necessary condition for strengthening the animal health system in Senegal

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Animal health workforce

Training and regulation

The sector is made up of veterinary doctors, livestock work engineers (ITE) and livestock technical agents (ATE). Livestock auxiliaries (AEs) are at the fringes of the system: they have no specific training and their number is unknown.⁷ As a result, their activities are difficult to regulate, with some practicing illegally, and misusing antimicrobials.

The World Organisation for Animal Health (WOAH) launched the Professionalization of Veterinary Paraprofessionals (ITE and ATEs) project in 2020 aimed at improving access to quality veterinary services. The expected results are: the upgrading of an institutional framework allowing for a harmonious and coherent development of the different categories of veterinary staff, including veterinary paraprofessionals; the strengthening of the skills of veterinary paraprofessionals through the improvement of initial and continuing training; and the development of a sustainable socio-economic framework to facilitate the professional integration of veterinary paraprofessionals. At the end of the project, it is expected that Senegal will partially fill its human resources deficit with the integration of veterinary paraprofessionals into the labour market, whose quality of training is in line with the WOAH guidelines on the competencies of Veterinary paraprofessionals.

An OIE (the previous name for WOAH) Performance of Veterinary Services mission in 2016 noted the excellent levels of qualified managers (veterinarians and other professionals with a university degree) as well as veterinary paraprofessionals and the homogeneity of their initial training.⁴ However, once they have qualified, there is no formalised system for monitoring the quality of the services offered.

The ODVS (Order of Veterinary Doctors of Senegal) is the veterinary statutory body in charge of regulating the profession, including the practice of private ITE and ATE. However, the ODVS is experiencing difficulties in exercising its role of control of the private animal health system.¹⁷

Indeed, the adoption of a regulation authorizing ETAs and ETIs to provide clinical services and the fact that these veterinary paraprofessionals (as well as pharmacists) are not members of the ODVS or under its regulatory control make it almost impossible for the statutory body to regulate their activities.



The public sector

Veterinary staff work in a mixed environment, consisting of public and private veterinary services.^{19,5} In recent decades, the system has gone from state-led, where animal health was the prerogative of the government, to privatization (which occurred in a context of economic crisis, with a desire on the part of the state to sharply reduce public spending).¹⁸

The distribution of state veterinary services is modelled on Senegal's administrative subdivisions, ensuring territorial coverage across regions, departments, arrondissements, and communities. The main functions of the public sector are: the formulation and implementation of animal health and veterinary public health policies and strategies; the development and implementation of animal-origin food safety regulations; the import and export of veterinary medicines, animals and products of animal origin; animal health protection through the implementation of the national epidemiological surveillance system, medical and health prophylaxis against animal diseases; enforcement of regulations in the fields of animal health, veterinary public health, the veterinary profession and pharmacy, animal welfare and the quality of feed.

The private sector

The privatisation of veterinary services began in the early 90s.¹⁵ Subsequently, institutional arrangements made it possible to extend the prerogatives of providing animal health services on a private basis to veterinary paraprofessionals such as ITE and ATE. Other actors such as livestock auxiliaries who have generally been trained by NGOs involved in supporting the development of livestock are also tolerated and come to complement the above-mentioned categories.¹⁶ The responsibilities of the private sector are: the practice of veterinary medicine, surgery and pharmacy, the practice of zootechnical and animal health advice, the issuance of official health certificates for acts performed in the exercise of their clientele, and collective zooprophylaxis through the health mandate.



Brooke's Animal Health Mentoring Framework

The Animal Health Mentoring Framework is a tool for clinical case-based assessment that helps connect skills and resource gaps by identifying the individual level of competence of animal health professionals. This multi-competency framework requires the practitioner to be a good advocate for animal welfare; an effective communicator; an excellent clinician; in possession and able to maintain a kit of essential medicines and equipment; able to demonstrate good clinical governance.

