

# Poverty impacts of foot-and-mouth disease and the poverty reduction implications of its control

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**Foot-and-mouth disease (FMD) remains one of the most important livestock diseases of the world, given its highly infectious nature, its broad economic impacts on animal wellbeing and productivity, and its implications for successful access to domestic and export markets for livestock and products. The impacts of the disease vary markedly between developed and developing countries, and also within many developing countries. These differences in impact shape some markedly heterogeneous incentives for FMD control and eradication, which become of particular importance when setting priorities for poverty reduction in developing countries. Some consider that the benefits from FMD control accrue only to the better off in such societies and, as such, may not be a priority for investments targeted at poverty reduction. But is that view justified? Others see the control of FMD as a major development opportunity in a globalised environment. In this paper, Brian Perry and Karl Rich summarise the differential impacts of FMD and its control, and link these findings with the growing understanding of how the control of this globally important disease may contribute to the processes of pro-poor growth in certain countries of the developing world.**

THE mention of foot-and-mouth disease (FMD) provokes different reactions in different people (see, for example, Kitching and others 2006). Despite differences in opinion on control strategies, the actual and estimated economic impact on developed markets such as the UK (£3.1 billion to agriculture and food products during the 2001 outbreak) and USA (projected losses of US \$40 billion), respectively, provide incentives to eradicate the disease as quickly and efficiently as possible (Ekboir 1999, Thompson and others 2002, USDA-APHIS, unpublished data).

However, the impacts of FMD in different countries vary, and although the disease was ranked within the top 10 diseases constraining poverty alleviation in developing countries in a study by Perry and others (2002b), attitudes towards the disease depend on the perceptions of the incentives and priorities for its control and eradication, which may differ significantly even to people in the same country. While FMD affects the clinical wellbeing of most susceptible livestock and the food-producing performance of higher-producing animals, it is not a killer disease, and there is a wide variation in the morbidity that it causes. Indeed, the direct impacts of the disease on some indigenous livestock production systems in the developing world are low. As a result, the demands for its control or eradication are complicated by the presence of other competing animal disease constraints with a higher direct impact on livestock enterprises, and by competition for the financial resources and infrastructure necessary to control the disease.

These factors have contributed to a perception that FMD may not be a priority when it comes to investing in poverty reduction. Is that view justified? In the authors' opinion, FMD control can be an important component of poverty reduction strategies for livestock enterprises of many – but not all – developing countries, depending on the competitive advantage held by the country in livestock resources, on the potential for engagement in export markets for livestock products, on the role of livestock in livelihoods, and on the importance of FMD relative to other diseases. This view is driven by an interpretation of how freedom from FMD in certain settings can contribute to 'pro-poor growth' (see, for example, Ravallion 2004, Fuentes 2005). Some have questioned the direct benefits of FMD control to poorer sectors of society (see, for example, Scoones and Woolmer 2006), and thus the investment this requires. This Viewpoint article reviews the direct and indirect impacts of FMD and its con-

trol in the different regions and production systems of the developing world, and links these findings with the growing understanding of how its control may, or may not, contribute to processes of poverty reduction.

## THE DIVERSITY OF IMPACTS OF FMD AND ITS CONTROL

FMD is widely distributed in the developing world, in particular Africa, South America, south Asia, south-east Asia and east Asia, regions of the world that support 75 per cent of the world's poor (Thornton and others 2002). The lack of infrastructure, human resources and movement controls in many developing countries render them particularly vulnerable to the spread and poor control of the disease. Livestock form an integral component of the livelihoods of the poor (Livestock In Development 1999, Perry and others 2002b). Many poor livestock keepers in affected regions traditionally try to reduce their vulnerability to shocks by keeping several livestock species, most of which are susceptible to FMD infection. The disease thus provides a continuous burden to the livestock enterprises of the developing world and a continuing risk to the livestock industries of the developed world. This represents both a challenge and an opportunity for developing countries, as the standards required to gain access to these developed livestock commodity markets are extremely high, costly to achieve, and difficult to accomplish. On the other hand, the rewards, in terms of the much higher prices attainable for their products, are exceptional. In Asia, particularly, the growing demand for livestock products provides an opportunity for small-scale producers to access new markets for their livestock commodities (Delgado and others 1999, Gulati and others 2005).

