

Moving towards the global control of foot and mouth disease: an opportunity for donors

S. Forman⁽¹⁾, F. Le Gall⁽¹⁾, D. Belton⁽²⁾, B. Evans⁽³⁾, J.L. François⁽⁴⁾, G. Murray⁽⁵⁾, D. Sheesley⁽⁶⁾, A. Vandersmissen⁽⁷⁾ & S. Yoshimura⁽⁸⁾

(1) The World Bank, 1818 H Street N.W. Washington, DC, 20433, United States of America

(2) International Co-ordination, Policy and Risk Directorate, MAF Biosecurity New Zealand, Ministry of Agriculture and Forestry, Pastoral House 25, The Terrace, P.O. Box 2526, Wellington, New Zealand

(3) Canadian Food Inspection Agency, 1400 Merivale Road, Ottawa, ON K1A 0Y9, Government of Canada, Canada

(4) Sécurité alimentaire et développement économique (DGM/BPM/ALIM), Direction des biens publics mondiaux. Direction Générale de la Mondialisation du développement et des partenariats, Ministère des Affaires Étrangères et Européennes, 27 rue de la Convention, CS 91533, 75732 Paris Cedex 15, France

(5) Gardner Murray Pty Ltd, P.O. Box 4215, Weston Creek, Canberra, ACT 2611, Australia

(6) United States Department of Agriculture, Animal and Plant Health Inspection Service, 1400 Independence Ave SW Stop 3432, Washington, DC, 20250-3432, United States of America

(7) European Commission, Directorate-General External Relations, CHAR 13/106 1049, Brussels, Belgium

(8) Animal Health Division, Food Safety and Consumer Affairs Bureau, Ministry of Agriculture, Forestry and Fisheries, 1-2-1 Kasumigaseki Chiyoda-ku, Tokyo 100-8950, Japan

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Summary

Livestock contributes significantly to the world economy. However, animal diseases are still a major constraint on economic growth, the reduction of poverty and food security. Among the most significant diseases is foot and mouth disease (FMD), a highly contagious, multi-species animal disease with a devastating impact on national economies and trade. Less obvious is the severe constraint that FMD places on both development and the reduction of poverty in developing countries where this disease is endemic. As a result of its global implications and the high costs that it imposes on society, FMD is an infectious disease whose control and prevention are recognised as being a global public good.

Moving towards the global control of FMD should be considered a priority for donors, but will require long-term commitment from all parties, strong political will from governments and concerted financial support from donors. Areas of intervention must fall within the framework of programmes developed by international organisations, such as the Food and Agriculture Organization of the United Nations (FAO) and the World Organisation for Animal Health (OIE), through the FAO/OIE Global Framework for the Progressive Control of FMD and Other Transboundary Animal Diseases, as well as the disease control programmes of the regions concerned. Such a goal should specifically focus on analytical work (micro-economic impact and cost-benefit analyses of FMD at the household level and on the poor), research, surveillance networks, communication, monitoring and evaluation, and continuous strengthening of Veterinary Services.

Keywords

Animal diseases – Control – Cost-benefit analysis – Donors – Economic impact – Food security – Foot and mouth disease – Poverty – Veterinary Services.

Introduction

Livestock contributes significantly to the world economy. Moreover, this sector has considerable social and political importance. It is estimated that livestock accounts for 40% of the global agricultural gross domestic product (GDP); employs 1.3 billion people and generates a livelihood for a further one billion poor people in the world (18). Livestock is also the main source of protein and other nutrients for 830 million food-insecure people, in the form of meat or milk. Among its major contributions in the developing world, livestock:

- provides a source of cash for essential expenses (e.g. education, health)
- is an important source of traction to till the land and harvest crops
- provides manure to fertilise the soil
- provides the activity around which social networking occurs in many communities, in particular, Africa and Asia.

A significant leap in the world demand for animal protein is expected between now and 2020. This will come from the emerging middle classes in developing countries and their new consumer habits. Globalisation has resulted in an increasing trade in livestock and the number of animals and volume of animal products being exchanged at national and international levels are constantly growing.

Animal diseases have been identified as one of the major barriers to increasing livestock productivity and its consequent positive impact on the lives of those in developing countries (15). Highly contagious transboundary diseases, such as foot and mouth disease (FMD), have profound economic and social effects (7) and merit a high priority. This multi-species disease is capable of rapidly infecting all cloven-hoofed mammals, including cattle, pigs, sheep and goats.

The disruption caused by FMD to global markets and the national economies of developed countries has been well studied. The FMD crisis in the United Kingdom (UK) in 2001 cost the equivalent of US\$13 billion. However, the effects of FMD on poverty and food security at the household level in poorer countries are less well known and there is very little information on the micro-economic aspects of this disease.

Experience in the Americas, Western Europe, Southeast Asia and Australia (in the late 19th Century) demonstrates that eradication of FMD is technically possible. It also confirms that such a task is both expensive and challenging, particularly in the absence of persistent commitment from both the private and public sectors. Foot and mouth disease is currently endemic in many

developing or in-transition countries of Africa, Asia, the Middle East and South America. At present, more than 100 countries worldwide are not considered free of FMD by the World Organisation for Animal Health (OIE). Although these countries do not currently have the resources and the means to achieve FMD eradication, many studies highlight the high benefit-to-cost ratio that could result from the eradication of this disease. With these potential benefits in view, efforts to control FMD merit continuing and sustained support from donors and affected countries.