Brooke West Africa monitors 123 animal health practitioners in Senegal and Burkina Faso, conducting their assessment quarterly. The data collected is used as part of clinical quality monitoring by examining gaps common to all practitioners. The framework identifies gaps in the animal health system, such as the unavailability of specific medicines. By identifying the individual and collective shortcomings of practitioners and students, but also those of the animal health system, the AHMF makes it possible to improve education and continuing training of practitioners, and to advocate for the strengthening of animal health systems.

Coverage

The public sector is made up of 30 veterinarians and 328 veterinary paraprofessionals. Despite the recruitment efforts made by the State, these numbers remain insufficient.¹² Additional staff needs were estimated in 2022 at 19 people at the central level and 113 people at regional levels.

140 veterinarians are set up in private practice - 88% of whom are better urban and semi-urban. There are great disparities between the different agro-ecological zones, and between urban and rural areas (76% of private practitioners are in urban and semi-urban areas): the network is inadequate in the regions of Kédougou, Kolda, Fatick, Tambacounda and Saint Louis, while Dakar is practically saturated. The additional needs in terms of human resources have been estimated as 35 private veterinarians and 97 private veterinary paraprofessionals to ensure a good network and distribution of private veterinary services.¹²

49 ITE are installed in private practice, 76% of which are in urban areas. The coverage radius of a private ITE is 35 km on average, with a maximum of 117 km (Tambacounda) and a minimum of 4 km (Dakar). 170 ATE are set up in private customers, 65% of which are better urban. The coverage radius of an ATE is 19 km on average, with a maximum of 67 km (Tambacounda) and a minimum of 2 km (Dakar).

Access to medicines and vaccines

The value chain of veterinary medicines is well integrated, and the actors are well known. The first players are the importers, who are organised into companies set up by veterinarians who are in representative or customer relations with the major international veterinary pharmacy firms. These companies supply them with wholesale products that must be approved and meet the marketing criteria laid down by the West African Economic and Monetary Union (WAEMU). Thirteen importers of this type of veterinary medicinal product have been identified in Senegal, in addition to several wholesalers of human medicinal products who also import veterinary medicinal products.¹¹

The second link in the chain is veterinary practices and pharmacies, on the one hand, and human pharmacies on the other. Indeed, Law 2008-07 of 24 January 2008 organising the veterinary profession and pharmacy in Senegal extends the prerogative to hold and distribute veterinary medicines to human pharmacies in the same way as private veterinary doctors. In addition, for some years now, there have been attempts to control the distribution of veterinary medicines by pharmacists, and a law has recently been passed to this effect, even if it has not yet been promulgated.

The third link is made up of depots of veterinary medicines owned or managed by veterinary para-professionals - in this case livestock work engineers (ITE) or technical livestock agents (ATE). Normally, the latter get their supplies at retail level at the veterinary or human pharmacy level. Thus, access to medication is facilitated by the presence of the three links that allow good availability of medication in the national territory.¹¹

From the legal point of view and the prerogatives of the various actors, the distribution scheme for veterinary medicinal products is very clear. However, the reality on the ground is very different, marked by a certain disorganization.



Despite legislation for more than a decade, the sale of veterinary medicinal products in the field is not sufficiently well controlled. A large black market and the non-compliance with prescription rules by veterinarians, Veterinary paraprofessionals and pharmacists call the functioning of the system into question. The problem is less access to medicines than distribution, which is anarchic and uncontrolled to a certain extent.

Self-medication is widely practiced by farmers (uncontrolled access to medications, difficulties in accessing veterinarians and veterinary paraprofessionals), not to mention some veterinary paraprofessionals who sometimes engage in abusive and anarchic use of medicines, including deficiencies in the administration of the indicated doses, deficiencies in the diagnosis of diseases. As a result, AMR has become a major concern due to overuse of antimicrobials. In 2019, there were 2,700 AMR-related deaths and 11,900 AMR-related deaths.²⁰ The government has since developed the National Multisectoral Antimicrobial Resistance Surveillance and Control Action Plan (2018-2022), with "One Health" activities often devoted to AMR. Finally, the marketing of medicines without marketing authorisation raises doubts about the quality of certain medicines.