The impacts of FMD are illustrated in Fig 1. These impacts vary considerably in the different production systems of the developing world, depending on the species involved, the genotype of animal, the level of productivity, the significance of livestock to livelihoods, and the effectiveness of indigenous coping mechanisms for controlling the effects of FMD (see, for example, Anon 1984, Catley and others 2004, Barasa and others 2005). In many African and Asian smallholder subsistence settings, impacts are more related to livelihoods and vulnerability than kilograms of weight gained or milk produced. Perry and others (2002a), for example, reported the multiple

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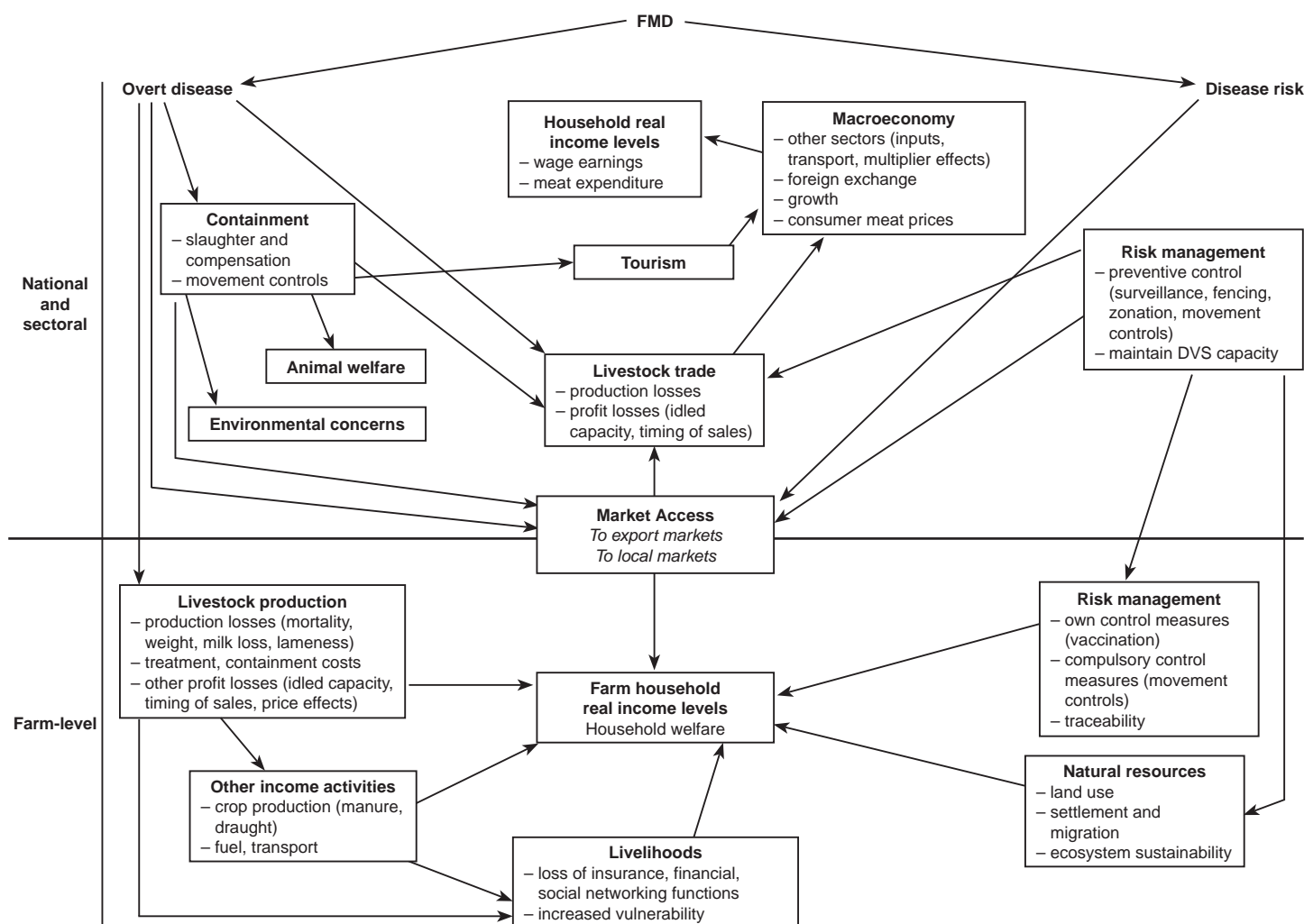


