

The World Organisation for Animal Health (OIE)

Prevention and control of animal diseases worldwide

Feasibility Study –  
A global fund for emergency response  
in developing countries

Final Report  
*Part II*

*Submitted by:*  
*Civic Consulting - Agra CEAS Consulting*

***Part II prepared by Civic Consulting***  
*with support from*  
*Agra CEAS Consulting and the*  
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## **Executive summary**

### **Methodology used**

This study was conducted by Civic Consulting<sup>1</sup> in the period November 2006 to March 2007 and updated in September 2007. The work was undertaken using desk research, literature review and construction of a detailed literature database. It also involved an economic analysis based on incentive theory, as well as consultations with key relevant institutions/authorities and experts and case studies of selected national compensation schemes for epidemic livestock diseases in four countries. Additionally, an analysis of the operational principles of five existing global funds was conducted to identify best practices.

### **Study focus**

The study explores the need for and possible operational rules of a Global Emergency Response Fund for Animal Epizootics and Zoonoses (GERFAE) that would provide developing and transition countries with immediate funding to cover the cost of control measures and livestock owners' compensation costs.

### **Conclusions**

The analysis conducted indicates that the global framework for the financing of costs and losses of epidemic livestock diseases was significantly improved during the last decade, partly as a consequence of the Avian Influenza crises and other large scale outbreaks of animal diseases. However, the framework is still characterised by significant shortcomings:

- **Limited global support:** Currently there is hardly any global structure for the financing of animal disease risk management for highly contagious transboundary animal diseases in developing countries other than related to Avian Influenza. This may lead to the underfunding of measures to prevent outbreaks of highly contagious transboundary animal diseases and may delay adequate responses to emerging diseases.
- **Fragmentation of donor response:** Current multilateral global funds/facilities do not provide an answer to the inherent challenges of the animal disease risk, namely its cumulative nature, which would require a system to cope with the resulting highly volatile funding needs caused by outbreaks of various sizes.
- **Inefficiencies caused by lack of incentives for prevention:** Little incentives are provided for developing countries to prevent crises by improving their Veterinary Services and their animal health status. Veterinary restrictions in case of outbreaks by major importing countries and related losses of export revenue can even be the source of strong adverse incentives for affected livestock industries and governments to delay reporting of disease outbreaks.
- **No consistent policy on cost-sharing with farmers:** Only few countries (and mostly these are developed economies) have a consistent policy to share responsibility and costs related to

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<sup>1</sup> With support from Agra CEAS Consulting (for sections 3.2.4, 6.2/5) and from the Institute of Risk and Insurance of Hamburg University (for sections 5.1/5 and 6.3/6)

outbreaks of animal diseases between government and livestock sector, which is a major incentive to upgrade bio-security in livestock production and also contributes to a financially sustainable animal health system.

The analysis of deficiencies indicates that it is still a significant challenge to develop an efficient global institutional framework to finance epidemic livestock disease risk, which addresses the limitations regarding mobilization and allocation of financial resources for epidemic livestock disease prevention and control for diseases other than AI, creates incentives for prevention at all levels and provides a mechanism to cope with the highly volatile nature of animal disease risk.

The study concludes that there is a need for a new global mechanism for the financing of animal disease risk management. *This could either be developed by extending the mandate of an existing fund/facility, for example developed in the framework of the AI crisis, or by creating a new instrument. For the aim of this analysis this question is not of significance, as the operational rules would be expected to be applied independent from the mechanism chosen and the hosting organisation(s).*

The report provides detailed suggestions for operational rules of a possible Global Emergency Response Fund for Animal Epizootics (GERFAE). It is suggested that the fund should operate on basis of guiding principles that include:

- ❑ The fund will encourage an effective and rapid emergency response for control of epidemic livestock diseases in developing and transition countries, *including through compensation of livestock holders*;
- ❑ The fund will function as a financial instrument, not as an implementing body;
- ❑ The fund will promote efficient global animal disease risk management;
- ❑ The fund will focus on diseases that pose a threat to “global public goods”;
- ❑ The fund will provide incentives for prevention and early reporting;
- ❑ The fund will safeguard ownership of the emergency response by the affected countries;
- ❑ The fund will encourage sharing responsibilities and costs to the extent possible.

The objectives of GERFAE could be in principle achieved by two different approaches:

- *Approach A:* GERFAE would provide support to eligible countries in case of an outbreak of a relevant disease and provide financial support for emergency response planning in times without outbreaks;
- *Approach B:* GERFAE would provide financial support to eligible countries in case of an outbreak of a relevant disease only. Global financial support for emergency response planning will be provided through other sources/mechanisms.

The analysis indicates the advantage of Approach A, under which GERFAE would also directly (co-)finance emergency response planning, as this would allow for the easiest feedback loops between recipient countries and GERFAE, which are needed for financial planning and management of the fund, and are likely to increase the transparency of the process.