Medicines used for euthanasia are the exception as their access is strictly regulated and they are often out-of-stock at the national level.

Deficiencies in the control of the distribution and use of veterinary medicines have a negative impact on human and animal health, as well as animal welfare. Indeed, the presence of medicines of dubious quality, the self-medication practiced by farmers, the non-existence or inadequacy of prescriptions lead to ineffectiveness in the treatment of animal diseases including zoonoses and increase the risk of AMR. In addition, the difficult access to dedicated medicines (and their high cost) makes it practically impossible to practice euthanasia in conditions that respect animal welfare.

The animal health situation and disease surveillance

Senegal organises an annual national livestock vaccination campaign targeting the following priority diseases (compulsory vaccination): peste des petits ruminants (PPR); African horse sickness; Newcastle disease; lumpy bovine skin disease (CBND); contagious bovine pleuropneumonia (CBPP).⁹ Vaccination campaigns are financed by the State, donors and the contribution of livestock farmers (about 40% of the total cost of vaccination). Despite their regularity, vaccination coverage rates remain low, due to some vaccines being out-of-stock during the campaign, lack of awareness among leaders and communities, the lack of vaccination parks and the lack of control of the workforce.⁸ Some diseases remain endemic, and CBPP, which Senegal was declared free from, reappeared in 2022.

Other targeted vaccinations campaigns include haemorrhagic septicaemia, pasteurellosis of small ruminants, botulism, symptomatic anthrax, anthrax, foot-and-mouth disease, enterotoxemia, Rift Valley fever, porcine pasteurellosis and rabies. Despite these efforts, challenges remain, as evidenced by relatively low vaccination coverage rates (Fig.2).

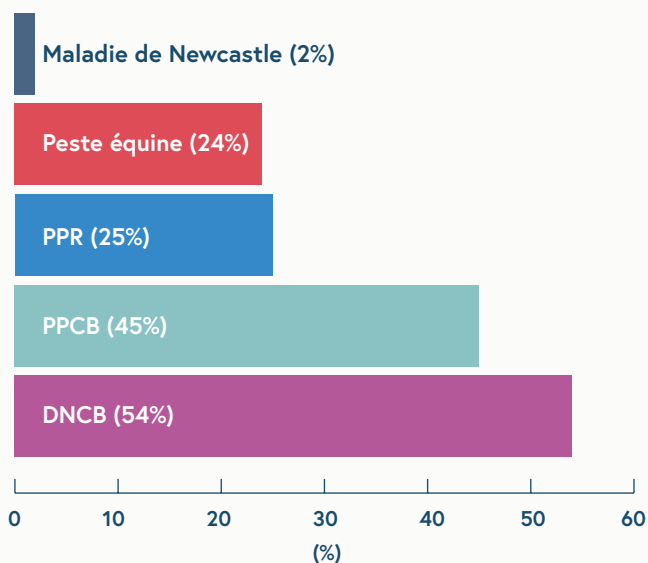


Fig.2 Average vaccination coverage rate against priority diseases (2018, 2020, 2021)¹²

These diseases are monitored through epidemiological surveillance networks, as part of the National Epidemiological Surveillance System (SNSE) for animal diseases. The general objective is to safeguard animal and public health and to adapt the control of animal diseases to the new context of globalisation of trade and the risks associated with trade in animals and products of animal origin

The main constraints of the SNSE are:

- Central level: insufficient financial resources allocated to support surveillance (costs of taking and sending samples, etc.); insufficient human, material, logistical and infrastructure resources; problems with activation, non-functioning of the committees; delays in obtaining laboratory results
- Field level: problem of activating the epidemiological surveillance network; insufficient logistical, human and operational resources; low involvement of private veterinarians (problem of remuneration); delay in the return of animal health information; under-reporting due to the endemicity of diseases, which leads to an additional workload for an understaffed workforce; the six regional laboratories of the veterinary services are not operational, which complicates disease diagnosis at regional and community level