Rationale for involving the international community in the eradication of foot and mouth disease: the socio-economic impact of this disease

The socio-economic impact of FMD is broad, both at the macro-economic level and, in developing countries, at the household level, in terms of poverty and food security.

Foot and mouth disease: a 'macro-economic' disease

Many studies highlight the severe impact on national economies that the introduction of FMD could have in an FMD-free country. For instance, the FMD outbreak in the UK in 2001 had negative consequences not only for agriculture and the farming industry but also for the tourism sector, resulting in a 0.2% reduction in the GDP (3, 19). The total cost of that outbreak has been estimated at US\$9 to 13 billion, where there were at least US\$4.5 billion in direct costs to the public sector and an additional US\$4.5 to US\$9 billion in the agricultural and tourism sectors (3, 19, 21).

Models developed in different countries and contexts to predict the economic impact of FMD yield profound estimates. A six-month outbreak of FMD in Australia would lower the GDP by an estimated 0.6% (US\$2.6 billion – a 2002 estimate) and lower employment by 0.8% (6). A model for Tennessee in the United States of America (USA) showed that the depopulation of 10% of the state cattle herd, in response to an FMD outbreak, could generate total economic losses of US\$275 million and 9,400 jobs (8).

Foot and mouth disease has a serious effect on access to international markets. Even with science-based,

international standardised rules established by the OIE and Codex Alimentarius, which are accepted by national authorities for animal health and commerce, many FMD-free countries will not import susceptible animals or animal products from countries where the disease is not controlled.

Cost-benefit analyses undertaken in developing countries, such as the Philippines (16) and Zimbabwe (15), reveal that the eradication of FMD in these countries would be feasible and cost-effective. These estimated cost-benefit ratios range from 1:1.5 to 1:12, depending on the scenario and the countries.

The transboundary nature and high economic impact of FMD justify its inclusion in the OIE list of immediately notifiable diseases. This is also the reason for the Food and Agriculture Organization of the United Nations (FAO) and the OIE deciding to launch a joint initiative for the global progressive control of FMD, under the umbrella of the FAO/OIE Global Framework for the Progressive Control of FMD and Other Transboundary Animal Diseases (GF-TADs). The global control of FMD is in accord with OIE objectives to achieve the most informed and least restrictive disease control measures for the safe trade of animals and animal products, in compliance with the World Trade Organization (WTO) Sanitary and Phytosanitary Measures (SPS) Agreement and OIE standards (23).

In this sense, the 'One World, One Health' international technical consultation held in Winnipeg, Canada, 16 to 19 March 2009, recognised the fact that investment in the effective control of infectious diseases that do not respect national or economic boundaries and impose high costs on society is a global public good. Foot and mouth disease is certainly one such disease. As long as FMD persists in affected countries, all neighbouring countries remain at high risk for introduction of the disease. It is unrealistic to expect poor countries with FMD to bear the full cost of disease eradication because successful control will have high immediate costs but will generate both short- and long-term positive results (e.g. reduction of the risk of FMD) for neighbouring countries and the global community. In fact, FMD-free countries are making a win/win investment when they support infected countries in their efforts to control the disease, since, while helping to alleviate poverty, they also protect their own territories from the potential introduction of the virus.

The impacts of foot and mouth disease on smallholder farming systems

Foot and mouth disease affects animal production in many ways, including:

- the reduction of milk yields in dairy livestock and an increased risk of mastitis

- abortions and mortalities among young animals
- lameness that prevents animals from being used for draught power to till land, harvest crops or transport goods
- weight loss as a direct result of the reduction in feed intake.

With more than twelve million farmers being members of village dairy cooperatives, producing 21.5 million litres of milk every day (12), the dairy sector in India relies on smallholders. This sector has a strong role in alleviating poverty and in food security in rural areas. In a survey conducted in 1994, Saxena (17) estimated that FMD causes milk losses of approximately 3,508 million litres per year, about 6.5% of the total annual milk production.

A study conducted in the People's Democratic Republic (PDR) of Lao, after a 1999 FMD outbreak (14), highlighted the significant negative impact on smallholder farmers with livestock. All susceptible, cloven-hoofed species were affected (cattle, buffalo, pigs and goats) with a morbidity in buffalo and cattle of 100%. High mortalities in young susceptible animals were recorded and the loss of income from unsold animals was considerable. Even when livestock owners could sell a few animals, they were sold at half price.

The consequences of this FMD outbreak could have been even more severe if the event had occurred during the rice planting season. Villagers indicated that, if the disease had happened during this season, they would have had to sell between 400 kg to 600 kg of rice to hire a buffalo during that period, or delay planting, which would have led to a severe decrease in production (of up to 40%) the following season. Rice is the major source of food security in these villages, and 85% of the rice produced in the Lao PDR is for local consumption, with a statistical ratio of rice production/population of approximately 450 kg per person per year. Most farmers focus on achieving self sufficiency in glutinous rice, which requires approximately two tons of rice for a family of five (according to data from the World Bank).