## **The report in brief (extended summary)**

This feasibility study was led by Civic Consulting and explores the need for and possible operational rules of a Global Emergency Response Fund for Animal Epizootics and Zoonoses (GERFAE) that would provide developing and transition countries with immediate funding to cover the cost of control measures and livestock owners' compensation costs. It is Part II of a series of economic studies on the financing of animal epizootics and zoonoses losses in developing and transition countries, commissioned by the OIE with support from the World Bank. The study has been based on a review of relevant best practices and an economic analysis based on incentive theory, as well as in depth case studies of selected national compensation schemes for epidemic livestock diseases (in Australia, Netherlands, Nigeria, Vietnam). In addition, the following existing global funds have been analysed: The UN Central Emergency Response Fund (CERF); the Global Fund to Fight AIDS, Tuberculosis and Malaria; the WFP Working Capital Financing Facility; the OIE World Animal Health and Welfare Fund; and the FAO Special Fund for Emergency and Rehabilitation Activities. The results of the analysis have been a basis for developing operational principles for a possible Global Emergency Response Fund for Animal Epizootics and Zoonoses, including principles for incentive-compatible compensation of affected livestock holders through Country Compensation Mechanisms.

### **Current financing of epidemic livestock disease costs in developing countries**

Comprehensive data on financing of costs and losses of outbreaks of epidemic livestock diseases and related preparedness/prevention measures in developing countries is scarce. An overview of the donor commitments for Avian and Human Influenza indicates that in terms of commitments bilateral donors have by far the largest share. Multilateral development banks as well as the European Commission are also major donors, accounting for nearly one third of total commitments. Individual countries are the largest group of recipients, with international organisations receiving a share of less than 20%. Multilateral global trust funds currently play only a limited role, although an increasingly relevant one.

A total of five operational global funds/facilities with a significant focus on animal health are discussed, with a common feature of them being their recent date of establishment. The oldest of the funds is the Standard and Trade Development facility, which was set up in 2002, followed by the FAO SFERA (2003), the OIE WAHWF (2004), WB Avian and Human Influenza Facility (AHIF) and UN Central Fund For Influenza Action (CFIA) (both in 2006). The Avian Influenza crisis led not only to a significant increase of attention regarding animal health issues, but also to the declared intention of donors to better co-ordinate their initiatives. Activities funded by the above mechanisms differ significantly (see section 5.1.1), as does the degree to which funding is provided to external recipients from these funds/facilities, with some of the funds being mainly an internal instrument of contingency financing rather than a mechanism to provide project-based funding to eligible external recipients.

The analysis of the current global institutional framework for the financing of costs and losses of epidemic livestock diseases indicates significant progress during the last decade. There is more global coordination of donors and recipient countries, and there are an increasing number of multi-lateral financial initiatives and mechanisms, created mainly during the last few years. This is partly a response to the threat of Avian Influenza and other zoonoses, but also the consequence of an increased awareness for the need to have effective and efficient global mechanisms to address specific global problems or emergencies. Other important developments regarding the financing of the global response to animal health threats are:

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- There is growing attention for a need to provide financial resources for preventing epidemic livestock diseases, including by assessing and improving the quality of the Veterinary Services to create a more uniform implementation of animal health standards;
- Emergency response plans are increasingly prepared and implemented in many potentially affected countries to respond effectively in case of an outbreak of Avian Influenza with global financial (and technical) support;
- Vaccine banks are being established that allow in case of outbreaks to respond rapidly with vaccination, therefore potentially reducing the need for large-scale culling operations that dramatically increase potential costs and losses;
- There is growing awareness for the need to compensate livestock holders in case of disease related culling. In 2006, for the first time global guidelines in this respect for developing countries have been developed and the Global Programme for Avian Influenza is the first major donor initiative to provide financial support for compensation of farmers in affected countries.

In spite of these positive developments, the global framework for the financing of costs and losses of epidemic livestock diseases is also characterised by significant shortcomings:

- Limited global support: Currently there is hardly any global structure for the financing of animal disease risk management for highly contagious transboundary animal diseases in developing countries other than related to Avian Influenza. This may lead to the underfunding of measures to prevent outbreaks of highly contagious transboundary animal diseases and may delay adequate responses to emerging diseases.
- Fragmentation of donor response: Current multilateral global funds/facilities do not provide an answer to the inherent challenges of the animal disease risk, namely its cumulative nature, which would require a system to cope with the resulting highly volatile funding needs caused by outbreaks of various sizes.
- Inefficiencies caused by lack of incentives for prevention: Little incentives are provided for developing countries to prevent crises by improving their Veterinary Services and their animal health status. Veterinary restrictions in case of outbreaks by major importing countries and related losses of export revenue can even be the source of strong adverse incentives for affected livestock industries and governments to delay reporting of disease outbreaks. The lack of incentives for prevention and the existence of adverse incentives can be expected to lead to significant inefficiencies, as large-scale disease outbreaks in the past have indicated.
- No consistent policy on cost-sharing with farmers: Only few countries (and mostly these are developed economies) have a consistent policy to share responsibility and costs related to outbreaks of animal diseases between government and livestock sector, which is a major incentive to upgrade bio-security in livestock production and also contributes to a financially sustainable animal health system.

The analysis of deficiencies indicates that it is still a significant challenge to develop an efficient global institutional framework to finance epidemic livestock disease risk, which addresses the limitations regarding mobilization and allocation of financial resources for epidemic livestock disease prevention and control for diseases other than AI, creates incentives for prevention at all levels and provides a mechanism to cope with the highly volatile nature of animal disease risk.