Because of these difficulties, livestock farming is facing endemic, emerging and re-emerging diseases. A total of 6,538 disease outbreaks were reported in 2018, 2020 and 2021 in the different regions.⁹ In general, foot-and-mouth disease, pasteurellosis and peste des petits ruminants (PPR) occupy an important place in the clinical suspicions that have been reported. It should also be noted that the health situation in the country is regularly updated on the WOA World Animal Health Information System (WAHIS).

MEASURE Evaluation: Community-based surveillance of priority zoonoses

In 2018-2019, the NGO implemented a project "Community-based surveillance of priority zoonoses and human diseases through the One Health approach in Senegal, in six health districts in the regions of Saint Louis and Tambacounda. Nurse heads of posts (ICPs), heads of veterinary posts (CPVs), professionals in the environmental sector, community monitoring and alert committees (CVAC) and 391 high school students were trained and guided on the "One Health" approach and the reporting of priority zoonoses under surveillance. Bovine tuberculosis was the most frequently reported disease with 58 signals, accounting for 37% of all zoonotic disease signals, including Ebola virus disease, which has been under surveillance since the start of the pilot phase in 2017. It is followed by rabies with 38 signals, or 24%.

Collaboration for One Health

One Health is managed by the High National Council for Global Health Security (HCNSSM). It was created in 2017 by Primal Decree No. 21787 of 11 December 2017. Since 2019, it has been attached to the General Secretariat of the Government of Senegal. Its mission is to set the strategic orientations of the "One Health" global health security program within the framework of compliance with the International Health Regulations (IHR).¹⁰ In addition, it is responsible for ensuring the synergy and complementarity of the sectors responsible for human, animal, environmental, food and nutritional security, food safety, public safety, civil security, social security, economic security and digital security.

Senegal takes part in the Programme de sécurité sanitaire mondiale (PSSM) based in One Health. The national platform, Haut Conseil National pour la Sécurité Sanitaire Mondiale (HCNSSM), is financed through internal resources (State, local authorities and private sector funds) and external resources (bilateral and multilateral partners).

However, the mobilisation of resources is a major problem: the contribution of the state and partners is inconsistent, and the amounts mobilised are not up to the ambitions of the HCNSSM.



The full operationality of the One Health platform is hampered by the difficulties of mobilizing internal and additional resources from external partners

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Animal health is an integral part of One Health in Senegal. Zoonoses, AMR and vaccinations against animal diseases are well included in the annual work plan of the MHPS.

The following are notable actions:

- Collaboration for zoonotic activities: in this context, six zoonotic diseases have been prioritised (rabies, avian influenza, bovine tuberculosis, viral haemorrhagic fevers (Ebola and Marburg), anthrax and Rift Valley fever. Other priority activities include updating the zoonotic risk mapping; communication to communities on zoonoses; surveillance and reporting of zoonotic diseases; the establishment of a functional mechanism for sharing data on zoonoses; scaling up community-based surveillance
- Antimicrobial resistance: Production and dissemination of communication materials on self-medication and the illicit sale of veterinary and human medicines and phytosanitary products (agriculture); AMR communication plans and awareness campaigns; monitoring antibiotic resistance of *Escherichia coli* and *salmonella* strains in livestock and the environment; support for the establishment of mini-veterinary laboratories following a good network of the territory to carry out antibiograms
- Vaccinations: the annual workplan takes into account vaccinations for animals, in particular support for annual livestock vaccination campaigns



Recommendations:

These recommendations are addressed to the government, the private sector, donors, multilateral organizations and NGOs. They are a plea for investment in animal health to support One Health

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Support community engagement and access to services

