The World Organisation for Animal Health (OIE)

Prevention and control of animal diseases worldwide

Pre-feasibility study – Supporting insurance of disease losses

Final Report
Part III

Submitted by:
Civic Consulting - Agra CEAS Consulting

Part III prepared by Civic Consulting

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September 2007

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Acronyms

AI: Avian Influenza

BRM: Business Risk Management

CIS: Community of Independent States

FAO: Food and Agriculture Organisation of the United Nations

FMD: Foot-and-Mouth Disease

GDP: Gross Domestic Product

GERFAE: Global Emergency Response Fund for Animal Epizootics and Zoonoses

GPAI: Global Programme for Avian Influenza

OIE: World Organisation for Animal Health

PML: Probable Maximum Loss

PSRMP: Canadian Private Sector Risk Management Partnerships programme

PVS: The OIE's Performance, Vision and Strategy criteria

RMB: Chinese Yuan

Rs: Indian Rupees

RUR: Russian Ruble

SVD: Swine Vesicular Disease

US$: United States dollar

Executive summary

Methodology used

This pre-feasibility study was conducted by Civic Consulting in the period November 2006 to March 2007 and updated in September 2007. The study has been based on a global survey of insurers and insurance associations, often supplemented with interviews and in-depth case studies of regions with existing insurance products for epidemic livestock diseases. It also included a review of available literature.

Study focus

The study gives an overview of the epidemic livestock disease insurance products that are available in some markets, and determines barriers that have prevented their development in others. Finally, it analyses preconditions for market-based insurance products in developing and in transition economies and presents options to support the development of market-based insurance products.

Conclusions

A main pre-condition for developing epidemic livestock disease insurance is the existence of a well-planned government disease prevention and control programme. It is assumed that a market-based product would need to be fully aligned to a well-prepared government slaughter and compensation programme. A crucial element is an appropriate veterinary service. However, the effectiveness of the veterinary services, and of its ability to implement disease prevention and control, is also affected by the structure and degree of commercialisation of the livestock sector in each country. This varies significantly from one country to another.

Any scheme to support the development of epidemic livestock disease insurance would have to take into account that each country has different circumstances concerning rural insurance, capacity of insurers, as well as organization and disease status in the livestock sectors. Each country would require tailored adaptation of epidemic disease insurance solutions, although this could be eased within a framework for international standardization in product design, backed by international technical assistance, capacity building and reinsurance. Innovative solutions for product distribution, farmer enrollment and loss assessment seem essential in the absence of existing synergies and the current poor development of livestock insurance.

A high level of capacity building would be needed by the insurance sector in most developing countries, and high levels of technical assistance to undertake development of products, risk assessment, product pricing, and support for insurers. Within each country, an integrated approach to any market based insurance solution is required, where linkages could be forged to initiatives such as creation of farmer databases, livestock registration, classification of herds, and disease prevention. Insurers could play a part in such a process, but they would only be one stakeholder in a wider range of organisations and initiatives aimed at prevention and management of epidemic disease.

Given the infrastructural and technical constraints to market-based epidemic insurance identified throughout the study, the conclusions are very guarded as to the potential for a "scheme" for the development of market-based insurance products. In particular, no "universal" scheme can be foreseen which would be suitable for application in all countries. In spite of the negative outlook for a scheme for market-based epidemic insurance, there are high degrees of synergy between the needs of the insurance market, both for conventional livestock mortality insurance and for epidemic disease insurance, in the strengthening of governments' measures to improve veterinary services, and associated measures, in particular in establishing a database for the registration and identification of the national livestock herds and their owners.

Based on these considerations, the study discusses strategies which could directly encourage private sector epidemic insurance, and strategies which could indirectly encourage private sector epidemic insurance.

The report in brief (extended summary)

This pre-feasibility study was conducted by Civic Consulting and is Part III 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 global survey of insurers and insurance associations, often supplemented with interviews and in-depth case studies of regions with existing insurance products for epidemic livestock diseases. It also included a review of available literature. The study gives an overview of the insurance products that are available in some markets, and determines barriers that have prevented their development in others. Finally, it analyses preconditions for market-based insurance products in developing and in transition economies and presents options to support the development of market-based insurance products.

Livestock disease insurance in developing and in transition countries

Insurance sector

The development of the insurance sector in emerging markets remains limited in comparison to industrialized countries. In 2005, industrialized countries accounted for 88% of global premium, and emerging countries 12%. Average per capita non-life premiums were $3,287 in industrialized countries compared to $77 in emerging countries, accounting for 3.82% and 1.42% of GDP respectively. However, growth rates of premium income have been stronger in emerging markets.[1] Most developing countries have liberalised domestic insurance markets, which were dominated by state owned insurance companies. International insurance groups have increased their involvement, by joint venture or acquisition of local, state-owned or private companies.

In developing countries, insurers have concentrated on motor, industrial and life business, mainly focused in urban areas. There are significant difficulties for insurance companies to penetrate into rural areas. Small farm size, low insurance awareness, low economic capacity, poor rural distribution networks and high rural transaction costs all conspire to make rural markets unattractive to insurers. In spite of this, there has been a strong desire by governments and insurers to find solutions allowing improved access to risk management and insurance for farmers. Microinsurance has increased, but less rapidly than microfinance. There is a long experience of crop and livestock insurance in developed countries, where markets are mature. Where agricultural insurance has been tried in developing countries, the focus has been on crop insurance. Creating viable crop insurance programmes in developing countries has proved problematic. Innovative product development, such as weather index products, has been introduced in a few countries to try and overcome limitations of traditional crop insurance products.[2] Crop insurance has been a higher focus than livestock insurance for most developing countries.

[1] Swiss Re (2006) in from Sigma Report No. 5 (2006): World Insurance in 2005

[2] World Bank (2005)

In terms of global *agricultural* insurance premium (crop and livestock), most is generated in North America (58 percent) and Western Europe (28 percent). Asia accounts for about 4 percent and Latin America has 3 percent. The rest of the world comprises the remaining 6 percent. World-wide most agricultural insurance is for crops – representing 71 percent of the global premium for agricultural insurance (hail crop insurance is 22 percent and multiple peril crop insurance is at 49 percent). Only about 12 percent of global premium is for livestock (not including sporting or companion animals).[3]

Livestock insurance products which are marketed in developing countries are individual animal accidental mortality policies, sometimes including limited disease, targeted at high value breeding stock. Penetration is very low, reflecting the fact that this type of product is not attractive or economic to small farmers, and because of major underwriting and loss adjustment challenges for insurers. Where such individual-animal policies are sold, for example in India and some South East Asian countries, they have often been linked to credit for livestock, or linked to government programmes for the introduction of improved breeding stock. Individual-animal mortality policies are not feasible for lower value production livestock. Insurers have considered the introduction of herd-based deductibles, where a given number or value of animals must be lost before a claim can be made. Such policies would only be feasible for large herds, and sales of such policies are very limited even in developed countries.