Another study in Cambodia estimated the total cost of an FMD outbreak in the early wet season, for a family with two working cattle, at US\$34. The average monthly income of a rural household in Cambodia is approximately US\$40, and the costs of control (vaccines) for this family would be about US\$6 per year (10). Field investigations show that, in villages where no vaccination is undertaken, there are outbreaks at least once every two years, and more often when several serotypes are circulating.

A Vietnamese case study investigation, conducted on 36 smallholdings after a large FMD outbreak in 2006 that affected most of the provinces in Vietnam, estimated that

the economic loss for each farm varied from US\$84 to US\$930, depending on the ecology of the region and the local production system (20). The total net losses due to FMD were about 20.6% (ranging from 10% to 31.9%) of the total annual household income, severely jeopardising the opportunity for such families to escape the poverty trap.

In *Food Security in sub-Saharan Africa to 2020*, the International Livestock Research Institute listed FMD as one of the four infectious diseases that are a major threat to livestock productivity, directly preventing food security improvement in Africa (4). The importance of milk in the diet of the Nuer population of Southern Sudan was assessed, and a seasonal 'hunger gap' – a period during which households relied mainly upon milk for their diet – was highlighted (2). Foot and mouth disease often occurs immediately before this period, with a significant drop in milk yields, thereby severely threatening the food security of the Nuer people.

Finally, the gender aspect of livestock and poverty must be addressed. In many countries in Africa, dairy cattle or goats are owned or managed by women, who feed and milk them, and sell the milk and livestock when cash is needed (for education, health, etc.). Foot and mouth disease disrupts these activities and thus the incomes of these women in poor rural areas.

In conclusion, the impact of foot and mouth disease on poverty and food security must not be forgotten, although most of the economic data on this disease are at the national or international 'macro' level. Its control and eradication would contribute to the overall United Nations Millennium Development Goals. The four pillars of growth to alleviate poverty, as defined by the Department for International Development in the UK, are:

- to reduce risk and vulnerability in economically deprived regions
- to provide broad access to assets and markets
- to foster international economic links
- to create strong incentives for investment.

Controlling FMD is directly relevant to each of these objectives (13).

In addition, the recent FMD crisis highlighted serious qualitative negative impacts on farmers, communities and tourism. These are difficult to quantify, since they range from psychological issues to changed marketing arrangements. Nonetheless, they are significant and, as in the case of suicides among farmers in the UK, often tragic.

Main constraints on the international funding of global control of foot and mouth disease

Even though FMD is probably the best known animal disease in the world, donor investments to support the control and/or eradication of the disease in developing and middle-income countries are limited. (For instance, the World Bank has only one project in its portfolio, which is entirely dedicated to FMD in Uruguay.) The investments that have occurred often come from bilateral donors, with the aim of targeting neighbouring countries to protect themselves from the introduction of FMD. Several factors contribute to the perception that FMD is not a high-priority disease when it comes to investing in poverty reduction. Moreover, investing in only one country may have limited impacts because of the transboundary nature of the disease. Very often a regional approach is required and this can be less attractive to donors because of the lack of instruments and frameworks for effective regionalisation, and the difficulty of coordinating actions across several countries.

False perceptions of foot and mouth disease

In spite of its high contagiousness (up to 100% morbidity), FMD is seldom fatal, except in young animals. Frequently, livestock lose weight, milk yields drop and delayed conception occurs in herds but the animals recover after a few weeks (two to eight). Since the assets (the livestock) are not completely lost to the farmer, FMD is not recognised as a high-priority disease for reducing poverty. As a result, investments in its control and eradication in developing countries are weak. Moreover, some consider that indigenous livestock are naturally resistant to the disease and that the direct impacts of FMD in these production systems are relatively small.

While it is true that FMD is not a 'killer disease', its contribution to keeping people in poverty and reducing food security in developing countries is extremely important. An epizootic of FMD in the Hararge region of East Ethiopia presented an opportunity to conduct a study to either confirm or refute the belief that FMD has few negative effects on indigenous livestock in traditional mixed farming systems (11). This survey showed that 60.5% of cattle developed the disease with clinical signs, and the mortality rate among calves was 6%. Some 64% of the 259 farmers interviewed considered the disease 'harmful'. Among these, 83% reported losses in milk production and the disruption of ploughing and field work as major issues.

The high costs of preventing and controlling foot and mouth disease versus the lack of cost-benefit analyses at the household level

The tools to control and even eradicate FMD do exist, but they are expensive. For example, international commercial firms involved in FMD vaccine production and distribution do have the capacity to quickly develop and deliver efficient adapted vaccines for specific or emerging strains from all of the seven known serotypes. However, the cost of such vaccines is high. To be fully protective in certain areas of the world, vaccines must often include several strain types and be administered on more than one occasion to achieve full immunity.

In Southeast Asia, for example, where serotypes A, O and Asia 1 are endemic, needs assessments conducted jointly by the Asian Development Bank FAO project and the OIE Southeast Asia Foot and Mouth Disease Campaign (SEAFMD) for Cambodia, Yunnan (China), the Lao PDR, Thailand and North and South Vietnam showed that the total costs of a vaccination campaign, including the purchase of vaccines and the logistical requirements of administering the vaccines and monitoring their effectiveness, averaged US\$4.67 per head per year across all species (cattle, buffalo, pigs, sheep). The cost ranged from US\$2.64 in North Vietnam to US\$9.01 in the Lao PDR. Most poor farmers cannot afford such costs. However, the public good of effective intervention fully justifies government assistance and donor support. Nonetheless, to be fully sustainable, part of the cost must also be provided by the private sector.