FIG 1: Impacts of FMD (adapted from Perry and Randolph 2003)

impacts on smallholder communities in southern Laos of an epidemic of FMD, which affected several species kept by them, including buffaloes, cattle, pigs and small ruminants. Even if no outbreaks occur, the risk of FMD has an impact on livestock keepers and the wider society, through the requirement for preventive measures and the way that confidence in the success of these measures determines access to markets. From a current global perspective, the risk of FMD has a much greater impact than the disease itself (Perry and Randolph 2003).

### THE TRIANGLE OF POVERTY, INEQUALITY AND GROWTH, AND ITS RELEVANCE TO FMD CONTROL

Achieving the first goal of the Millennium Development Goals – to reduce poverty by half by the year 2015 – will require sustained growth by developing countries, and much emphasis has been placed on the importance of economic growth in the processes of poverty reduction. However, it is increasingly acknowledged that growth by itself is not sufficient, and effective distribution of the benefits of growth is also critical. Bourguignon (2004) ascertained that a 1 per cent decrease in poverty can be achieved via a certain growth rate, or by a certain decrease in inequality. This has led to the much-used phrase of 'pro-poor growth', defined simply as 'growth that is good for the poor'. At the same time, poverty reduction is a complex process, with no single 'silver bullet' solution. The complexities include the need for action at many levels, ranging from national-level policies that pro-

mote economic growth and equity, down to infrastructure development and technological innovations targeted at the priorities of the rural farmer.

The policy division of the Department for International Development (DFID) in the UK has developed a very useful framework for evaluating how 'in tune' strategies for poverty reduction might be (DFID 2004). Here, this has been used as a tool to assess the poverty reduction implications of FMD control, given the differential importance of livestock in the livelihoods of the poor in developing countries. DFID (2004) sets out four broad conditions ('pillars') for accelerating pro-poor growth:

- creating strong incentives for investment;
- fostering international economic links;
- providing broad access to assets and markets;
- reducing risk and vulnerability.

Table 1 highlights the relationships between these broad conditions for pro-poor growth and FMD control. As noted in the table, FMD control can contribute in many, but not all, settings to the process of pro-poor growth. For export-oriented producers, these benefits are clear in terms of better access to foreign markets and higher prices, but less obvious impacts include the economic growth created in downstream industries and additional employment for the poor in manufacturing and service industries. In more traditional settings, there are potential impacts on livelihood and market access from improved FMD control that could reduce the vulnerability of producers, although the magnitude of such impacts

**TABLE 1: Summary of the Department for International Development (DFID) pillars for pro-poor growth and their relationship to FMD control**