Industrial pig and poultry sectors can be more attractive to insurers, due to controlled indoor production conditions. Cover for livestock within these units has been offered through an extension of a property insurance policy, to cover consequential loss mortality arising from specific property insurance perils, such as fire, smoke or machinery breakdown. Property and business interruption policies do not normally cover disease.

From the above review, it can be seen that from a global perspective, the current involvement of the insurance sector in agricultural areas, and particularly with livestock producers, is very limited. Epidemic cover is even more limited, and restricted to a few developed countries.

This review also shows that there is limited potential product overlap with an epidemic product, which could be linked to government measures for disease control or eradication, and there are limited existing distribution channels to livestock producers. Further, as few insurers are specialized in agriculture, they would generally require significant capacity building to become involved in epidemic insurance programme design and implementation.

Reinsurance sector

Reinsurance (the insurance of insurance companies) is a way of insurers for accessing additional capital, allowing efficient transfer of risk, and expansion of risk acceptance capacity beyond the scale which would be allowed by internal capitalisation and reserve accumulation of the insurer. Reinsurance is particularly important for products with catastrophic (co-variate) exposure, such as drought, flood or epidemic disease. Financial capacity of national insurance markets is limited in many developing countries, and reinsurers play an important role.

[3] International Cooperative and Mutual Insurance Federation (2004), p12-13

Reinsurance availability for agricultural schemes has been highly problematic in developing countries. Whilst international reinsurers have been willing to support domestic insurers in well established property, casualty and motor lines, both crop and livestock insurance present a different level of underwriting difficulty for both insurers and reinsurers.

Acceptance of any reinsurance business by a reinsurer only follows a process of due diligence, which includes not only the analysis of the specific risk or portfolio of risks being offered, but also assessment of the integrity, operational capability and financial status of the insurance company, and of country risk. Relationships between insurers and reinsurers become established over a period of time, normally based on core business (motor, property, engineering, aviation, etc). Insurers in developing countries have, either through their own initiative or under government pressure, sought to develop agricultural products and expand in the rural areas. The reinsurers are normally the first port of call of the insurers, seeking technical assistance as well as financial capacity.

Reinsurers have found it difficult to meet the demands of insurers in developing countries, mainly for the following reasons:

- First, there has been a high need for technical assistance in design and implementation, particularly in the start-up phase. The costs of technical assistance are often high in relation to expected transaction size;

- Secondly, there have often been poor underwriting results, particularly in crop insurance, so the attractiveness to provide technical assistance and reinsurance capacity is limited;

- Thirdly, agriculture is often faced with more important infrastructure constraints than lack of insurance. Both insurers and reinsurers are frequently faced with small farm sizes, high costs of distribution, low economic capacity and lack of insurance awareness of farmers. Underwriting and loss assessment is difficult for individual-farmer policies, and there is often a lack of long term, reliable statistics needed for risk assessment and pricing.

Reinsurers have provided livestock reinsurance treaties for mortality, normally on a restricted basis and for accidental mortality. Disease is often excluded, and certainly epidemic disease, or government slaughter. Demand for livestock insurance was often from a few breeders with high value animals, or for wealthy bloodstock owners. Many insurers, however, wish to demonstrate that they can offer bloodstock and livestock, even if volumes of business are minimal.

Reinsurance for agriculture is dominated by a few of the major reinsurance companies operating internationally. There are very few domestic or regional reinsurers with technical departments familiar with agricultural risks.

In spite of this negative background, some reinsurers are actively interested in expanding and diversifying their agricultural portfolios, and are willing to consider new programmes and proposals, provided that there is a prospect of viability, and volume of business which is of interest. The prospect of building a global portfolio of diversified epidemic risks would be more attractive to reinsurers than individual national programmes. However, the situation of each country is unique, requiring adapted national programme design.

Pre-conditions for market-based epidemic livestock disease insurance programmes in developing countries

This report considers that there are many barriers to the introduction of market-based epidemic insurance in developing countries. However, pre-conditions can be listed, and would apply on a country-by-country basis:

The most significant pre-condition for the introduction of market-based epidemic insurance in a developing country is that there must be at least one insurance company in the country willing and able to take a commercial interest in establishing and distributing an epidemic disease product. Several insurers can be involved in a pool, and a lead insurer would normally be appointed by pool members. This collective approach has benefits where each company and specific individuals can be allocated by each insurer to contribute during the developmental phase. Once operational, the pool would agree to an annual plan, and appoint a lead insurer who would be responsible for risk acceptance. These insurer(s) would form a stakeholder group with other parties interested in market-based epidemic insurance. In reality, such an initiative would only follow a government plan to strengthen disease management and direct compensation, and would be linked to external technical assistance, and to the support of interested reinsurers.

Other pre-conditions for developing the insurance sector regarding epidemic disease insurance products would be likely to include:

- insurable client base of farmers in engaged in the commercial livestock sector;
- existence of an effective national epidemic disease strategy and operational infrastructure including veterinary services;
- agreed government compensation system for direct losses, backed by access to adequate national or international funding;
- defined linkage of the market-based programme to the rules and operations of the government programme of compensation, for the purposes of declaring outbreak, defining slaughter and quarantine zones etc;
- clear definition of covered and excluded diseases, and diagnostic capacity;
- existence of, or establishment of, a geographically zoned client and livestock database;
- distribution channel(s) to reach farmers, either directly or through linkage to other organization(s);
- access to external specialists able to provide the insurer with technical assistance during the feasibility study and design phase, and ongoing support;
- access to data and modelling of each covered disease, to permit estimation of maximum probable losses, establishment of appropriate financial limits, and setting of premiums;

- access to reinsurance and financial structuring;
- a viable business plan able to demonstrate the prospect of a profit margin to the insurer, after considering distribution and overhead costs, and reinsurance costs;
- adequate legal and regulatory framework.

Pre-conditions for developing the reinsurance sector regarding epidemic disease insurance products include those points listed under "insurance sector", plus:

- assessment of the capacity of the insurance company(ies) to manage the proposed market-based programme;
- assessment of the adequacy of operational procedures of the original programme, including risk acceptance, loss assessment, veterinary testing and controls, including catastrophic event preparedness;
- assessment of exposure to anti-selection and moral hazard;
- assessment of adequacy of proposed premium rating, limits, terms and conditions of the original programme;
- setting of reinsurance structure, particularly the layering of risk for non-proportional reinsurance, in relation to expected frequency of claims. Reinsurers will require defined limits to their financial liability, by district, province and in total;
- acceptable return on capital allocated, according to each company's internal acceptance practices;
- an opportunity for diversification of risk nationally or internationally would make the overall programme more attractive but need not be a pre-condition to a particular national proposal.