### Possible role for a Global Emergency Response Fund for Animal Epizootics (GERFAE)

It does not seem very likely that it would be possible to improve the current financing of animal disease risk management purely through better coordination of the bilateral donor community. The reason for this is that there needs to be a party that is ultimately taking and managing the animal disease risks agreed upon with eligible countries, which will require considerable efforts and innovative approaches for risk management to be able to fulfil the agreed commitments. It seems unlikely that any individual donor would be willing to take this responsibility. This clearly indicates the need for a new global mechanism for the financing of animal disease risk management. **This could either be developed by extending the mandate of an existing fund/facility, for example developed in the framework of the AI crisis, or by creating a new instrument. For the aim of this analysis this question is not of significance, as the operational rules would be expected to be applied independent from the mechanism chosen and the hosting organisation(s).**

The wider global framework for animal health has to fulfil functions that are indispensable for an efficient and effective response to any given outbreak of a relevant disease, including the setting of standards, and technical assistance, where there is a wide body of experience at key organisations such as the FAO, OIE, World Bank, regional programmes and, last not least, bilateral donors, that form the backbone of development cooperation in the area of animal health. Therefore, developing emergency response standards and technical assistance to implement them should as a general principle not be performed by GERFAE, but by other appropriate institutions of the global animal health framework. **GERFAE would mainly be a financial instrument.**

The new instrument GERFAE (or the existing fund/facility with an extended mandate) would therefore be different from existing mechanisms regarding the following aspects:

- It would focus on all eligible animal diseases, that by their nature require global intervention;
- It would focus on providing a financial mechanism for eligible developing countries to cope with the highly volatile nature of animal disease risk;
- The financial support provided would be conditioned as to create incentives for prevention at all levels;
- Its operational rules would take into account best practices from developed, transition and developing countries to enhance control of eligible animal diseases, including through compensation of livestock holders, while preventing the creation of adverse incentives through overcompensation.

## Recommendations for operational principles for GERFAE

### Principles and eligibility criteria

A Global Emergency Response Fund for Animal Epizootics and Zoonoses (GERFAE) would be an important element of an efficient global framework for animal disease risk management. It should operate on basis of guiding principles that include:

- ❑ The fund will encourage an effective and rapid emergency response for control of epidemic livestock diseases in developing and transition countries, *including through compensation of livestock holders*;
- ❑ The fund will function as a financial instrument, not as an implementing body;
- ❑ The fund will promote efficient global animal disease risk management;
- ❑ The fund will focus on diseases that pose a threat to “global public goods”;
- ❑ The fund will provide incentives for prevention and early reporting;
- ❑ The fund will safeguard ownership of the emergency response by the affected countries;
- ❑ The fund will encourage sharing responsibilities and costs to the extent possible.

The objectives of GERFAE could be in principle achieved by two different approaches:

- Approach A: Providing financial support to emergency response and related planning. GERFAE would provide financial support to eligible countries in case of an outbreak of a relevant epidemic livestock disease to implement a rapid emergency response and provide financial support for emergency response planning in times without outbreaks;
- Approach B: Providing financial support to emergency response only. GERFAE would provide financial support to eligible countries in case of an outbreak of a relevant epidemic livestock disease to implement a rapid emergency response only. Global financial support for emergency response planning will be provided through other sources/mechanisms.

The need for a linkage between the financial support to emergency response measures by GERFAE and emergency preparedness measures taken by recipient countries arises from both effectiveness and efficiency considerations. The effectiveness of an emergency response depends to a significant degree on the level of preparedness at an operational level reached before the onset of the emergency to enable a swift and timely response. Also, preparedness measures including emergency response planning are likely to reduce the costs of outbreaks of livestock diseases. The analysis indicates the advantage of Approach A, under which GERFAE would also directly (co-)finance emergency response planning, as this would allow for the easiest feedback loops between recipient countries and GERFAE, which are needed for financial planning and management of the fund, and are likely to increase the transparency of the process. However, in principle Approach B is also feasible, if other appropriate global mechanisms provide financial support

for emergency response planning and it is safeguarded that the needed information on the emergency response planning is provided to GERFAE.

The overall budget of GERFAE is likely to be inadequate to cover all outbreaks of epidemic livestock disease for developing and transition countries lacking adequate resources and capacity. Therefore under both Approach A and Approach B a set of eligibility criteria has to be developed, that define whether in principle a disease, measure/activity and country is eligible for support. Recommendations for eligibility criteria include:

⇒ ***Eligible diseases, that may trigger support of GERFAE in case of an outbreak, should be determined on basis of the following criteria***

- The public relevance of a livestock disease (depending e.g. on contagiousness and public health impact);
- The need for global coordinated action;
- The character of a livestock disease as relevant emerging risk.

Depending on the available resources a global emergency response fund could have separate windows to support the emergency response regarding outbreaks of the following diseases (in order of priority):

- *Category 1: Emerging livestock diseases* of high public relevance with a need for global coordinated action;
- *Category 2: Other priority epidemic livestock disease(s)* of high public relevance with a need for global coordinated action;
- *Category 3: Under-funded diseases* of high public relevance with a need for regionally coordinated action, where countries in the affected region lack adequate domestic resources and capacity to combat the outbreaks and there are clear indications for a risk of global impact if adequate disease control measures are not taken.

