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Essay

Nigeria, a major factor in the growth of the pig industry in Africa, prospects for Africa: review and validation of the national strategy for control of african swine fever and social behavioural change communication materials in Nigeria

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Nigeria, a major factor in the growth of the pig industry in Africa, prospects for Africa: review and validation of the national strategy for control of african swine fever and social behavioural change communication materials in Nigeria

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Abstract

African Swine Fever (ASF) is a highly infectious and contagious viral transboundary animal disease (TAD) with catastrophic effects on the pig industry once there is an outbreak of the disease, of which the Nigerian pig industry has had its backlashes due to several effects of ASF outbreak events in the country, especially in the last decade. The socioeconomic effect of the disease is huge, and the country witnessed shock-induced hospitalization and death of some pig farmers as a result of the impact on the source of their livelihood and the huge loans collected to set up the business. The prospect of the industry in Nigeria is boundless, with the potential of human resources and possible funding for farmers to grow the industry, combined with the implementation of the National African Swine Fever Control Strategy (NASFCS) document. We reviewed and validated the NASFCS document and the Social Behavioural Change Communication (SBCC) Materials designed. The workshop was conducted by the Food and Agriculture Organisation of the United Nations - Emergency Centre for Transboundary Animal Diseases (FAO-ECTAD) in collaboration with the Federal Ministry of Livestock Development (FMLD) and funded by the Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs) Defense Threat Reduction Agency (DTRA) Option 3 ASF Project. Thirty-eight participants consisting of staff from FAO and FMLD and partners drawn from the Veterinary Council of Nigeria (VCN), Nigeria Veterinary Medical Association (NVMA), Nigeria Agricultural Quarantine Services (NAQS), National Veterinary Research Institute (NVRI), the Academia, Veterinary Paraprofessionals (VPPs) from the Nigerian Association of Animal Health and Husbandry Technologists (NAAHHT), private veterinarians, National Pig Farmers Association (NPFA), and other relevant sectors from across the country. Participants were divided into groups for the review of the strategy document and the SBCC materials. At the end of the workshop, participants were enlightened on the use of the NASFCS document, matters challenging the pig industry in the nation were discussed, including the way forward for the development and sustenance of the industry. Finally, the NASFCS document and the SBCC materials were reviewed and validated to enhance awareness and effective control of the disease in Nigeria.

Essay

African Swine Fever (ASF) is a viral infection characterized by signs such as fever, huddling, pinkish discolourartion of the skin and whitish discharges from the eyes and nose which may result in almost 100% mortality of the herd during outbreaks [1]. Transmission of the disease occurs through contact with infected dead pigs (dead or alive), infected pork meat and products, and contaminated farm equipment´s. The viral infection has no conventional treatment and vaccination is not yet in practice [2], majorly impairing the prevention of the disease and hence, its huge economic impact. The disease affects both domestic and wild pigs.

Global state of pig production and prospects for Africa

The Food and Agricultural Organisation of the United Nations (FAO), stipulated that pork is the most common source of meat globally consumed accounting for 36% of the world´s total meat consumption followed by poultry (33%), beef (24%), goats and sheep (5%) [3]. Despite the popularity of pork, the consumption in Africa ranked 5th after poultry, beef, mutton and chevon [4,5] while the per capita meat consumption in Africa for poultry is 6.30 kg, beef (5.22 kg), chevon and mutton (2.39 kg) and pork (1.53 kg) [6]. Nevertheless, the continent has huge prospects in the advancement of the pig industry even though the current consumption rate differs by far from what is obtained in Asia (14.35 kg) and Europe (33.79 kg) [6].

Notwithstanding the growing consumption of pork globally, the menace of ASF globally is reflected in reports from sixty-four (64) countries from January 2022 to December 2024 [7]. The global impact of ASF (January 2022 to December, 2024) on domestic pigs was 10,556 outbreaks, 828,654 cases, 1,914,999 losses (dead and culled pigs due to ASF outbreaks) while in wild boars there were 17,327 outbreaks and 28,568 cases [7]. Europe had the highest number of cases and deaths; 4378 outbreaks, 443,066 cases and 1,320,424 losses in domestic pigs and 17,215 outbreaks and 28,568 cases in wild boars. The Highest number of outbreaks in domestic pigs was in Asia; 4,936 outbreaks, 291,697 cases and 504,147 losses, as well as 107 outbreaks and 540 cases. The continent with the least number of outbreaks and deaths with zero report on wild boars was the Americas; 65 outbreaks and 467 cases while Africa reported; 777 outbreaks, 93,424 cases and 81,016 losses [7].