Challenges faced in supporting the development of market-based insurance products

A main pre-condition for developing this type of insurance is the existence of a well-planned government disease prevention and control programme. It is assumed that a market-based product would need to be fully aligned to a well-prepared government slaughter and compensation programme. A crucial element is an appropriate veterinary service. The OIE PVS instrument could be very valuable in assessing it. However, the effectiveness of the veterinary services, and of its ability to implement disease prevention and control, is also affected by the structure and degree of commercialisation of the livestock sector in each country. This varies significantly from one country to another.

Any scheme to support the development of epidemic livestock disease insurance would have to take into account that each country has different circumstances concerning rural insurance, capacity of insurers, as well as organization and disease status in the livestock sectors. Each country would require tailored adaptation of epidemic disease insurance solutions, although this could be eased within a framework for international standardization in product design, backed by international technical assistance, capacity

building and reinsurance. Innovative solutions for product distribution, farmer enrolment and loss assessment seem essential in the absence of existing synergies and the current poor development of livestock insurance. Key factors from an insurer's perspective include:

- In terms of **product design,** an agreed-value policy, with a claim triggered by defined government slaughter for **specified diseases**, and providing a payment to farmers which was supplementary to government compensation, would offer the simplest approach.

- In terms of **marketing**, few existing marketing channels exist for insurers to reach the rural community, and innovative solutions would need to be developed, preferably allowing **low distribution costs**. Often farmers have limited insurance awareness, and may have low willingness and ability to pay premium, and sales of such a market-based policy would need to overcome these hurdles. Demand for such a market-based product would need to be tested, as experience in crop insurance indicates that there is an unwillingness to purchase insurance for events occurring with low frequency.

- In terms of **risk acceptance**, simplified minimum acceptance criteria would need to be developed, compared to more complex risk acceptance needed for conventional livestock mortality insurance, which requires farm inspection and veterinary certification.

- In terms of **underwriting**, the key difficulty lies in **product pricing**, due to the absence of data required for risk assessment of frequency and severity of whichever specified diseases are to be insured, and difficulties in modelling expected future outbreaks. Further, new strains of disease (e.g. AI) may have unknown epidemiology and unpredictable financial impacts.

- In terms of **loss assessment**, it may be possible to follow government slaughter decisions, which for the insurer means a need for confidence in the independence and integrity of the services responsible for government slaughter decisions.

These factors demonstrate that a high level of capacity building would be needed by the insurance sector in most developing countries, and high levels of technical assistance to undertake development of products, risk assessment, product pricing, and support for insurers. Within each country, an integrated approach to any market based insurance solution is required, where linkages could be forged to initiatives such as creation of farmer databases, livestock registration, classification of herds, and disease prevention. Insurers could play a part in such process, but they would only be one stakeholder in a wider range of organisations and initiatives aimed at prevention and management of epidemic disease.

Finally, the financial management of the consequences of disease outbreak, with infrequent but potentially severe claims, require major risk transfer by domestic insurance sectors, which have low financial capacity and may be unwilling to commit significant risk capital to such types of insurance. International re-insurers would need to play an important role, and would be more interested in a programme which aimed to develop such cover in many countries, achieving some economies of scale in product and mechanisms, and some risk spread. The financial capacity and willingness of the insurance sector in each country means that major risk transfer is needed. Financial structures for national retention of risk, layers of commercial reinsurance, and possibly high-level government-backed catastrophe cover could be foreseen.

Conclusions on options for an Animal Epizootic Insurance Scheme to support the development of market-based insurance products

Global versus national approach to a scheme

Given the infrastructural and technical constraints to market-based epidemic insurance identified throughout this pre-feasibility study, our conclusions are very guarded as to the potential for a "scheme" for the development of market-based insurance products. In particular, no "universal" scheme can be foreseen which would be suitable for application in all countries. The extent to which market-based insurance could develop is strongly influenced, country-by-country, by the following national features:

- Degree of commercialisation of the livestock sector(s): Market-based epidemic insurance is a financial instrument and could only be feasible for farmers operating in the emergent or commercialised livestock sectors, where clients were willing and able to pay insurance premiums.

- Degree of development of the insurance sector in the rural areas: Current penetration of insurance markets into rural areas is, on average, low. Epidemic product sales would be hard where insurers do not have a rural client base or linkages to a distribution network. Similarly, the capacity of the national insurance market to develop expertise in underwriting an epidemic product varies according to the degree of sophistication of the market.

- Degree of development of government capacity for epidemic livestock disease management is a pre-condition to commercialised insurance: for example, veterinary services, epidemic risk management capacity, advance planning for epidemic outbreak, herd registration and databases. These characteristics differ widely from country to country, as does the current status of endemic and epidemic disease in each country.

A conclusion is that there is a wide diversity between countries in the pre-conditions existing for an epidemic product. This is in a context that there are very limited private sector epidemic insurance programmes even in industrialised countries. Hence, there is limited experience, in comparison to other classes of insurance, of epidemic scheme design and of best practices to act as examples for international transfer of know-how.

Countries could be classified according to the status of their livestock sector, of their insurance sectors, and of their government veterinary services to identify those that are likely to be most favourable to market-based epidemic insurance.

The existence of the PVS instrument provides a strong objective measure of veterinary services, and could be a starting point for assessment of the key preconditions. This is complementary to the objectives in terms of eligibility to GERFAE (see Part II).

Synergy of market-based insurance and GERFAE objectives

In spite of the negative outlook for a scheme for market-based epidemic insurance, there are high degrees of synergy between the needs of the insurance market, both for conventional livestock mortality insurance, and for epidemic disease insurance, in the strengthening of governments' measures to improve veterinary

services, and associated measures, in particular in establishing a database for the registration and identification of the national livestock herds and their owners.

Further, the operation of a market-based product would need to be integrally linked to a government compensation system for livestock. All the measures foreseen as necessary to strengthen the effectiveness and efficiency of emergency preparedness, for example development of pre-outbreak emergency preparedness, and developing compensation protocols, and post-outbreak response capacity, are fully aligned with the needs for commercial insurance (see Part II). Thus, in spite of the constraints identified, the development of a sound governmental epidemic prevention and response programme could lay the foundation for the private insurance market to offer parallel products. This seems most likely to occur only in those countries with better developed or innovative insurance markets, where there are insurers specialising in the rural sector, where commercial livestock sectors exist, and developed distribution networks such as agricultural banks and microfinance organisations. Wider penetration of livestock insurance is seen in some transition countries.