⇒ ***In principle, all emergency response measures that are supported from GERFAE should be co-financed in kind or in cash by the recipient country.*** Co-financing requirements may differ for specific categories of emergency response measures and have to be pre-defined within each country emergency response plan to increase transparency and reduce the administrative burden related to documentation and audit.

⇒ ***Country emergency response plans for specific disease outbreaks should define performance indicators for specific emergency measures.*** Performance indicators should be pre-agreed between the recipient country and GERFAE and form the basis for decisions to be made on a possible continuation of GERFAE assistance after the initial emergency response. Indicators should also reflect the duties of the recipient countries as members of relevant organisations such as the OIE to minimise the risk of the spread of animal diseases, e.g. through early reporting of suspicious disease cases.

⇒ ***It is recommended that countries have to fulfil a set of eligibility criteria to receive financial support for emergency response measures from GERFAE, namely:***

- To have in place a pre-defined and costed country emergency response plan for relevant diseases; and earmarked contingency funds to co-finance measures;

- To have a Country Compensation Mechanism in place to be eligible for support to compensation payments to livestock holders;
- To have conducted a PVS evaluation of the Veterinary Services and to develop and implement a country strategy to upgrade Veterinary Service to address relevant deficits identified;
- To have a country emergency management facility in place that can coordinate measures in case of an outbreak;
- Finally, there needs to be an eligibility criterion related to the income level of the recipient countries, with a limit to be set in a transparent way with the aim to target scarce resources to countries most in need, while not excluding countries where a GERFAE intervention would make a difference. Only in exceptional cases upon a decision of the Governing Board would GERFAE finance to a limited degree emergency response measures in specific low-income countries that do not fulfil the above mentioned criteria.

### **Mobilisation of funding**

Initial soundings on the issue of mobilisation of funding have been undertaken with a number of potential donors, which highlight certain points:

- 1) Amongst national donor agencies the desire to contribute to such a fund has to be viewed in the context of a permanent tension between – what are perceived as – the ‘benefits’ of bilateral support compared to support channelled through multilateral agencies.
- 2) It was also noted that complementary action was needed “to help the livestock industries in developing countries access markets once they've controlled diseases and outbreaks of diseases”. Thus, it was deemed essential that disease control be driven by the powerful incentive of the prospect of increased sales and revenue for farmers and countries.
- 3) Beyond this, assuming the establishment of GERFAE were to be accepted there is the key issue of accountability. While donors are willing to accept a ‘trust fund’ managed by an intermediary such as the World Bank which ‘signs off’ on the accounts this may also be difficult to achieve.

In terms of the scale of the required funds, the analysis undertaken in Part I on the potential costs of an outbreak is of relevance here. Under the ‘most likely’ scenario of this analysis, the total direct disease losses and control costs of an outbreak are estimated to range between US\$ 5.3 billion in the case of scenario A (H5N1 infected countries), US\$ 6.1 billion in scenario B (infected and non-infected at immediate risk countries), and US\$ 9.7 billion in scenario C (all OIE developing country members), calculated on an annual basis. All these costs exclude on-farm losses from business interruption. In the particular case of LDCs (Least Developed Countries), the costs are presented separately. An analysis by country groups is of relevance because it is suggested to introduce an income eligibility criterion, for example one that allows access only to LDCs. Under the most likely scenario, in the event of an HPAI outbreak the estimated direct impact (excluding consequential losses) for the LDCs as a group ranges from US\$ 73 million per year in scenario A (only 4 LDCs affected) to US\$ 258 million in scenario B (8 LDCs affected) and nearly US\$ 600 million if all 50 LDCs were to be affected (scenario C).

The projections quoted above are estimates of total direct disease losses and control costs, and may not be equated with the financial need of GERFAE. Several factors influence the financial need of GERFAE, including:

- Income eligibility criterion concerning eligible countries;
- Eligible diseases;
- Eligible measures;
- Co-financing rate required;
- Compensation rates applied;
- Types of costs compensated.

Assuming scenario B prevails (i.e. an HPAI outbreak that touches the countries currently listed as infected and non-infected at immediate risk) and on basis of an average compensation rates at 75% and a co-financing rate for eligible countries of 50%, the total required annual budget for GERFAE regarding HPAI would amount to US\$ 103 million for the LDCs affected under scenario B, or US\$ 2.45 billion on a global level. This illustrates the need for decisions early on in the planning process regarding eligible disease and measures as well the income eligibility criterion for GERFAE.

It has to be underlined that the results above have to be interpreted with great care and the assumptions for each scenario, as well as the limitations of the model, have to be taken into account (see Part I). Capital needed to finance emergency response measures of GERFAE cannot be estimated easily. There may be years without any disease outbreaks in recipient countries, and periods with numerous and/or large-scale disease outbreaks, which would require significantly more funding from GERFAE. That means total capital outlays for emergency response measures during a given budgeting period are variable, and an elaborated system for managing the risk of the fund has to be developed (see section 6.6). In the mid-to long term, epidemiological models that can be used to provide information for parameters describing the spread of diseases and potential magnitude of disease losses in eligible countries have to be developed, that can be used to narrowing down the range of scenarios.