Africa contributes about one-third of the global livestock production [8], constituting about 40% of Africa´s agricultural GDP [9]. Projections on livestock demand for meat and meat products in Sub-Saharan Africa (SSA) based on low and middle income consumers between years 2005 and 2007 projects increasing demands for animal protein by 2050 as a result of rising population, income, and urbanization; 107 million tonnes more meat and 5.5 million tonnes more milk [10]. Africa contributes 1.67% of the global pork production [6], which is quite low and a pointer for the need for development of this industry to meet the growing demand for animal protein on the continent. The overhaul of the entire pig industry in Africa in terms of the farming systems and biosecurity will cause the required change for the advancement of the industry. However, it is paramount to note that the disparity in pig consumption may accrue due to cultural, religious, economic, and geographical factors. Additionally, an increase in meat consumption is directly related to the standard of living as well as changes in taste and preferences [6].

Addressing the challenges of disease reporting in Africa, especially within the animal health sector, is crucial for accurately understanding the situation regarding African Swine Fever (ASF) on the continent. While there have been significant improvements in recent years to enhance surveillance systems for outbreak detection and disease reporting, there is still work to be done, given that over 70% of the pig population is found in rural communities [11]. Strengthening these reporting mechanisms could have a profound impact on managing and controlling diseases effectively and ultimately benefiting both animal health and local livelihoods. Pigs are primarily allowed to roam freely in search of food within an extensive management system. While this approach presents challenges to the industry's growth, it also opens up opportunities for innovation and improvement by enhancing management practices. Communities engaged in pig farming can increase their earnings and develop more sustainable livelihoods.

The estimated pig population rose from 35.6 million heads in 2013, according to FAO 2013, to 40 million heads in 2023 [12] in sub-Saharan Africa, indicating the relevance of the industry in

the region. The socio-economic impact of the pig farming industry in Asia, Europe, and the Americas presents important lessons for Africa. By improving pig production, the continent can enhance food security, create jobs, generate income and foreign exchange, and attract investment, paving the way for a better future [6].

West Africa has the highest pork production in Africa, with about 14 million, while Nigeria has about 9.5 million heads of pigs, contributing about 70% of pig production with about 90% raised under an extensive management system [13,14]. This growth has been largely driven by increasing urban demand for pork, which is often viewed as a more affordable and accessible protein source compared to beef and other livestock products [15,16]. Moreover, this development has created lucrative income for farmers and opened numerous job opportunities, employing millions of small-scale farmers. The industry is one of the fastest-growing industries in Nigeria with a promising future to increase national agricultural GDP [**6**]. However, the extensive management system, which exposes the pigs to all sorts of hazards, including the menace of diseases due to limited biosecurity, is a huge challenge to the industry [**6**].

Challenges of pig production in Nigeria

Impediments to pig production in Nigeria range from poor biosecurity measures, due to limited understanding of control measures by farmers, and limited market access, with many pig farmers operating in poorly structured markets with limited integration into organized value chains, thereby limiting profitability and low investment in pig enterprises. Others challenges are; inconsistent government policies, limited access to high quality breeding stock (poor genetics), inadequate infrastructure, high and unstable cost of inputs, such as feed and drugs, limited veterinary services, inadequate technical knowledge and skills, high mortality rate due to diseases, slow growth rate due to poor feed conversion, low off take, and low reproductive rates [4,17]. Furthermore, there are no price control systems in place for the purchase of pigs, which is often subjected to seasonal variations, limited slaughter facilities and unhygienic pig abattoirs and slaughter houses, exacerbated by limited infrastructures for refrigeration of pork, unstable electricity supply short-chaining the refrigeration process, inadequate transportation system for pork distribution, and refuse dumping in the live animal markets which serves as a source of environmental contamination, or infection to free-range pigs thereby maintaining the cycle of disease infection in pigs [17].

Challenges such as indiscriminate sourcing of pigs, indiscriminate sourcing of feeds and interactions at the feed mills; indiscriminate drinking water sources such as water logged areas and streams, locating of slaughter slabs within the vicinity of the pig farms, community sharing of boars among farms for reproductive purposes; sharing of farm equipment´s among farmers, improper waste disposal methods, unscrupulous activities of farm attendants, managers, owners, veterinarians, veterinary paraprofessionals by visiting other farms to consult without adherence to adequate biosecurity protocols like restriction of access for visitors as well as community-level biosecurity [17].