Many cost-benefit analyses have been conducted in various countries (e.g. Thailand, the Philippines, Zimbabwe, South Sudan), showing that the control and eradication of FMD is an economically viable investment at the national level. However, only a few focus on the benefits that would be generated for the poor. In the Philippines and Zimbabwe, economic estimates are that 4% and 16% of the returns would be transferred directly to the poor.

Unfortunately, extensive micro-economic impact studies are lacking, further limiting potential donor investment in FMD control. More cost-benefit analysis studies are needed at the micro-economic level to counterbalance the high perceived cost of FMD prevention (vaccines), control (bans on animal movement) and eradication (stamping out and compensation).

A national approach is insufficient to control and eradicate foot and mouth disease

As is the case with other very contagious diseases, FMD does not respect political or geographic borders and the growing regional and global trade in animals and

their products accentuates the risk of transboundary spread of FMD. As shown in South America (Uruguay) and southern Africa (Namibia, Botswana, South Africa), maintaining disease-free status is difficult and, in particular, depends upon close cooperation among neighbouring countries.

This emphasises the need to adopt a regional or sub-regional approach and to harmonise the surveillance systems, control measures, policies and legal frameworks among neighbouring countries in a particular region. To be effective, these frameworks must recognise the demographics and movement patterns of susceptible species and production practices.

The need to work at the regional level to control FMD is a constraint for some donors; either because they do not have specific tools that can be rapidly used to fund regional programmes or organisations, as in the case of the World Bank, or because this is perceived as more complicated to implement and monitor. Another weakness is that most of the regional organisations, such as the African Regional Economic Commissions and the Association of Southeast Asian Nations (ASEAN), have limited authority over individual nations and cannot directly implement regionally harmonised policies and regulations, which may further discourage donor support.

In conclusion, investments in animal health remain limited in developing countries, despite the well-described effects of major animal diseases (9). This is in spite of the importance of the livestock sector for their national economies, for poverty alleviation and for food security. Whenever investments are made in the animal health sector, other diseases that are perceived as more important in alleviating poverty compete with FMD. Most studies list FMD as one of the major diseases limiting production in all sectors, public and private, in commercial farming and smallholder farming systems alike. However, distorted perceptions about FMD lead to a lack of political will at the national and international levels to adequately fund its control and ultimate eradication.

Elements for increased donor involvement in the control and eradication of foot and mouth disease

Past and present experiences provide a good indication of ways in which donor involvement in FMD control could be developed and strengthened.

Previous and continuing initiatives

A national case study: World Bank support for a foot and mouth emergency recovery project in Uruguay

Uruguay is a good example of the positive effects of FMD eradication, which enabled the country to gain new access to high-value export markets for its meat. Indeed, after Uruguay gained the status of FMD-free country without vaccination in 1996 (9), its volume of beef exports increased by 100% and the value of these exports increased by 52%. However, due to two outbreaks, the first in late 2000, and the second, which spread widely, in April 2001, the country lost its disease-free status. Uruguay immediately began eradication, based on traditional culling and depopulation, but was unable to control the disease. As a result, the Government decided to undertake mass vaccination of the national cattle herd to eradicate FMD, while other susceptible species remained vaccination-free (to provide sentinel surveillance), and requested the assistance of the World Bank for this task. The World Bank agreed to provide technical and financial support to Uruguay, to help contain and mitigate the effects of the outbreak, recognising the situation as a disease emergency. This support took the form of:

- mass vaccination of the national cattle herd
- logistical support for disease surveillance and outbreak control
- identifying alternative markets for Uruguayan beef in the short term.

The project was completely successful. The last outbreak was reported in 2002 and Uruguay was declared 'FMD-free with vaccination' by the OIE in 2003. In spite of this success, the Government of Uruguay requested the World Bank to continue its assistance and the project is still active. It has evolved from an emergency project to a longer-term programme, aimed at:

- building capacity in the Veterinary Services
- establishing a sustainable tracking system for livestock (starting with cattle)
- improving laboratory diagnostic capacity
- supporting Uruguay in conducting economic studies and cost-benefit analyses of FMD.

An FMD outbreak drill undertaken recently showed that the new animal tracking and identification system allowed the Veterinary Services to track suspicious animals more effectively and contain any potential disease outbreaks more rapidly.

Some lessons learned from this experience are, as follows:

- FMD eradication is feasible with a strong political and industry will

- a good tracking system, using geo-references, is an excellent tool for FMD surveillance and control

- a national approach to FMD control is important but the regional dimension of this disease also needs to be tackled, if countries are not to remain vulnerable

- cost-benefit analysis would seem to show that it is more economically efficient to strengthen the animal health system (a 'horizontal approach') rather than to isolate a single disease (the 'vertical approach')

- there is significant need for concerted, harmonised and coordinated efforts by the international community (donors, technical institutions and regional organisations), as part of their core mandate, making full use of their comparative advantages.