This leads to the following recommendation:

⇒ ***Decisions on the eligible countries, diseases and measures, the co-financing rate required; compensation rates applied and types of costs compensated have to be taken early on in the planning process of GERFAE, as this significantly impacts on the budget required.*** Due to the variability of capital requirements for emergency response measures during a given budgeting period, an elaborated system for managing the risk of the fund has to be developed.

### **Compensation of livestock holders**

Countries eligible for GERFAE support for compensation payments to livestock holders would be required to establish a Country Compensation Mechanism. Incentives of livestock holders to undertake risk management measures strongly depend on the principles according to which a Country Compensation Mechanism (CCM) operates. Regarding the question of what kind of organisational set-up a CCM should have to fulfil this compensation function, there is no globally valid best practice. The state of the Veterinary Service, the existing structure and the diversity of a country's livestock sector determine the institutional arrangement of a CCM, which could be implemented with a Central Animal Health Fund, a

Regional Animal Health Fund, Sector Agreements, etc. The formal integration of livestock holders, e.g. representatives of farmer's organisations, is likely to increase acceptance and performance of the Country Compensation Mechanism, and is also considered best practice in existing cost-sharing schemes for epidemic livestock diseases.

The need for a close linkage between Country Compensation Mechanism and Veterinary Service arises from several factors. Firstly, emergency response planning of the Country Compensation Mechanism to cope with emerging compensation claims is directly related to the emergency planning of the Veterinary Service regarding culling. Secondly, the availability of data on livestock holders/establishments that provide at least approximate information about the number and species of animals in a country's regions is equally important for the Veterinary Service and the Country Compensation Mechanism, in both emergency planning and emergency response. Thirdly, actual control measures including culling are carried out under the authority of the Veterinary Services, and timely compensation requires a very close cooperation in operational terms. Finally, the availability of contingency funds/a relevant government budget line to (co-)finance emergency response measures is equally relevant for both Veterinary Services and Country Compensation Mechanism.

This leads to the following recommendation for set up and operation of a Country Compensation Mechanism:

⇒ ***A Country Compensation Mechanism has to be adapted to a country's Veterinary Service infrastructure and livestock production structure.*** The institutional set-up of a Country Compensation Mechanism has to allow for close cooperation with the country's Veterinary Service because compensation is a key element of emergency response. In establishing a Country Compensation Mechanism, it should be drawn on existing social, political and industrial institutions in order to increase acceptance and reduce set-up costs. To avoid collusion, the use of independent financial auditors is recommended.

*Providing incentives for early disclosure and compliance with veterinary restrictions*

Operational guidelines of a Country Compensation Mechanism should encourage livestock holders to notify disease outbreaks to the Veterinary Service in due time and to comply with veterinary control measures. A simple mechanism to provide incentives for alertness, thus enabling the early observation of disease symptoms is to apply different compensation rates for healthy, visibly diseased and dead animals. The differentiation between healthy, visibly diseased and dead animals does not make high demands on the culling team's veterinary skills. The rule also does not undermine the incentive compensation payments provide for disease notification, since reduced compensation rates for diseased and dead animals just reflect the reduced values of visibly diseased and dead animals on the market.

Besides early disclosure, successful disease control and eradication requires imposing restrictions on livestock production in and around the location of a disease outbreak. Experience with compensation in both developing and developed countries indicates compensation rates need to be low enough to avoid encouraging farmers from still disease-free areas from presenting their animals to be culled, importing animals into culling zones or expanding culling zones through intentional infection. On the other hand, the upper limit for compensation simply is the market value. No rational livestock holder would seek culling of his animals when compensation would not exceed the animals' market value.

This leads to the following recommendations:

- ⇒ ***A Country Compensation Mechanism should compensate visibly diseased animals at half the rate of healthy animals. Dead animals should not be compensated at all,*** although there may be exceptions under specific circumstances. The compensation of culled animals as such provides incentives to notify suspected disease outbreaks to the Veterinary Service as it reduces a livestock holder's costs of disease notification, which could lead to culling of the herd. Additionally, taking into account the number of dead and visibly diseased animals provides incentives for livestock holders to regularly check the herd's health status as it imposes costs on delaying notification of suspected outbreaks.
- ⇒ ***A Country Compensation Mechanism should apply compensation rates that are sufficient to induce early disclosure and compliance with culling orders, but do not create adverse incentives for livestock holders to seek culling.*** Compensation rates for culled animals need to exceed a certain level to induce farmers to notify suspected disease outbreaks and to hand over animals to culling teams when they are located in a culling zone. They may under no circumstances be higher than market values and have to be determined on basis of type-specific animal values. The values have to be adjusted during longer outbreak situations to prevent adverse incentives resulting from large deviations between compensated values and actual market prices.