An issue that has contributed to the negative perception of the industry in Nigeria during outbreaks of African Swine Fever (ASF) is the longstanding practice of cluster farming. A prime example is Oke Aro farms settlement, recognized as the largest pig farm in West Africa, located in Giwa/Oke-Aro. This extensive piggery estate spans over 30 hectares and boasts around 5,000 pens, all situated in Ogun State, Nigeria. It represents a network of farms housing an estimated 1 million pigs and involving about 5,000 farmers [18]. This farm has faced significant challenges, one of which was the outbreak of ASF that caused substantial losses of about 250,000 pigs with cumulative losses of about 4.9 billion naira in the year 2020 [18]. The incident led to the tragic deaths of four farmers, while around 30 others were

hospitalized due to shock and elevated blood pressure. This distress was primarily triggered by their overwhelming inability to repay loans amounting to millions of naira, which they had taken out to support their farms [19]. The challenge of ensuring biosecurity on farms in light of ASF outbreaks is significant, especially since these farms are situated closely together in the same region. However, this piggery farm brings certain advantages to the farming community. It has allowed pig farmers to come together to form pressure groups and cooperatives, giving them some control over slaughter, processing, and marketing operations. Additionally, they actively promote their products, enhancing their market presence [17]. Having pointed out these challenges, it is important to offer solutions that involve upgrading the farming system while also supporting farmers' cooperatives, which will foster the growth and development of the industry.

Validation of the National Strategy for Control of African Swine Fever and social behavioural change communication materials in Nigeria

The development of the National ASF Control Strategy and the production of SBCC materials is a major leap towards securing the future of the pig industry in Nigeria. This framework serves as a powerful tool for preventing disease outbreaks, curbing the spread of disease, and paving the way towards the potential eradication of ASF in our country. The enhancement and sustainability of the Nigerian pig industry to reach its full potential will depend on a series of strategic interventions; enhancing disease surveillance and control, especially for ASF; improving biosecurity infrastructure and farmer training; expanding access to finance, insurance, and veterinary care as well as strengthening market linkages and pork processing facilities, promoting inclusive policies that support small-scale producers, especially women, and youths. The initiative for the review and validation of the National ASF Control Strategy and the Social Behavioral Change Communication (SBCC) Materials from 26-27thof May 2025 was facilitated by the FAO-ECTAD, Country Office Nigeria, in collaboration with the FMLD through the funding of the GF-TADs DTRA Option 3 - ASF project. Participants were drawn from partners such as the Veterinary Council of Nigeria (VCN), Nigeria Veterinary Medical Association (NVMA), Nigeria Agricultural Quarantine Services (NAQS), National Veterinary Research Institute (NVRI), Academia, Veterinary Paraprofessionals (VPPs) from the Nigerian Association of Animal Health and Husbandry Technologists (NAAHHT), private veterinarians, National Pig Farmers Association (NPFA) and other relevant sectors (38 people). The general objective of the workshop was to review and validate the NASFCS document and the SBCC Materials while the specific objectives were to; outline areas that needed to be revised in the current National ASF Control Strategy in Nigeria; provide technical inputs by stakeholders on the critical areas that needed to be revised in line with the regional control strategy; introduce participants to the National ASF Control Strategy; discuss national ASF control strategies and make recommendations for improvement; establish a roadmap for the implementation of the National ASF Control Strategy; provide inputs from partners on the SBCC materials that were developed; and validate the NASFCS and the SBCC materials developed.

The workshop started with an opening session (Figure 1) by the representative of the Chief Veterinary Officer of Nigeria (CVON) followed by an overview presentation of the strategy by the ASF Strategy consultant. Participants were split into three groups, and the strategic document was divided into chapters for each group to review. The document was shared using Google SharePoint to enable participants to make inputs in real time. After which, the reviewed NASFCS was presented at the plenary to all participants, and views were shared for further enhancement of the document. Thereafter, the SBCC materials were presented, and inputs were made by the stakeholders. Finally, the document and SBCC materials were also presented for validation to the

entire house. The representative of the CVON validated the document and SBCC materials.

The role of FAO in the implementation of the NASFCS in Nigeria

The global role of the FAO is to prevent, detect, and control ASF which reduces its impact on food and nutrition security, livelihoods, and trade. These are; global coordination and policy guidance in collaboration with the WOAH under the GF-TADs, providing policy guidance and technical support to governments, strengthen ASF surveillance, prevention, and biosecurity regulations while ensuring a coordinated international response; surveillance and early detection through improve ASF monitoring, supports early warning systems, rapid response mechanisms, and risk assessments, enhancing laboratory capacities and provides training to enhance early detection and containment of the disease; promote biosecurity and disease prevention in collaboration with governments through practical and cost-effective biosecurity measures to prevent ASF outbreaks at local and national levels; capacity building and knowledge sharing such as the In-Service Applied Veterinary Epidemiology Training (ISAVET), workshops, and educational materials for veterinarians, farmers, and policymakers to strengthen ASF prevention and response and preparing countries for emergency response in the face of ASF outbreaks; encouraging and improving research and innovation towards evidence-based decision-support tools, diagnostic tools, disease transmission and advancing scientific research and innovative solutions for long-term ASF prevention and control strategies; assisting in emergency response and risk management during ASF outbreaks through provision of technical assistance, outbreak management strategies, and farmer support and development of containment plans in affected regions while reducing economic losses and safeguarding pig production [20].