Case studies on regional and multi-national approaches

The Southeast Asia Foot and Mouth Disease Campaign

The OIE SEAFMD (1) is considered a model of regional cooperation in addressing a transboundary disease (www.seafmd-rcu.oie.int/index.php). Funded mainly by Australia, with support from the government of Thailand and, more recently, from New Zealand and France, the OIE SEAFMD was formally established in 1994 at the request of the first seven Member Countries:

- Cambodia
- the Lao PDR
- Malaysia
- Myanmar
- the Philippines
- Thailand
- Vietnam.

The objective of the group is to increase the productivity and economic output of the livestock sector in these countries by controlling and eradicating FMD. Indonesia, which eradicated FMD in 1986, subsequently joined the campaign. The policies, programme and management of the SEAFMD are supervised by the OIE Sub-Commission for FMD in Southeast Asia, whose members include FAO, ASEAN and donor representatives.

The SEAFMD aims to add value and flexibility to national control programmes by employing a series of integrated and harmonised approaches to FMD control. Since the organisation works closely with the FAO and its Regional Office in Bangkok, as a Commission Member and partner, it is able to provide technical and financial support to its Member Countries in eight areas:

- international coordination and support (through meetings, workshops and working groups)
- programme management, resources and funding

- public awareness and communication
- policy, legislation and zoning
- surveillance, diagnosis and control
- regional research and technology transfer
- private sector involvement and facilitation
- monitoring and evaluation.

The organisation also has a range of other partners, and the campaign has enabled it to gain financial leverage, which helps support in-country activities. Liaison with neighbouring countries has begun, e.g. the SEAFMD is now cooperating with the Yunnan Province (People's Republic of China) to support Upper Mekong zone activities.

'Control zones', which are defined and mutually agreed within the 'Progressive Zoning Approach', involve several countries. These agreements:

- aid regional cooperation
- offer integrated approaches to controlling FMD in a step-by-step plan
- concentrate limited resources where the chance of success is greatest
- promote interest in disease control and the resulting trade opportunities (according to OIE standards), which encourages further support for the programme.

A roadmap has been developed towards freedom from FMD by the year 2020, to better address future challenges. The map is intended to:

- strengthen and expand regional cooperation
- fulfil the requirements for progressive zoning
- further develop the competency and capacities of national Veterinary Services, using the OIE Performance of Veterinary Services (OIE PVS) evaluation tool
- strengthen private sector participation
- expand and integrate epidemiology and laboratory networks.

Furthermore, SEAFMD has adopted an improved outcomes-based approach, with increased emphasis on monitoring, evaluation and socio-economic studies, including the role of gender in animal disease control.

The Hemispheric Plan for the Eradication of Foot and Mouth Disease

The Hemispheric Plan for the Eradication of FMD (PHEFA) was established to serve as the template for national programmes to eradicate FMD in affected areas of South America. A conference held in Houston, Texas, USA, in 2004 provided an occasion to declare commitment to

the eradication of FMD and led to the creation of an Inter-American Group for the Eradication of Foot-and-Mouth Disease (GIEFA). This group was charged with the responsibility of developing, applying and supervising a plan of action. The USA is a full signatory partner in PHEFA and, through the United States Department of Agriculture, has contributed approximately US\$29 million of public funds to this programme, which is estimated to cost the producers and people of this hemisphere approximately US\$600 million dollars per year to maintain. It is estimated that 90% of this cost is taken up by the producers (who pay for the vaccination of their livestock and the certificates to move their animals).

Any gaps in the programme are difficult to estimate and depend on the country involved. For instance, such gaps may be more apparent in Paraguay and Bolivia than in Brazil. Among other donors are the FAO, Canada and the private sector. Moreover, since 2005, Brazil has considerably increased its investment in its border regions with Bolivia, Paraguay and Venezuela.

To support PHEFA, the USA works primarily through bilateral agreements with its neighbours. These agreements involve the direct investment of funds to support activities in the national FMD control and prevention programmes of its partner countries. Individual national projects are made up of a great variety of specific activities, including:

- the purchase of equipment needed to vaccinate livestock and control the movement of animals
- the construction (or refurbishing) and equipping of veterinary offices, inspection posts, laboratories and livestock markets
- the training and education of technical personnel and the public.

Donors also contribute towards maintaining transparency in these eradication efforts, through their participation in:

- the Hemispheric Committee for the Eradication of FMD (COHEFA)
- GIEFA
- briefings and discussions at the Annual South American Committee Meeting for the Eradication of FMD (COSALFA).

Finally, donor collaboration is also crucial to the main regional and international partners involved in this campaign:

- the Pan American Health Organization
- the FAO
- the International Development Bank
- the World Bank

- the OIE
- the Inter-American Institute for Co-operation in Agriculture (IICA).

The European Commission for the Control of Foot and Mouth Disease

Another good example of a regional approach to combatting FMD is the European Commission for the Control of Foot and Mouth Disease (EuFMD), which was established in 1954 to coordinate the eradication of FMD in Europe under the leadership of the FAO. This Commission has been very successful in supporting the European Union (EU) countries in their efforts to eradicate FMD.