#### *Differentiation of different livestock production sectors*

Registration of livestock holders is an important precondition for effective and efficient animal disease risk management, including a functioning compensation system. However, in most countries a complete registration of livestock holders cannot be reached. Especially in countries with many backyard holders, registration would involve prohibitively high administrative efforts. Hence it should be aimed at achieving registration of farms above a certain size with the Veterinary Service. An incentive-based approach for this is to determine a maximum number of livestock compensated per unregistered livestock holder in case of an outbreak, i.e. a compensation limit. This would provide a clear incentive for registration to farmers. Experiences in other sectors indicate that this type of incentives work in practice. In case of an outbreak and culling, unregistered farms exceeding this maximum number of animals would not be compensated for those animals above the maximum number. This guideline would after a transition period split a country's livestock production industry into two sectors: Registered *commercial livestock producers* characterised by exceeding a certain farm size, and unregistered, *small-scale and backyard livestock holders*.

This leads to the following recommendation aiming at achieving an efficient level of registration of livestock producers:

- ⇒ ***A Country Compensation Mechanism should define a maximum number of animals for each specie that are compensated in case of culling, if the livestock holder is not individually registered.*** This maximum number of animals is the borderline between individually registered commercial livestock producers and small-scale and backyard livestock holders, who are not individually registered. The maximum number of animals to be compensated without registration should reflect the capacity of the Veterinary Service of the country. An appropriate borderline should be chosen so that the Veterinary Service can administer registration and fulfil its control function regarding commercial livestock producers. Unregistered livestock holders should not be compensated for culled animals above the maximum number.

*Compensation of commercial livestock producers*

Evidence from countries with Avian Influenza outbreaks has shown that a compensation rate of 50% of the animal value can be enough, if veterinary restrictions are accompanied by strong control efforts in order to prevent a violation of restrictions. A compensation rate of over 100% is generally not recommended because of the creation of adverse incentives. Based on these international experiences it is suggested to provide *higher compensation rates to commercial livestock producers meeting higher pre-defined bio-security standards*. As simplicity is key, the pre-defined criteria that determine a commercial farm's bio-security level need to be easily observable and verifiable, e.g. indoor keeping, fencing, all-in-all-out production documented in records, documented regular veterinary checks etc.

The report provides the following recommendations concerning the compensation of commercial livestock producers :

- ⇒ ***Animal losses of commercial livestock producers due to culling should be compensated according to the bio-security level of the farm.*** Low, moderate and high bio-security farms should be compensated at rates of 60%, 75% and 90 % of the type-specific animal value for healthy animals and half of these rates for visibly diseased animals. Criteria for bio-security have to be pre-defined and communicated to farmers to provide incentives for taking the relevant measures.
  
- ⇒ ***Compliance of commercial livestock holders with veterinary restrictions can either be achieved through an incentive-based approach by also compensating business interruption and other losses caused by veterinary restrictions, or through policing of livestock holders in disease outbreak situations.*** During long outbreak situations, livestock holders under movement restrictions could be worse off than livestock holders with infected herds if only animal losses due to culling are compensated. In these cases, adverse incentives are created and compliance with veterinary restrictions has to be massively controlled through deployment of police or military forces.
  
- ⇒ ***As soon as this is feasible, the GERFAE Governing Board should require Country Compensation Mechanisms from eligible countries to share costs and responsibilities with commercial livestock producers.*** Contributions of livestock holders to the CCM according to farm size are socially acceptable and would not have negative effects on animal disease risk management of livestock producers. Because of the related advantages, GERFAE should encourage cost-sharing in recipient countries even before it becomes a formal eligibility criteria.

*Compensation of small-scale and backyard holders of livestock*

Although it is unrealistic to achieve individual registration of small-scale and backyard livestock holders with the Veterinary Service in developing and transition countries, it is crucial for successful planning and carrying out of an emergency response to have some data available regarding livestock densities in different parts of the country. One way to obtain this is a regular census of livestock. Another way is to promote aggregate registration of livestock kept in one village or region, for example. The approach developed in this study is to formally treat these small-scale and backyard livestock holders as one entity in terms of the Country Compensation Mechanism. This entity will be referred to as a production community. A production community creates opportunities to transmit information to backyard holders of livestock; it could therefore enhance individual capabilities of risk management. The main advantage of the production community however is that it renders small-scale and backyard livestock holders, which

must be considered as uncontrollable livestock producers, accountable. This can be achieved through a community-based compensation approach.

In case of an outbreak, compensation payments would have to be determined according to the animals culled in the production community. The rules for a reduction of compensation payments would also be community-based, i.e. *high numbers of visibly diseased and dead animals would reduce compensation payments to the community as a whole. The individual livestock holder however receives a fixed share of total community compensation, which represents his share in the number of animals culled as specified in the culling records.* The individual livestock holder's share would not depend on the disease status of his animals at the time of culling. Therefore the individual backyard holder has a significant incentive to provide diseased and dead animals to the culling team for disposal, thereby reducing dramatically the risk for illegal sale of these animals on local markets. On the other hand, the total compensation that the production community receives will be determined according to the compensation rules described above, i.e. reduced depending on the number of diseased and dead animals in the community as a whole. This means that any diseased or dead animal reduces the amount paid per animal to all members of the production community, leading to a collective interest in early reporting and higher bio-security.