Pillar/conditions for pro-poor growth	General overview of pillar	Relevance of pillar to FMD control and poverty reduction
Reduce risk and vulnerability	Reduced risk and vulnerability helps the poorest segments of society capitalise on economic activities and enhance their human capital through education, for example	FMD control can provide certain producers with livelihood benefits, given the multidimensional role of livestock in poor households. These benefits could include better access to domestic markets when cash is required or improved crop productivity facilitated by animal traction that is less likely to fall ill due to FMD
Provide broad access to assets and markets	Pro-poor growth is enhanced by greater access to physical assets and access to education, health and financial services	Access to input and output markets based on FMD control can provide a strong basis for producers to invest in assets that raise productivity and incomes. Vertically integrated systems can play an important role in providing such access
Foster international economic links	Greater access to international markets provides new knowledge and the impetus for innovation to raise pro-poor growth	Segmentation of international markets by FMD status provides strong price incentives for exports among countries with a competitive advantage in livestock products. Increased export revenue further generates multiplier effects in employment and support services that raise incomes for the poor and generate additional economic growth
Create strong incentives for investment	Private sector investment is crucial to drive pro-poor growth, requiring an enabling policy environment that respects property rights, enforces the rule of law and provides support through sufficient physical infrastructure (roads, power, etc)	Strong private sectors provide incentives for strengthened and diversified veterinary services and improved FMD control, stimulating growth through better market access and improved livestock productivity

Sources: DFID (2004), Perry and others (2002b, 2003, 2005, 2006), Rich and Winter-Nelson (2007)

will depend on the type of production system and level of market integration of such producers. Combined, the table demonstrates the different dimensions by which FMD control could contribute to pro-poor growth, although the magnitude and importance of certain conditions will differ widely by country and production system.

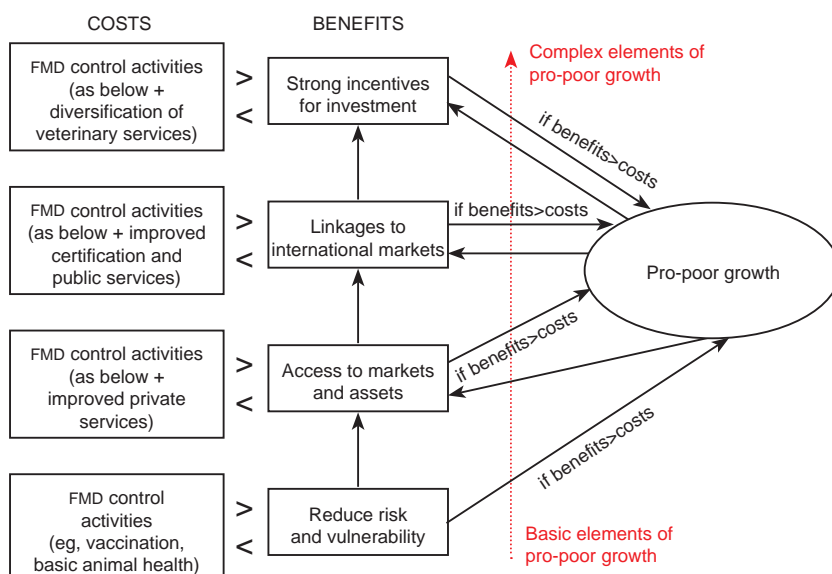
Based on these concepts, Fig 2 presents both the conditions for pro-poor growth and the different elements of FMD control as a hierarchy. Certain conditions and control strategies are a precondition for more complex elements of pro-poor growth. For instance, linkages to international markets require the reduction of risk and vulnerability in a population, and then greater access to domestic markets. Likewise, complex certification programmes require a fundamental grounding in more basic veterinary services to be effective.

The framework in Fig 2 also illustrates the dynamics of the process of pro-poor growth itself and the role played by FMD control. Policies that reduce risk and vulnerability not only generate pro-poor growth but also initiate a process by which the benefits to conditions further up the hierarchy also rise, further stimulating economic growth. Thus, due to the pro-poor growth created by reducing risk in a production system, the perceived benefits of policies that improve access to markets increase as well. If these benefits exceed the higher costs of new, more complex FMD control strategies necessary for market access, this will create a second vehicle for pro-poor growth as a result of FMD control.