A complimentary synergy between public compensation and private sector insurance is that insurance creates a formal contractual arrangement between insurer and the individual farmer, whereas public compensation standards, guidelines and rules are targeted to livestock owners in general. This contractual arrangement requires *ex ante* establishment of databases of insured farmers and their herds, and legally binding rules for claims payment. It requires accurate definition of insured and excluded diseases, which may be more generally defined under government compensation guidelines. In crop insurance, there are examples where the databases of insured farmers are superior to any government records of farmers and their production systems.

Strategies which could *directly* encourage private sector epidemic insurance include:

- Premium subsidy: Subsidisation of private sector epidemic insurance does not seem convincing, given that limited government financial resources are required, as a priority, to implement national risk prevention and control services, and in particular to provide financial compensation for compulsory slaughter. Subsidisation of a supplementary, private-sector, consequential loss insurance product would not seem sustainable, and certainly not in the context of a global scheme, although might be considered as a government measure in specific countries.

- Public sector reinsurance: This measure does not seem to a priority, unless bottlenecks in private sector reinsurance are identified. Private sector reinsurance may be forthcoming, provided that the original insurance programmes are viable. Key factors identified by reinsurers remain data for pricing, and independence of government veterinary services. The main constraints to epidemic insurance are in building national "ground up" programmes capacity, as "top down" financial instruments will not substitute for viable local programme design and operation. The existence of a national pool of insurers, or international pool of reinsurers, cannot substitute for sound local implementation, such as animal identification systems, animal health information, and database development.

- Promotion of public – private partnerships: Encouragement of pilot projects funded by a scheme similar to the Canadian PSRMP programme. PSRMP is a Business Risk Management (BRM) programme funded through the Agricultural Policy Framework which provides financial and technical advice to industry-led projects seeking new risk management tools developed and/or delivered by the private sector, in order to cover gaps in available farm-level risk management

coverage. Such an initiative would bring together national and international representatives of the financial services industries to create projects, which may receive technical assistance funding.

- Technical assistance: As noted, it is unlikely that insurance or reinsurance markets will act as the prime movers for the development of private sector epidemic insurance. Preconditions to insurability are completely linked to the existence of government services, so that the development of such services is a pre-cursor. Hence, direct technical assistance to insurers does not seem useful in isolation. A phased approach could be foreseen, where insurers are increasingly involved, building on the initial development of sound epidemic preparedness and response. A degree of international standardisation implied by the current project would increase the cost-effectiveness of global technical assistance. Key aspects where technical assistance could be needed are to advise governments in strengthening disease management and in putting in place an *ex-ante* programme for direct compensation. Risk assessment tools required by governments would also benefit insurers.

Strategies which could *indirectly* encourage private sector epidemic insurance include:

- Development of government and international veterinary services capability: as a foundation for an insurance programme which supplemented the government compensation system. The synergy of this approach is described above.

- Establishment of improved information systems: available to insurers, to allow better assessment of livestock health and disease, and to encourage development of some internal technical capacity within insurers as a first step towards developing products (both epidemic insurance and traditional mortality insurance).

- Client and livestock database: An essential requirement for any insurance programme as well as for government compensation programmes is that there is a comprehensive database of farmers, and of the livestock held on farms. This is not only needed for the identification of livestock, but also geographical zoning for control purposes. An important issue in this respect is the definition of minimum requirements regarding the systems for (government) registration of herds.

- Classification of livestock sectors and disease risks: Development of best practices for management information system for a classification of livestock into categories, by livestock type, age, use and production system, which could also be a pre-requisite for government authorities responsible for disease management and direct compensation, is fully complementary to insurers' requirements. Development of herd identification, classification and databases, and access to animal health inspection and status reports, could benefit animal health management as well as provide a basis for confidence of insurers in livestock risk management by potential clients.

1. Introduction

Aim of the study

This pre-feasibility study is Part III of a series of economic studies on the financing of animal epizootics and zoonoses losses in developing and transition countries, commissioned by the World Organisation for Animal Health (OIE) with support of the World Bank. Insurers around the world have developed various livestock insurance products for epidemic livestock disease. This study gives an overview of the insurance products that are available in some markets, and determines barriers that have prevented their development in others. Finally, this pre-feasibility study analyses preconditions for market-based insurance products in developing and in transition economies and presents options to support the development of market-based insurance products.

Structure of the study

The structure of this study is as follows: Section 2 details the methodology employed for the study. Section 3 provides an overview of selected existing types of epidemic livestock disease insurance globally and concludes with an analysis of the strengths and weaknesses of existing schemes. It includes in depth studies of selected markets (US, EU, CIS, China, and India), the market situation for such products, barriers confronted in these countries and their prospects for the future. It also includes a technical comparison of different ways in which these products have been set up. Section 4 presents the pre-conditions for market-based epidemic livestock disease insurance in developing and in transition countries. This includes a consideration of the product design and financial characteristics. Challenges and options for an animal epizootics insurance scheme to support the development of market-based insurance products at the national level are presented in Section 5. The Annex includes the survey questionnaire and an overview of results of the insurers' survey conducted in the framework of the study.

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[4] Participants in the peer-review process were asked to provide their expert opinion, without necessarily expressing the view of their organisation.

2. Methodology

The study has been based on the following resources:

- Global survey of insurers and insurance associations, often supplemented with interviews;
- In-depth case studies of regions with existing insurance products for epidemic livestock diseases;
- Expert and stakeholder interviews;
- Review of existing studies and reports by government institutions, academic institutions etc.

More details on the resources used for the study and the methods employed are presented in the following sections.

Survey of insurers and selected authorities

A systematic investigation into current insurance products and the market situation for such products globally was based on a questionnaire distributed to over 200 insurance companies, associations of insurers, re-insurance companies and brokers in Central and South America, Africa, Asia, the US, the EU, the CIS Countries and Asia. The questionnaire collected data on existing insurance products for epidemic livestock diseases as well as insurers' opinions on the strengths and weaknesses of their products as well as on future demand.

The response rate was quite satisfactory considering the rather limited number of private insurance companies and other relevant stakeholders that offer products for epidemic livestock diseases. In total, 30 filled questionnaires were collected from around the world.

Table 1 and Table 2 describe the profile of the respondents:

Table 1: Number of respondents to the survey

Respondents	Questionnaires received
Insurance companies	19
Association of insurers	4
Re-insurance companies	3
Brokers	2
Other	2
TOTAL	**30**

As can be seen below, there were fewer responses from regions where the insurance market is less developed, as a limited number of private insurers in these regions offer relevant products.