Small-scale producers and backyard holders usually have very low or no bio-security. Many bio-security measures seem unrealistic to achieve for these production systems, e.g. closed poultry production and the like. However, there are measures to reduce animal disease risk even on a small-scale or backyard production level. For example, ensuring access to clean water, fencing birds' farmyards and separation of sick birds are measures that can reduce the risk of attracting Avian Influenza and that can be implemented in small-scale and backyard production systems. It is recommended to provide explicit incentives for improving bio-security in production communities however in order to forward the process of improving bio-security in the small-scale and backyard sector. Similarly to commercial livestock producers, it is therefore suggested to differentiate compensation levels in order to provide incentives for production communities to undertake those kinds of measures, e.g. participation with disease awareness programs or the like.

This leads to the following recommendations regarding production communities of small-scale and backyard livestock holders:

- ⇒ ***Small-scale and backyard livestock holders should be encouraged to form production communities to increase collective responsibility and communal accountability for animal health.*** The geographical outline of a production community has to reflect structural aspects of animal disease risk management. The set-up of a production community should draw on existing administrative structures and social networks.
- ⇒ ***Animal losses due to culling incurred by small-scale and backyard holders of animals that are member of a production community should be compensated according to the bio-security level of the production community.*** Animals from production communities that do not take specific precautions should be compensated at rates of 75% of the type-specific animal value for healthy animals and half of these rates for visibly diseased animals. For production communities adhering to certain verifiable bio-security measures this rate should be increased to 90%. The compensation payment is community-based, and individual compensation therefore does not depend on the health status of the own animals, but on the health status of all animals culled in the community. This incentive structure increases collective responsibility and communal accountability for animal health.

*Compensation outside of production communities*

Although the organisation of small-scale and backyard livestock holders in production communities would be beneficial from a disease risk management point of view, this is a new approach at this stage and needs to be tested before its feasibility can be finally assessed. Experiences in countries such as Vietnam seem to indicate that it is possible to channel compensation payments through existing communities. However, it is clear that in some regions or countries the formation of production communities may not be feasible at all. It requires existing social structures, which may not exist in outskirts of large cities with a high turnover of migrant population, for example. It also requires trust in existing institutions, as the incentives provided are future compensation payments, and therefore a minimum of trust is required that commitments before an outbreak will be valid after the outbreak. If no trusted institutions are available, such an approach cannot work.

Although the most common situation currently, an environment of atomised backyard holders of livestock is most problematic from a risk-management point of view: Backyard holders are very difficult to reach – both to increase awareness for prevention/bio-security, and for control measures in case of an outbreak. The compensation guidelines should therefore provide clear incentives for small-scale and backyard livestock holders to form production communities, if the system is assumed to be feasible in the particular country. In addition, it is possible to introduce a higher *first-notification compensation rate* for the compensation of small-scale and backyard livestock holders to induce early reporting of disease cases.

This leads to the following recommendations for compensating losses of small-scale and backyard livestock holders outside of production communities:

- ⇒ ***Losses due to culling of animals of small-scale and backyard livestock holders outside of production communities should be compensated at rates of 60% of the type-specific animal value for healthy animals and half of this rate for visibly diseased animals.*** Low compensation rates provide an incentive for the formation of production communities, if introduced in the country. Policing of veterinary restrictions is needed however to ensure compliance of the small-scale and backyard livestock holders outside of production communities with veterinary restriction, as social control mechanisms do not exist.
- ⇒ ***An additional incentive for early disclosure could be provided by a special first-notification compensation rate of 90% of the animal value for backyard holders.*** First-notification compensation rates of 90% of the animal value should only be considered for the compensation of the first individual livestock holder in each region that notifies the outbreak of a particular disease.

**Governance arrangements**

In the context of GERFAE, to facilitate optimal coordination of emergency planning and response, both activities should be funded by one mechanism under one management structure. Of the models analysed in the study, an explicit collaboration of relevant institutions (with one of them having a Trustee function) is perhaps more appropriate to further encourage streamlining of global efforts in the area of animal disease risk management and involve expert input within the more day-to-day activities of the fund. Involving agencies with core spheres of expertise appears to be the more holistic approach for a coordinated and efficient animal disease risk management. By encouraging interagency collaboration in such a manner it is more likely that coordination with other donors, stakeholders and activities is safeguarded.

It is recommended that the GERFAE should also follow the standard governance structure of a Governing Board, an Advisory Panel and a GERFAE Secretariat. The Governing Board should represent donors, eligible countries and, depending on the hosting arrangements, the leading Technical Agencies. The composition of the Board should reflect the funding efforts of all donors and the role of eligible countries and their regional organizations to encourage eligible country ownership and voice within the GERFAE function and process. It could potentially include observing or nonvoting members from other stakeholder groups that have an interest or expertise in animal health, such as the veterinarian, farmer organization, food industry community or NGOs that can assist governments in implementation of eligible measures. The Technical Agencies should be responsible for establishing the Advisory Panel, which could also include these other stakeholders groups, to provide objective scientific and technical advice to the GERFAE Governing Board.