A few examples are useful to illustrate this framework. Take, for example, a pastoral system (or region) in which veterinary services are weak or non-existent, but where livestock play a key role in livelihoods. The chief benefit from FMD control would be at a basic level in terms of reducing risk and vulnerability. Could FMD control play a role in generating pro-poor growth in such a system? This would depend on whether the costs of the control strategies were lower than the benefits induced by them through a reduction in producer vulnerability. This is unlikely to be the case in some settings, particularly if livestock keepers perceive other diseases to be a higher priority and/or have developed coping strategies in the wake of their past experiences of the morbidity created by FMD. On the other hand, for pastoralists who are more integrated with markets (or have the potential to be so), FMD control may open up new opportunities that diversify income sources and improve market access. Thus, in the Horn of Africa, for instance, while FMD control may not necessarily broadly accelerate pro-poor

growth, for a subset of producers it has the potential to place them on the path towards reduced vulnerability and increased market access.

A second case is drawn from the example of FMD in southern Laos described by Perry and others (2002a), where farmers were not integrated with markets but relied on livestock as a source of traction and nutrition (in the form of meat and milk). Are there benefits to FMD control in contributing to pro-poor growth in this situation? In this case, FMD control has a number of positive market and non-market benefits for producers: healthier animals provide a stable source of draught power, and also possible additional income through the renting of animals to other farmers; increased household milk production allows producers to spend scarce resources on other necessities; and reduced vulnerability induces greater adoption of more efficient production practices based on sound agroecological and economic principles rather than less efficient coping strategies designed to mitigate the risk of animal disease. Moreover, it is possible that, over time, the



**FIG 2: Conceptual framework of the means by which FMD control could contribute to pro-poor growth**

growth induced by reducing risk and vulnerability in this context will increase the benefits from FMD control in other areas, such as improving access to markets. This could subsequently induce a second means by which FMD control could contribute to pro-poor growth. Of course, FMD control must be weighed in the context of other animal diseases, which may have higher priority in terms of animal mortality or frequency of exposure, and in the actions of neighbouring countries, or production systems, in which the incentives for FMD control may differ, thus influencing the cost-benefit calculation.

Finally, looking at more commercialised livestock systems, there are clear multidimensional benefits to FMD control. In countries such as Botswana and Namibia, the benefits resulting from FMD control are thought to exceed their costs on each of the DFID's pillars, although the benefits are not the same for all producers. For export-oriented producers, while the costs of FMD control are high, so are the benefits, in terms of international and domestic market access. At the same time, the growth created by this process provides new opportunities within the livestock sector: for smallholders in terms of growing domestic markets; for rural labourers in the form of jobs in downstream industries in packing, services, and retail; and for consumers in the form of greater choice and potentially higher food safety and quality. Combined, such growth effects have numerous pro-poor effects downstream that reduce the risk and vulnerability of various stakeholders and create new markets for smallholder livestock producers.

Despite the potential for FMD control as a vehicle for poverty reduction, an important consideration is the mechanism for achieving the benefits. Past economic impact assessments have shown that the public sector often bears an excessive proportion of the costs of FMD control, while a large proportion of the direct benefits pass to the private sector (Perry and others 1999, 2003, Randolph and others 2002). Indeed, the conclusions of many of these studies advocate a much more active engagement of, and partnership with, the private sector, to help redress the imbalances in the funding of FMD control activities. Such partnerships can provide opportunities for the diversion of public sector investment to build on the veterinary infrastructures developed for FMD control. This may facilitate diversification into animal health services that have greater direct benefits to the livestock species and constraints of more concern to the poor. This is potentially a win-win opportunity. However, successful partnerships need to create benefits and linkages throughout the supply chain that integrate all partners, both public and private. Public-private partnerships have been utilised as a means to control FMD in Brazil (Dubois and Moura 2004), but have recently been compromised by a reduction in public support and a failure to integrate smallholders, both internal and external, to the beef supply chain (K. M. Rich, C. A. Narrod, unpublished observations). As a result, the design of partnerships needs to incorporate mechanisms that ensure sustainability, while remaining sensitive to smallholder constraints and interaction throughout the supply chain.

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