Table 2: Distribution of respondents to insurer's survey worldwide

Respondents	Questionnaires received
Europe (including non-EU and CIS countries)	11
North America	12
Central and South America	2
Africa	1
Asia and Middle East	4
TOTAL	**30**

Interviews

Interviewees were selected for their expertise in epidemic livestock disease insurance and also for relevant experience in developing such products. In-depth interviews have been conducted with the following persons:

Table 3: Key organisations interviewed

Interview participants	Organisation
Mr. Jean Christophe Garaix (AXA, France)	Re-insurance company
Mrs. Emma Stamper (Crowe Livestock Underwriting Ltd., UK)	Other (Underwriters)
Dr. Tobias Farny (Munich Re, Korea)	Re-insurance company
Ms. Annette Houtekamer-Van Dam (Eureko Re, Netherlands)	Re-insurance company
Dr. Karl Murr (Munich Re, Headquarters)	Re-insurance company
Mr. Thomas Heintz (Partner Re, Zurich)	Re-insurance company
Mr. William White, (Heath Lambert Group, UK)	Insurance Broker
Mr. Munyaradzi Daka (Lion Assurance, Uganda)	Insurance Company
Various interviews covering insurance/compensation issues have been conducted in Asia (China, South Korea, India), the US, as well as a number of South American, CIS and European countries.	Insurance Companies and other stakeholders

The interviews were conducted either by phone or face-to-face. Experts selected for interviews mostly completed an in-depth questionnaire before the interview and the interviews were mainly intended to clarify and provide additional information on selected aspects.

3. Existing epidemic livestock disease insurance products in selected markets

3.1. USA

3.1.1. Market situation for livestock insurance

The livestock sector represents roughly half of the total value of agricultural production in the USA,[5] but accounts for a small fraction of the agricultural insurance market in the country.[6] Private insurance cover for livestock related risks is available in the USA and offered by several domestic insurance companies and agents. In general, policies that cover the basic named insurance perils such as fire, lightning and theft are widely available. Cover for additional perils such as other weather related risks; accidental shooting, drowning, electrocution; attack by wild animals; injury from loading or unloading, building collapse, or overturn of conveyances; vandalism and malicious mischief are also offered for an additional premium, although animal mortality policies are more limited in their availability. It is estimated that only 10-15 domestic companies in the USA underwrite such products.[7] In general, any legal entity producing livestock could be a holder of such insurance policies although certain restrictions and guidelines may apply. Diseases are typically excluded for most food value animals, i.e., cattle, sheep, swine, poultry; although a few limited examples of livestock disease insurance, with exclusions, do exist (see below).

In addition to these insurance products sold by private companies, six federally supported insurance products that cover livestock have recently been introduced in the USA since the passage of the US Agricultural Risk Protection Act (ARPA) of 2000. The current products offered by the US Department of Agriculture (USDA) Risk Management Agency (RMA) mainly target price risk in livestock; production risks are mostly left uninsured, including disease. The products currently offered are Livestock Risk Protection (LRP) for hogs, fed cattle and feeder cattle; Livestock Gross Margin (LGM) for hogs; Adjusted Gross Revenue and Adjusted Gross Revenue-Lite (AGR-Lite) products. The LGM and LRP products are specifically targeted at livestock and cover price risk, they were first offered for hogs in 2002; the LRP covers livestock price risks, while LGM covers both livestock and feed price risk. The AGR products cover livestock as part of a whole-farm revenue policy, however the livestock revenues covered are only designed to represent the value of crop production fed to animals and coverage is limited. The AGR product was first offered in 1999.[8]

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[5] Koontz et al. (2006), Chapter 14

[6] Although exact figures cannot be found for the US market as a whole, indications can be found by looking at the business lines of reinsurers active in the US agricultural market. For example Partner Re's publications on their Agricultural business (http://www.partnerre.com/App_Assets/Public/153b0a90-8ef1-4a8f-ad88-b64439b62e37/Agriculture_English.pdf)and their US Speciality Lines, which include reinsurance for agriculture and livestock in the US (http://www.partnerre.com/App_Assets/Public/8ec5a5a6-ae0a-45cb-8173-e25e97148722/33400_6%20Specialty%20Lines.pdf), indicate the percentage of livestock coverage is small in comparison to crop insurance.

[7] Hansel H. Anderson, VP-Underwriting, Farmers' Mutual Insurance Company, PA, USA

[8] For more information, see Koontz et al. (2006), Chapter 14 and http://www.rma.usda.gov/

3.1.2. Epidemic livestock disease insurance products currently available

In general, disease is excluded from livestock insurance policies offered privately in the USA. Results from the surveys conducted with US insurers confirm this. Few examples can be found where epidemic disease coverage has been offered, although little information exists as to the precise details of this coverage, outreach and success of these programmes. For example, Wellington Underwriting Agencies Limited, manager of Wellington Syndicate 2020 at Lloyd's in London, announced in August 2006 that it was going to offer Avian Influenza business interruption cover to farmers in the USA. The product will cover business interruption for broiler farmers, who farm a particular type of young chicken. The coverage is triggered if the government slaughters their poultry following an outbreak of the H5N1 strain of Avian Influenza on their farms and is designed to supplement the US government Avian Influenza response plans.[9] However the extent of this programme and product uptake since the launch is not known.

Another example is Country Insurance & Financial Services Group, a group of affiliated insurance companies, who offer a Livestock Mortality policy that covers all disease that causes death to cattle, horses, swine, sheep, goats and dogs insured on the policy, to farmers in the state of Illinois. They also offer a more general Farm policy, covering broad perils such as theft, drowning by flood, accidental shooting, etc. where death by disease is not covered. Additional coverage via policy endorsements, such as interruption of business production, loss of income, loss of value for high valued livestock, etc. can be added to an existing Farm policy, for an additional premium. On their stand-alone livestock mortality policy, death by disease that is contracted and causes direct death to the insured livestock is covered, however with certain limitations and exclusions. In particular the policy does not apply to death directly or indirectly due to loss: caused by the destruction of any animal because that animal contracted, or was exposed to, any contagious disease, whether such destruction be by order of the federal government, state government and or any subdivision of government; all livestock that harbours infectious disease prior to the company's agreement to insure the livestock; caused directly or indirectly by the failure or neglect of the insured, the insured's agents or employees to give proper attention and care to the animal or animals described in the declarations, amongst other exclusions. Therefore, in the case of epidemic outbreaks when the state or federal government feels it is necessary to take action, the livestock mortality policy does not compensate a farmer for his destroyed livestock. According to Craig Conroy from Country Insurance & Financial Services Group however, Livestock Mortality policies are written on a limited number of livestock compared to the number of livestock covered on farm personal properties on the farm policies.