This leads to the following recommendation for governance arrangements of GERFAE:

- ⇒ ***GERFAE should be created through a collaboration of relevant institutions. One institution should manage the day-to-day running and management of GERFAE, possibly in a Trustee function, in close cooperation with expert Technical Agencies.*** Such an arrangement would recognize the need for institutional arrangements to optimise efficiency and cost effectiveness of GERFAE activities, ensuring emergency planning and response plans to be funded by GERFAE are country-driven, appropriately prepared and executed and part of a greater, coordinated framework of national, regional and global animal disease risk management. Existing institution expertise should be leveraged.
- ⇒ ***GERFAE should have a governance structure which includes a Governing Board, an Advisory Panel and a Secretariat.*** The structure must safeguard against overlap and redundancy of initiatives to ensure efficiency of coordinated action and to build eligible country ownership and voice within the GERFAE process. It should ensure transparency, accountability and efficiency of stakeholder involvement and activities, and review, develop, monitor and evaluate GERFAE policies, operational and application funding guidelines.

### **Payment procedures / monitoring**

The question of payment procedures and monitoring of GERFAE payments to eligible countries can be addressed at two levels: First at the level of the fund itself i.e. the relation between the fund and recipient governments and secondly at the level of disbursement of compensation payments to livestock holders through a Country Compensation Mechanism. In both cases, it is essential that a clear audit trail is established. In the case of GERFAE itself and its relation to both donors and recipient governments it is essential that it provides for and sets aside the necessary budget and obtains the necessary expertise to ensure that the plans for fund disbursement are sound and workable i.e. there is ‘pre-vetting’ and that following a disbursement a verifiable audit trail exists. Establishing this type of audit trail mechanisms for recipient governments is a well-established practice of donors and will not be discussed here in depth.

The major challenge is, however, to have a similar audit trail at the level of the disbursement to the final beneficiary through the Country Compensation Mechanism that any beneficiary country will have to establish to qualify for GERFAE support. Experience with other supranational compensation mechanisms shows that creating an audit trail for compensation costs is feasible, but can lead to a very high

administrative burden for performing the audits and also lead to significant delays. Therefore GERFAE needs to delegate as much auditing functions as possible through the use of independent financial auditors.

This leads to the following recommendation:

⇒ ***Once the fund is operational the GERFAE Governing Board, with guidance from the Advisory Panel and Technical Agencies, must establish an audit and monitoring processes, taking into account experiences of the ongoing projects funded through the Global Program for Avian Influenza.*** The processes should be reviewed regularly, adapted and result in GERFAE guidelines and requirements for eligible countries. GERFAE needs to delegate as much auditing functions as possible through the use of independent financial auditors, to be contracted when a Country Compensation Mechanism is set up.

### Managing the risk of GERFAE

Without adequate provisions or in the absence of risk management measures, in case of a relevant outbreak of animal disease GERFAE has to provide funds rapidly to support emergency measures in eligible countries, even before related donor contributions are received. The timing of contributions to GERFAE and the release of funds for emergency measures can therefore be expected to differ, leading to a temporary deficit. The challenge is to find a financing strategy that addresses these temporary shortcomings and to prevent structural deficits which could arise in case of a catastrophic animal disease crisis.

A risk financing approach to managing GERFAE expenditure risk within a given budgetary period is recommended. Firstly, the initial working capital of the fund has to be established through donor contributions that are sufficient to finance expenses for emergency preparedness planning (under approach A) and emergency response measures under relatively certain capital outlay scenarios within the given period. Secondly, contingent grants from donors or other actors could be used to finance further emergency expenditures when needs are higher, so that GERFAE is a sustainable financing tool to support global animal disease risk management, but one that is to a certain extent self-sufficient from appealing for additional donor contributions in “normal” or “moderate” years. In periods with several outbreaks or significant large-scale outbreaks, which require further substantial emergency capital outlays, pre-arranged contingent loan agreements could be triggered to provide additional capital in order to ensure continuation of GERFAE’s animal disease risk management operations. GERFAE should be principally able to pay back contingent loans in following periods.

This leads to the following recommendation:

⇒ ***It is strongly recommended that ex-ante contingent agreements should be arranged as opposed to negotiating ad hoc capital provision when capital is needed.*** This is for *timely* and *reliable* financing, with funds made available immediately under the specifications of a contingent agreement. The timing of funding is critical to the efficient response and deployment of emergency measures, and the security of sufficient funding when needed is a strong incentive for efficient and thorough contingency planning and emergency preparedness. Ex-ante negotiations save time and budgetary surprises in moments when time and money is most scarce and offer security to enable efficient financial planning and capital allocation.

Of course, an element of flexibility should also remain in these arrangements as understanding and quantifying potential global animal disease risk exposure and hence GERFAE expenditure risk is scientifically and technically challenging and will always be subject to uncertainty and modelling error. GERFAE should, however, be able to continue its operations in situations that require more funding. As the majority of the funding sources outlined above are public sector driven it is recommended that GERFAE also targets developing access to the international risk markets to relieve the burden of animal disease risk financing from donor budgets. Financing instruments such as those described in Annex 1 could and should be developed in the future with the aim to enable access for GERFAE to risk transfer tools and the risk capacity of the international reinsurance and capital markets, for example through insurance, derivative contracts or other risk transfer solutions such as risk smoothing structures or finite financing arrangements.