When the decision was taken in 1991 to stop vaccination in EU Member Countries, EuFMD broadened its activities by implementing projects in neighbouring regions and countries, such as the Caucasus, Turkey and Iran (5). The new aims of the Commission were agreed as follows:

- to monitor the FMD situation in the surrounding areas and worldwide, and to disseminate this information
- to promote appropriate areas of research
- to provide a forum to coordinate the prevention and control of FMD in Member Countries.

In case of FMD emergencies, EuFMD can also provide infected countries with immediate short-term assistance, such as technical expertise, vaccines and diagnostic antigens and reagents.

The fight against FMD in Europe had a real spillover effect on other animal diseases and contributed to the structuring of the animal health system by facilitating knowledge networks among:

- governments
- Veterinary Services (public and private)
- laboratories
- livestock owners and farmers.

‘Veterinary Europe’ was partly built on these efforts to control FMD.

These experiences show that the regional approach has clear advantages, since it allows:

- integrated and harmonised approaches (for instance, in policies and legislation, trade issues, research)
- cooperation and transparency among the key stakeholders
- economies of scale for specific actions (such as the purchase of materials and equipment, vaccines, etc.).

Areas of intervention

There are a few strategic areas of intervention on which donors could focus to improve the effectiveness of investing in FMD control. However, such interventions should fall within the action frameworks developed by the international technical organisations, principally the FAO and the OIE (through the FAO/OIE GF-TADs). The action plans developed in various regions could also serve as programmes around which the international community could mobilise.

Investing in analytical work

As described above, at present there is a lack of awareness of the impacts of FMD at the individual producer level, particularly for the poorest farmers. Most of the economic and cost-benefit analyses have been conducted at the national level, showing the tremendous impact of FMD on the economies of countries wanting to gain access to international markets.

More extensive data from all continents on the significant effects of FMD on poverty alleviation, food security and gender issues would create a clear incentive for first governments and then the international community to increase investment in this sector and do so in a more strategic manner.

Supporting studies on and analysis of FMD will also improve, both qualitatively and quantitatively, baseline data on the disease and its socio-economic impact. These baseline data are essential for the monitoring and evaluation component of FMD control programmes. More and better-quality data and efficient monitoring and evaluation are crucial and lead to improvements in project design and approach. In addition, they aid the progressive transition from an outputs-based approach (a list of the activities undertaken) to an outcomes-based approach (a list of what must be achieved).

Investing in research for cheaper tools and technologies

Excellent tools exist for the effective surveillance, control and eradication of FMD. For instance, diagnostic tools in serology allow Veterinary Services to differentiate between vaccinated and previously infected animals, using non-structural protein technology. Moreover, when they are delivered properly and well adapted to the circulating strains, vaccines provide efficient protection against the disease, and strongly decrease virus circulation at the herd level.

However, these tools and technologies are rather expensive and most developing countries cannot afford to use them extensively, even with the assistance of donors. Foot and mouth disease research should not only focus on

developing new technologies (thermo-resistant vaccines with longer immunity), but also on making readily available, affordable products, which are accessible to developing countries and smallholder farmers.

Research on the epidemiology of FMD, such as that conducted in Southeast Asia on the virus carrier role of Asian swamp buffalo, with the support of the FAO, is also needed to better understand the spread of the disease.

Investing in national, regional and global surveillance

Support is needed in implementing efficient laboratory networks in each region, in cooperation with international Reference Laboratories, to provide the expertise required for vaccine selection and monitoring progress. Investment in basic surveillance in each country is also vital.

Investing in communication and public awareness

Controlling contagious diseases such as FMD is almost impossible without powerful communication tools and public awareness strategies. Indeed, when investing in the eradication of FMD, governments and donors may also want to target funds towards the design and implementation of effective communication programmes.

These communication strategies must target all stakeholders, including:

- high-level, political decision-makers and policy-makers, to strengthen their political commitment (economic analysis, impact studies and cost-benefit analyses are powerful tools in this regard)
- animal health staff from Veterinary Services (national, sub-national and private)
- other ministries and departments as appropriate (e.g. Health, Commerce, Foreign Affairs, Security), since this is a transboundary animal disease
- livestock producers, both commercial farmers and smallholders, using communication strategies adapted to their needs
- livestock traders and livestock product processors
- the general public.

Investing in good governance of Veterinary Services as a global public good

With the increasingly frequent emergence of high-profile animal and veterinary public health crises (bovine spongiform encephalopathy, FMD in the UK, highly pathogenic avian influenza, West Nile virus, severe acute respiratory syndrome and the novel H1N1 influenza), it is now accepted that high-quality national Veterinary Services, in both the public and private sectors, are a

crucial factor in the early detection and avoidance of the spread of any major disease. Supporting a horizontal approach to building capacity in Veterinary Services, so that their disease surveillance and control systems comply with OIE international standards, is the best way to ensure the early detection of, rapid response to and containment of any contagious disease, including FMD. The OIE developed the now well-established PVS tool (22) to assist its 175 Member Countries in measuring the strengths and weaknesses of their Veterinary Services against international standards, an activity supported by donors through the World Animal Health and Welfare Fund (the 'World Fund').