3.1.3. Prospects for epidemic livestock disease insurance

According to David Berry of The Hartford Financial Services Group, one of the largest US livestock insurers, the reasons they do not cover epidemic disease are primarily[10]: a) the potential for catastrophic loss due to the disease itself and the destruction of "potentially exposed" animals; b) the lack of either private or governmental reinsurance; and c) associated catastrophic loss related to the market value of unaffected animals, e.g. demand and market prices decline in the event of an outbreak, expanding the "loss due to disease" well beyond the actual affected area. Reinsurance capacity, the potential for catastrophic losses and

[9] Lloyds. (2006). "Lloyd's offers US farmers Avian Flu cover." http://www.lloyds.com/News_Centre/Features_from_Lloyds/

[10] Personal communication, 14th December 2006

uncertainty as to the frequency and magnitude of the underlying risk were also cited as barriers to market development by Michael Zielin of Partner Re[11] in Connecticut.

Insurance companies participating in the survey offered a mixed response to questions regarding potential growth of epidemic livestock disease insurance sector in the US. Respondents who believe the market will grow cite that producers remain concerned about potential outbreaks of BSE, FMD, Avian Influenza and others diseases – creating demand – as the main reason for potential growth. These respondents felt it will take a partnership of government and private resources; education of lawmakers as to the size of the exposure and involvement in product development; reinsurance capacity and reinsurer participation; producer knowledge of availability of such coverage and reasonable pricing to develop the market. Those who see limited future growth cite the lack of risk capacity, knowledge and understanding of the risk and desire to address these issues as the main reasons. Several feel that if a major disease epidemic should occur, the appropriate role of the government would be to provide financial, catastrophe assistance.

Following the ARPA in 2000 the US Department of Agriculture (USDA) Risk Management Agency (RMA) funded a study on livestock insurance. Researchers at Iowa State University held several listening sessions with livestock producers across the USA and discussed the various risks livestock producers face.[12] Most of the producers indicated that price risk, on both output and input markets, was their biggest concern. Hence the RMA developed the LGM and LRP products noted above. Producers indicated that production risk was of lesser importance and could be handled by risk management practices. Disease risk was not a major concern of the producers however the sessions were conducted before the BSE cases in Canada and the USA, the 2002 low-pathogenic Avian Influenza outbreaks in Virginia and the increased attention and coverage from the media of Avian Influenza in general.

Before the passage of the ARPA, livestock was explicitly excluded from coverage under federally supported agricultural insurance programmes. The language in the ARPA contains information on how livestock insurance coverage can be expanded in the future beyond the current RMA products and specifically lists livestock disease as one of the areas of possible expansion. However lack of data on livestock production risks and livestock disease, as well a Congressional funding, could inhibit RMA insurance development in these areas.[13]

3.1.4. Country Background: Public compensation scheme for epidemic livestock diseases

There is a long history of federal government involvement in controlling and eradicating livestock diseases in the USA going back to 1884.[14] The 5th Amendment of the US Constitution specifies, "nor shall private property be taken for public use, without just compensation",[15] hence compensation was a key component of

[11] Personal communication, 27th November 2006

[12] Koontz et al. (2006), Chapters 14 and 18

[13] Koontz et al. (2006), Chapter 14

[14] See Koontz et al (2006), Chapter 6, for history details. This section provides a short summary of this excellent chapter regarding the issues associated with US livestock disease insurance in the 21st century.

[15] Amendment V, Bill of Rights, United States Constitution from Koontz et al. (2006), Chapter 6

the government's response to disease outbreaks from the start. Current livestock compensation by the US federal government is directed in part by the Animal Health Protection Act, Subtitle E of the Farm Security and Rural Investment Act of 2002. The Act states that, "the Secretary shall compensate the owner of any animal, article, facility, or means of conveyance that the Secretary requires to be destroyed under this section".[16] In particular the Act establishes the following guiding principles: "the compensation will be based on the fair market value as determined by the Secretary"[17] and that compensation paid "by any owner under this subsection shall not exceed the difference between the fair market value of the destroyed animal, facility, or means of conveyance; and any compensation received by the owner from a State or other source for the destroyed animal, facility, or means of conveyance".[18]

The Code of Federal Regulations Title 9, Part 50[19] states that "Animals for which indemnity is to be paid under this part must be appraised at their fair market value by an appraiser selected by APHIS"[20]. In practice there can sometimes be difficulties selecting someone with expert knowledge on-site to determine the worth of the animals to be destroyed in the time of an outbreak that has financial independence from their appraisal; hence an alternative standardized appraisal value process is being developed by the USDA. The standardized appraisal values are not based upon expert opinion of an appraiser but on measurable characteristics of the animal where animals classified into categories would then have the same value. The process has many advantages and efficiencies for USDA[21] and in cases where the standardized appraisal value plans have been tested; they have been well received by the livestock industry.

The US federal government will also often assist owners in the culling and disposal of the animals, by either performing these procedures or paying partial costs of having it done privately, to ensure animals are killed in a humane fashion and that the risk of disease spread is minimized. It has also in the past paid some of the costs associated with cleaning and disinfection following an outbreak to ensure it is done properly to respect environmental concerns. In general the US federal government does not get involved in compensation arising from indirect losses, such as lost of income associated with down time or business interruption, despite calls from the industry to expand the items eligible for compensation. One of the reasons for this is to provide incentives for owners to practice good bio-security in order to minimize the chance of diseases, among other practical issues.[22]

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[16] Public Law 107-171, from Koontz et al. (2006), Chapter 6

[17] Ibid

[18] Ibid

[19] From multiple years of the US Code of Federal Regulations, Koontz et al. (2006), Chapter 6

[20] Animal and Plant Health Inspection Service, part of USDA, http://www.aphis.usda.gov/

[21] See Koontz et al. (2006), Chapter 6 for a detailed discussion of the issues involved with the standardized appraisal value approach.

[22] For more details of the programme, readers should refer to Koontz et al. (2006), Chapter 6, for an excellent summary and discussion of compensation alternatives, such as industry-generated compensation funds, that have been established in some part of the USA where there are major concentrations of poultry companies.

3.2. European Union

3.2.1. General information

This section of the study describes livestock insurance policies currently available for farmers in Europe. The overview is based on a survey among 5 insurance and reinsurance companies respectively, 1 insurance broker, 1 underwriting company and 2 national insurance associations in 7 European countries and on an earlier survey[23] of a total of 19 insurance companies and insurance associations in 14 European countries. Hereafter, the term "insurer" refers to all respondents of the surveys.

Epidemic diseases in European agriculture are a recurring phenomenon. Recent illustrations are Foot and Mouth disease (FMD), Classical Swine Fever (CSF) and Avian Influenza (AI). Control measures include stamping-out infected herds and immediately establishing surveillance zones around infected herds. Losses to farmers related to control measures include direct disease losses (e.g. value of culled animals) and other direct production losses (e.g. losses from business interruption). Epidemic livestock diseases bear a high risk of loss accumulation, particularly in regions characterised by highly specialised and intensive farming.