Coordination with Regional and International ASF Control Initiatives

African Swine Fever, a transboundary animal disease (TAD) requires robust and effective control measures that involve both regional and international stakeholders. These includes; Nigeria aligning its national ASF prevention and control strategy with global and continental efforts through collaboration with the FAO and the WOAH to adapt and implement globally accepted ASF control protocols; partnering with the African Union - Inter-African Bureau for Animal Resources (AU-IBAR) to strengthen surveillance systems and facilitate rapid disease detection and reporting; engaging with the Economic Community of West African States (ECOWAS)-Regional Animal Health Centre (RAHC) to harmonize cross-border ASF control strategies and enhance regional animal health security; working within the framework of the Comprehensive Africa Agriculture Development Programme (CAADP) to promote the integration of the pig sub-sector into national and regional agricultural investment plans. Such collaborative efforts will enhance Nigeria's access to technical assistance, funding opportunities, and cutting-edge innovations in ASF control and creating an Enabling Environment for Safe and Sustainable Pig Production. Regional and International collaboration by drawing lessons from the successful control of TADs like Rinderpest and avian influenza will require Nigeria to share ASF surveillance and outbreak data with neighboring countries to mitigate cross-border transmission and also align national ASF control strategies with global and regional frameworks to enhance coherence and effectiveness.

Nigeria must seek robust political and financial backing to ensure a sustained commitment across all levels of government. This support is crucial for allocating dedicated funds aimed at preventing and controlling African Swine Fever (ASF) within both national and state budgets. Also, there is a need to seek donor support and attract private sector investments in ASF-related infrastructure and technologies. Advocating for the inclusion of

ASF control in national agricultural and food security policies is also essential. Strengthening Public-Private Partnerships (PPPs) will be vital, recognizing the important role the private sector plays in managing animal diseases like ASF Nigeria must enhance investments in agribusiness focused on African Swine Fever (ASF) diagnostics, vaccine development, and biosecurity measures. It is essential to collaborate with pig farming cooperatives and relevant industry stakeholders in the co-creation of practical and scalable solutions to ASF. These collective initiatives will foster a supportive ecosystem for enhancing ASF resilience, thereby ensuring that Nigeria's pig industry is well-prepared to confront current challenges and future threats with assurance and cohesion.

Conclusion

Africa Swine Fever is highly infectious with catastrophic effect to the pig farmers during outbreaks. The disease has no specific treatment or vaccine at the moment, which makes it a major source of concern. Challenges (extensive management system, poor biosecurity, low market value, and patronage of pork, etc.) faced by the pig industry in Nigeria are not insurmountable; they need to be addressed for the future prospects of the industry. The pig industry has great prospects in Nigeria which stands out as the largest pig producing country in Africa; this can only be achieved when there is a strategic plan as a route to achieve control of the disease as well as the availability of the social behavioural change communication materials which will further enhance the sanitization and awareness creation on the potential havoc of the disease and how to prevent it. The validation of the national ASF control strategy and the accompanying SBCC materials is a vital step toward realizing our vision of growing and sustaining the industry. By effectively implementing this strategy and collaborating with relevant international organizations and fostering public-private partnerships, we can make significant progress. Success in this endeavour will enhance food and nutrition security through increased pig production, boost both local and international trade, and provide a good source of economic stability to the farmers.

Competing interests

The authors declare no competing interests.

Authors' contributions

Concept; Ayi Vandi Kwaghe, data compilation and essay draft: Ayi Vandi Kwaghe. All authors (Ayi Vandi Kwaghe, Otto Vianney Muhinda, David Dazhia Lazarus, Patience Tomoh, Solomon Olorunleke, Magdalene Nanven, Wesley Daniel Nafarnda) read through the essay draft, edited for intellectual content and accuracy of information. All authors have read and approved the final version of this manuscript.

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Figure

Figure 1: group photograph of participants at the opening ceremony for the review and validation workshop for the National African Swine Fever Control Strategy document and social behavioural change communication materials validation held at Kini Country Guest Inn, Akwanga, Nasarawa State

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Figure 1: group photograph of participants at the opening ceremony for the review and validation workshop for the National African Swine Fever Control Strategy document and social behavioural change communication materials validation held at Kini Country Guest Inn, Akwanga, Nasarawa State