Thanks to resources pooled by donors in the World Fund, and in close cooperation with the FAO, World Bank, European Commission, Canada, Australia, the USA and other donors, the OIE is also working on follow-up activities (PVS Gap Analysis and PVS follow-up evaluation missions) for countries having already completed a PVS evaluation. The purpose of these studies is to identify priorities, needs and strategies to address weaknesses detected during the evaluation and to help prepare national investment programmes to support Veterinary Services and, in particular (where relevant), the control and eradication of FMD. These national investment programmes will reflect the needs and priorities of the individual country, such as:

- epidemiology
- risk analysis
- capacity building, etc.

Consolidating donor support in the OIE World Fund guarantees, on one hand, the alignment and coordination of aid for national programmes, and, on the other hand, the compliance of any analysis, recommendations and plans with the OIE international standards for the governance of Veterinary Services and FMD eradication. The objective of controlling FMD should be included in the national priorities of countries seeking donor support.

The results of the PVS Gap Analysis, and investment programmes to aid Veterinary Services to comply with OIE standards, must be integrated into the national, sector-wide approach for the social and economic development of the country concerned, in particular in any programmes encompassing the agricultural, trade and public health sectors. This will allow donors to become more engaged with and committed to capacity building in the Veterinary Services and in FMD eradication. The FAO also supports national programmes for the prevention and control of animal diseases that include strengthening Veterinary Services as a major component. The international community should ensure that these programmes are sustainable.

Encouraging donor contributions to the OIE World Fund may be an effective way, among others, to guarantee long-term support for the good governance of Veterinary Services.

Conclusion

Livestock contributes significantly to the world economy. However, in many countries, animal diseases remain a major constraint on economic growth, poverty reduction and food security, as well as on the health and well-being of the people.

Foot and mouth disease is an internationally recognised, highly contagious, multi-species animal disease, which has a devastating effect on national economies, families, producers and industries; as well as being highly disruptive of trade. Foot and mouth disease ranks highly on the OIE list of immediately notifiable diseases. Less well known is the severe constraint that enzootic FMD places on development and the reduction of poverty in many regions of the developing world. This results from the combined costs of:

- control measures
- closure of access to valuable global markets for livestock and their products
- production losses through reduced milk yield
- reductions in weight gain
- the inability to use infected livestock for transportation, vital ploughing or field work in agricultural production systems.

The cost of prevention and protection is low compared to the cost of FMD outbreaks. Rich countries have a clearly vested interest in the elimination of FMD reservoirs at their source as an integral part of their own prevention and protection efforts. Because of its global externalities, and the high costs it imposes on society as a whole, the control and eradication of FMD qualifies as a global public good. The wide-ranging potential benefits of a global strategy against FMD fully justify the engagement of national authorities and the support of donors, and continuing investment in the good governance of Veterinary Services in affected and high-risk countries is an integral part of that strategy. Today, the OIE officially recognises 70 countries as being free from FMD, with or without vaccination. This recognition is based on scientific assessment by independent experts, followed by a vote of the 175 Member Countries of the OIE.

Lessons from the Americas, Western Europe and Southeast Asia provide good models for control and prevention

programmes at both the national and regional levels. Experience also demonstrates the limitations of unilateral approaches to this disease and the benefits of adopting a regional and global approach.

The current lack of cost-benefit analyses and literature on the micro-economic impact of FMD at the individual producer level and on the poor, compared to the high, perceived, short-term cost of disease prevention, control and eradication, is crippling. When coupled with the fact that it is difficult for many donors to operate at the regional level, such barriers could explain the historic reluctance to invest in a global effort to eradicate FMD.

Global control of FMD may become a priority for donors when national authorities demonstrate their political commitment to collaborating with livestock producers and neighbouring countries on progressive disease control measures. The development and implementation of such a strategy should be led by the technical international organisations, especially the FAO and OIE (under GF-TADs), in cooperation with regional institutions and the countries concerned. Global control is necessary for both developed and developing countries. It is difficult but possible and, while it may be expensive, the socio-economic and political returns promise to be high.

This will require long-term commitment. For instance, the eradication of rinderpest has taken more than 20 years and that is considered an 'easier' disease than FMD. Moreover, it will also need:

- strong political will from governments
- concerted financial support from donors, in line with the consensus reached by the international community in the 2005 Paris Declaration on how to make aid more effective
- participation from all branches of the private sector
- good cooperation and solidarity among countries
- integrated and harmonised approaches, backed up by technical and scientific expertise, through the use of international guidelines and standards.

More than anything, it will require strong awareness, initiative and commitment from developing countries where the disease is still endemic. These countries need more efficient surveillance, using whatever methods they have access to. The continuous and transparent sharing of data will also be a strong incentive for donors to become involved.

The areas of intervention on which donors should specifically focus are:

- more extensive collection of data and reports on the profound negative effects of FMD on poverty alleviation,

food security and gender issues, to encourage further donor investment in this sector

- the development of affordable technologies and products for FMD control, to increase their accessibility and availability to developing countries and smallholder farming systems
- national, regional and global surveillance systems and laboratory networks
- the design and implementation of communication and public awareness strategies targeting all levels of stakeholder
- continuous strengthening of Veterinary Services, through the tools recently developed by the OIE for evaluating their performance, and through national programmes, such as those implemented by the FAO, for the prevention and control of animal diseases.