Compensation of epidemic livestock diseases includes formalised compensation schemes and ad-hoc compensation. Compensation schemes can be categorised generally into three different schemes: (1) statutory compensation schemes; (2) non-statutory schemes; and (3) insurance covers. The latter scheme is analysed in the following sections.

3.2.2. Market situation for livestock insurance

Insurance cover for livestock is widespread in Europe. All countries surveyed do have insurance covers for livestock related risks such as death due to accidents or non-epidemic diseases (e.g. Brucellosis and IBR). The insurance products vary in their coverage of consequential losses. From Germany, Sweden and Spain it was reported explicitly that insurance companies cover losses of production or veterinary costs due to accidents or non-epidemic diseases. Livestock insurance covers are generally offered for cattle and pigs; some insurers also include poultry and other cloven-hoofed animals.

3.2.3. Epidemic livestock disease insurance products currently available

Epidemic livestock diseases generally involve many farms at the same time. Farms in an affected region can be infected or be confronted with control measures by governments (e.g. pre-emptive slaughter of contact herds or movement restrictions in surveillance zones). During the 1997/98 CSF epidemic in the Netherlands for example, 429 pig farms were infected with CSF and approximately 13,000 pig farms were affected by one or more control measures.[24] Because of the large number of farms involved, financial losses of epidemics in livestock can be catastrophic, especially in densely populated livestock areas. The extent to which private insurers can deal with the systemic nature of epidemic livestock diseases depends on many factors, such as

[23] Civic Consulting (2006)

[24] Meuwissen (2000), p55

the number and spatial spread of farms insured, the portfolio of the insurer and reinsurance capacity.[25] However, the market for insurance cover for epidemic livestock diseases is significantly smaller than livestock insurance market.

Insurance products for epidemic diseases are offered in 9 of the 15 surveyed countries. In most of these countries insurance markets complement the existing statutory schemes for epidemic livestock diseases. In other countries providing insurance cover for epidemic livestock diseases, policyholders have to purchase an additional, specific cover for epidemic livestock diseases.

The number of insurance providers on the national market reportedly varies from 1 (Switzerland) to approximately 10 (Germany). Information about the approximate share of farmers and the type of livestock insured against epidemic diseases is scarce. Approximately 50 to 60 per cent of German livestock producers contract insurance covers against business interruption losses. Swedish insurers estimated that 55 per cent of cattle have epidemic disease cover and Finnish insurers estimated that 70 per cent of the Finnish market was insured against epidemic diseases. The following information about the approximate number of farms insured was available from insurers responding to the survey in the following EU countries:

- United Kingdom: NFU Mutual insures 5,058 farms (cattle, sheep, pigs) insured against FMD; 7,729 cattle farms insured against Tuberculosis; 6,072 cattle farms insured against Brucellosis; 90 pig farms insured against CSF;
- Finland: About 20,000 farms;
- Norway: Livestock in 16,000 cattle farms, 2,300 pig farms, 1,200 poultry farms, less than 1,000 sheep farms.

Survey responses to questions concerning the total premium income and most significant claims against epidemic livestock disease were sparse. Total premium income ranges from approximately 500,000 Euros in 2004 for cattle in Spain to about 38 million Euros in 2005 for the national market leader in Germany. However, the latter figures include premiums for other insurance products (e.g. insurance for the recovery of high value animals and transport insurance for horses). The most significant claims reported were FMD in the UK (2001) and Brucellosis and Tuberculosis in Spain. Only insurers in Italy reported government support to private epidemic livestock diseases via premium subsidies. The government also offers support in Spain, where Agroseguro, a pool of more than 30 private insurers, is supported through subsidies for insurance premiums and by public engagement in stop-loss reinsurance. Insurance in force offered by Agroseguro only covers livestock insurance; though products covering epidemic livestock diseases are under development (e.g. insurance products for FMD which are in great demand according to Spanish insurers).

3.2.4. Product design

According to the surveys, only insurers in Germany, Norway, Sweden and UK systematically offer insurance products for epidemic livestock diseases with non-specialised cover. In other countries (these countries

[25] Meuwissen et al. (2000), p10

include Italy, Finland, Switzerland and Spain) coverage is offered at an additional premium, as a supplementary cover or as separately covered product.

In all of the countries that offer insurance products for epidemic livestock insurance several of the most contagious diseases are covered (e.g. FMD). Insurance cover for other diseases can be quite comprehensive or limited to a specific, definite list of epidemic diseases.

3.2.4.1. Underwriting procedures

Individual policies are offered to individual livestock owners in all surveyed countries. In some countries policies were also available for farmers` associations and other stakeholders. Standard period of validity of cover is 12 months; only insurers in Germany and Switzerland offer policies for longer periods. Common exclusions included in contracts are pre-existing diseases or natural disasters. Obligations of the policyholder include prevention measures to provide bio-security on farms. Four of the surveyed insurers do require specific measures while at least 3 do not. Only one insurer creates incentives to implement additional safety measures by a discount. Other, generalized obligations, which are required by 5 insurers, contain other hygienic and safety measures and timely reporting of disease outbreak.

3.2.4.2. Ratemaking procedures

Historical data about epidemics is limited due to the low frequency of outbreaks and continuously changing environment concerning prevention and control strategies.[26] Epidemiological models are often used to simulate the spatial and dynamic spread of epidemic livestock diseases and provide a basis to calculate losses due to epidemic livestock diseases. However, only one reinsurance company reported explicitly the use of epidemiological models to determine premium rates. In addition underwriters also analyse payback periods and the return on capital.

3.2.4.3. Claim settlement procedures

When asked about the trigger of coverage (i.e. the criteria that must be fulfilled in order for the insurance to apply), the surveyed insurers generally reported two categories of events. Once death or emergency slaughter or one case of disease is notified, the insurance policy applies to the claim. It is standard for the insurance companies to require a certificate issued by government.

In general, insurance companies which indemnify direct losses compensate the value of animals. Indemnification for consequential losses depends usually on several factors: (1) stipulated production value; (2) number of animals affected; or (3) period of business interruption or marketing restriction.

All insurers reported that they impose maximum ceilings on their claims. Maximum compensation is either defined in: (1) monetary terms; or (2) time limits. Most of the insurance policies include a deductible, either as a fixed rate or as a percentage of total losses. Some insurance contracts include partial or total reduction of indemnifications if outbreaks are not reported rapidly or if precautionary guidelines have not been observed.