- Implement the community dimension of "One Health" by fully operationalising decentralised multisectoral coordination committees and community platforms that bring together all local actors
- Educate communities about the dangers of self-medication and medicine misuse
- Continue to bring veterinary services closer to communities
- Incentivise private practitioners to set up in deprived areas (Casamance, Kédougou, Ferlo); subsidies for installation, raising the level of remuneration for services offered by the private sector (vaccination campaigns), better inclusion of veterinary paraprofessionals in public health missions

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Increase and improve the animal health workforce

- Build workforce numbers by recruiting the recommended additional 17 veterinarians and 122 veterinary paraprofessionals in public veterinary services, and the estimated 91 veterinarians and 278 veterinary paraprofessionals in the private sector
- Promote continuing professional development (CPD) among private practitioners, for the maintenance and updating of knowledge and skills as well as the improvement of practice
- Establish an institutional framework allowing for a harmonious and coherent development of the various animal health professions (veterinarians and veterinary paraprofessionals in particular)
- Strengthen the ODVS to fulfill its mission of regulating the veterinary profession (including veterinary paraprofessionals) in the private sector
- Operationalise the supervision of veterinary paraprofessional activities by private veterinarians covering the same area
- Finalize the revisions to curricula (P3V project) and their compliance with the OIE Competencies Guidelines for Veterinary Paraprofessionals

3



Close the veterinary medicines and vaccines gap

- Prevent vaccines from going out-of-stock, which contribute to relatively low vaccination rates against the five priority diseases
- Implement additional measures to improve livestock vaccination rates: raising awareness among livestock farmers, increasing vaccination parks and human and logistical resources
- Strengthen the Regional Committee for Veterinary Medicinal Products to speed up the process of granting marketing authorisations
- Correct malfunctions in the procedures for importing, distributing and using veterinary medicinal products
- Place special emphasis on distribution and use of antimicrobials to control AMR
- Prevent cross-border trade in fraudulent veterinary medicines
- Strengthen the capacities of the Laboratory for the Control of Veterinary Drugs (LACOMEV) to enable it to better fulfill its mission, in particular: quality control of veterinary drugs (finished products); identification and dosage of active ingredients

4



Improve animal disease surveillance

- Strengthen the operational system of the SNSE at the regional and community level (allocation of financial resources, animation, logistics)
- Fill the gap in human resources (veterinarians and veterinary paraprofessionals) in under-resourced regions
- Involve private veterinarians and paraprofessionals as well as communities in epidemiological surveillance
- Report notifiable diseases through the WAHIS system (World Animal Health Information System)
- Operationalise regional laboratories to improve diagnostic capacity at the decentralized level

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Enhance collaboration for One Health

- Advocate for investment in animal health systems to prevent critical shortages of animal health personnel, medicines and vaccines, poor access to services, and gaps in disease surveillance
- Advocate for mobilisation of internal resources for the sustainability of PSSM with budget line entry
- Take full advantage initiatives such as the World Bank Pandemic Fund
- Improve coordination and communication among stakeholders, implement integrated information and surveillance data sharing platforms for human, animal and environmental sectors
- Strengthen the institutional and legal framework of the HCNSSOH

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Eight key informants (KI) were interviewed for the collection of primary data. These KI are veterinarians, consultants or project managers working at MASAE, WOAHA, NGOS (VSF) and HCNSSM

The report was written by Dr Mactar Seck (Brooke West Africa) and reviewed by Ellie Parravani (Action for Animal Health) and Dr Mahamadou Fadiga.

Action for Animal Health (A4AH) advocates for more investment in strong and resilient animal health systems that protect people, animals and the planet. It is a coalition of partners – multilateral organisations, NGOs, research institutes and others with expertise in animal health, human health, environmental health and related fields.



**Action
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Full report at actionforanimalhealth.org
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Action for Animal Health calls for governments, donors, and implementing agencies to prioritise investment in animal health systems to operationalise One Health as a sustainable development strategy.

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