Importantly, programmes should become based on outcomes, rather than outputs, and be regularly evaluated,

to ensure that their objectives are being met, so that adjustments can be made as necessary. It should be recognised that systems set in place to prevent, control and eradicate FMD have general applicability to other diseases.

Current support from the international community for the OIE World Fund has already proved invaluable in these areas. This is a promising avenue that could guarantee, in conjunction with other approaches, long-term support for such global disease control programmes.

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Vers le contrôle mondial de la fièvre aphteuse : un objectif pour les bailleurs de fonds

S. Forman, F. Le Gall, D. Belton, B. Evans, J.L. François, G. Murray, D. Sheesley, A. Vandersmissen & S. Yoshimura

Résumé

L'élevage joue un rôle non négligeable dans l'économie mondiale. Toutefois, les maladies animales constituent une entrave importante à la croissance économique, à la réduction de la pauvreté et à la sécurité alimentaire. Parmi les maladies les plus graves figure la fièvre aphteuse, une maladie très contagieuse qui affecte plusieurs espèces et qui a un effet dévastateur sur les économies nationales et le commerce. Les conséquences de la fièvre aphteuse sur les objectifs de développement et de réduction de la pauvreté dans les pays en développement, où elle sévit à l'état endémique, sont moins immédiatement perceptibles mais tout aussi considérables. Compte tenu de ses effets à l'échelle mondiale et des coûts élevés qu'elle entraîne pour la société, la fièvre aphteuse est une maladie dont le contrôle et la prévention sont considérés comme un bien public mondial.

L'objectif du contrôle mondial de la fièvre aphteuse doit devenir une priorité pour la communauté internationale ; mais il nécessitera un engagement durable de toutes les parties intéressées, une volonté politique forte des gouvernements et un soutien financier concerté des bailleurs de fond. Les champs d'intervention doivent s'intégrer dans les programmes mis en œuvre par les organisations internationales telles que l'Organisation des Nations unies pour l'alimentation et l'agriculture (FAO) et l'Organisation mondiale de la santé animale (OIE) à travers le Plan-cadre mondial FAO/OIE pour la lutte progressive contre la fièvre aphteuse et d'autres maladies animales transfrontalières, ainsi que dans les programmes de lutte mis en place dans les régions concernées. La poursuite de

cet objectif devra être spécifiquement axée sur des travaux analytiques (études d'impact micro-économique et analyses coût-bénéfices de la lutte contre la fièvre aphteuse à l'échelle des ménages et des personnes pauvres), ainsi que sur la recherche, les réseaux de surveillance, la communication, le suivi et l'évaluation, et le renforcement des Services vétérinaires.

Mots-clés

Analyse coût-avantages – Bailleur de fonds – Effet économique – Fièvre aphteuse – Maladie animale – Pauvreté – Prophylaxie – Sécurité alimentaire – Services vétérinaires.



La progresión hacia el control mundial de la fiebre aftosa: una oportunidad para los donantes

S. Forman, F. Le Gall, D. Belton, B. Evans, J.L. François, G. Murray, D. Sheesley, A. Vandersmissen & S. Yoshimura

Resumen

La ganadería contribuye sustancialmente a la economía mundial, pero las enfermedades de los animales siguen obstaculizando en buena medida el crecimiento económico, la lucha contra la pobreza y la consecución de la seguridad alimentaria. Entre las enfermedades más importantes figura la fiebre aftosa, patología animal extremadamente contagiosa que afecta a muchas especies y tiene consecuencias devastadoras para la economía de los países y su actividad comercial. Menos obvio es el hecho que la enfermedad lastra sobremano los esfuerzos por hacer posible el desarrollo y la reducción de la pobreza en los países en desarrollo donde es endémica. Considerando sus consecuencias planetarias y el elevado tributo que impone a la sociedad, nadie pone en duda que el control y la prevención de la fiebre aftosa constituyen ahora mismo objetivos de interés general mundial.

Los donantes deberían considerar prioritario avanzar hacia el control mundial de la fiebre aftosa, pero ello exigirá un compromiso financiero a largo plazo de todas las partes, firme voluntad política por parte de los gobiernos y un apoyo económico concertado de todos los donantes. Los ámbitos de intervención deben encuadrarse en los programas definidos por organizaciones internacionales como la Organización de las Naciones Unidas para la Agricultura y la Alimentación (FAO) y la Organización Mundial de Sanidad Animal (OIE), que han definido conjuntamente un Marco mundial FAO-OIE para el control progresivo de la fiebre aftosa y otras enfermedades animales transfronterizas, y también en los programas de control zoonosario de las regiones en cuestión. Para ello convendría centrarse específicamente en labores de análisis (consecuencias microeconómicas y análisis de costos y beneficios a escala familiar y repercusiones de la fiebre aftosa para los pobres), investigación, redes de vigilancia, comunicación, seguimiento y evaluación, junto con un constante fortalecimiento de los Servicios Veterinarios.

Palabras clave

Análisis de costos y beneficios – Consecuencias económicas – Control – Donantes – Enfermedad animal – Fiebre aftosa – Pobreza – Seguridad alimentaria – Servicios Veterinarios.



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