[26] OpCit, p4

3.2.5. Strengths and weaknesses of existing epidemic livestock disease insurance products

Several European insurance companies currently show that direct disease losses, as well as direct production losses (such as business interruption losses for farmers under veterinary restrictions) can be, to a certain extent, insurable without public involvement. However, the market for epidemic livestock disease insurance products is relatively underdeveloped. Insurance covers for epidemic livestock diseases are available in 9 out of the 15 surveyed countries. All of these schemes cover several of the most contagious diseases (such as FMD, which is covered by nearly all schemes). Insurance products systematically offered with non-specialised cover are only available in 4 of these countries.

According to responses of insurers, epidemic livestock disease insurance products are sparse. An insurer in the UK considered them to be fairly widely distributed, although market share in the UK is small in comparison to other countries. When surveyed about the operational effectiveness of insurance products, opinions were split. One of the Swiss insurers considered epidemic risks to be sufficiently covered while one insurer in the UK reported the need to cover losses of revenue due to epidemic outbreaks. According to the respondents, insurance covers for epidemic livestock diseases have an acceptable financial performance and most insurers considered their products to be satisfactory. Almost all of the insurers surveyed did not assess the level of satisfaction of their customers.

Insurance companies stressed the highly variable demand from farmers. Outbreaks of epidemics cause a great demand for specific covers of epidemic livestock diseases, while demand decreases significantly in the absence of epidemic diseases. Insurance companies considered that existing compensation schemes with public involvement were a reason for the weak demand for insurance products. According to the insurers, farmers feel sufficiently covered by public compensation schemes or expect ad-hoc measures from governments.

As mentioned above, reinsurance capacity influences the insurability of epidemic livestock diseases. Only one of the insurance companies considered reinsurance capacity to be inadequate. At present time, reinsurance capacity seems to be sufficient, although this statement should be accepted with caution considering that reinsurance capacity may become unavailable, or increase in price, following the outbreak of a specific disease.

3.2.6. Prospects for epidemic livestock disease insurance

Opinions about the future development of epidemic livestock disease were divided; half of the surveyed insurers considered epidemic livestock disease insurance to be a growth sector in terms of future development, while the other half did not agree. Reasons for not believing in the future development of this sector varied, but the main reason was that insurers did not consider it to be affordable nor profitable. Other commonly stated reasons were the lack of demand from farmers and inadequate reinsurance capacity.

On the other hand, increasing risks of epidemic livestock diseases (due to extended live animal trade and larger livestock units) are stated as the main reason for future development of insurance coverage in the field. Unsatisfied demand in farmers was perceived by a small number of insurers. Avian Influenza insurance was considered particularly in demand because of the potential of high losses brought about by the disease.

Respondents commonly suggested public financial support as feasible measures to encourage the development of epidemic livestock disease insurance. Public assistance included subsidies for premium and

compulsory insurance schemes. According to respondents, the governments could assist insurance companies by supporting reinsurance programmes. Other suggestions included harmonisation of measures to be taken during epidemics.

3.2.7. Country Background: Public and other compensation schemes for epidemic livestock diseases

Public and non-public compensation schemes exist in most of the countries surveyed. Statutory compensation schemes are common. Among these, there are various combinations of financing methods ranging from high levels of financial participation from the stakeholders, to high levels of support by governments.

All reported statutory schemes cover the value of livestock. In seven countries, statutory schemes also compensate farmers for costs associated with culling, among other direct losses (e.g. costs for monitoring or losses from infected feed). Coverage of other direct production losses is provided by statutory schemes in only five countries. None of the statutory schemes offer complete coverage of all losses related to an epidemic outbreak. Only a few statutory schemes compensate prevention costs. In all statutory schemes most of the major epidemic diseases (e.g. FMD, CSF, AI) are covered.

Non-statutory schemes are primarily financed by contributions from farmers. These schemes offer very specific disease coverage varying in their coverage of direct or consequential losses.

Ad-hoc compensation unrelated to a public compensation scheme was provided to farmers who suffered losses due to restrictions on trade for breeding eggs during the 2000-2005 period, when there was an outbreak of Avian Influenza in the Netherlands. In that case, governmental payments added up to approximately 1.5 million Euros. In another case, farmers in the UK were compensated for welfare slaughtering of pigs in surveillance zones during an outbreak of Classical Swine Fever in 2000.

3.3. CIS countries (Russian Federation, Ukraine, Moldova and Kazakhstan)

3.3.1. General information

This report is based on the survey of livestock insurance programmes in CIS countries performed in December 2006, interviews with insurance companies in the region and a survey of Internet-based resources. There is lack of factual and analytical information available on Russian Internet websites of relevant institutions. Most of the websites provide basic descriptions of the insurance products and programmes and more specific information can be obtained only through direct contacts with the insurers. Besides, there is no statistical information about the programmes' performance in the previous years and assessment of the market volumes can be done only on the basis of information provided by the insurers and through expert appraisal.

Agricultural insurance in CIS countries is a part of property insurance statistics and it is virtually impossible to get official data on the number of agricultural contracts underwritten and losses adjusted. Such information is usually derived from the news, public press-releases and companies' reports. All CIS countries are currently working on design and establishment of the crop insurance systems which is presently considered to be more important than livestock insurance. Most countries decided to make subsidized agricultural insurance programmes voluntary. Some countries tried mandatory options (e.g., Ukraine in 2002-2003) but the parties involved, including governments, did not fulfil the programme requirements. Kazakhstan launched a mandatory crop insurance system in 2004. Farmer participation rate was high (65% - 2005), but the farmers claimed they did not like the administrative requirements and in 2006 they proposed to make this programme voluntary as in other countries.[27]

The livestock population had been decreasing in CIS countries until 2005-2006. Currently, commercial farms are expanding livestock operations and the numbers of poultry and pigs are growing. The Russian Federation has initiated a national project on livestock development; in 2006, about 52 thousand pedigree cattle were imported into Russia.[28] Purchase of pedigree cattle for this national project is subsidized by the government.

According to market reports and official statistics, there are about 20 million cattle, 8.3 million pigs and 256 million poultry at farms of all types in Russia. In 2006 Ukraine reported over 6.7 million cattle, 8 million pigs and over 180 million poultry being kept at farms of all types. In 2006 there were 316 thousand cattle, 514 thousand pigs and about 25 million poultry in Moldova.[29]

3.3.2. Market situation for livestock insurance

Livestock insurance is present in most countries in the CIS region (European part of CIS, Russia and Kazakhstan) however the volumes of insurance are small. The livestock is predominantly kept in private

[27] http://www.minagri.kz, www.gazeta.kz, Business and Power weekly (Kazakhstan)

[28] http://www.rosagroleasing.ru

[29] http://www.meat.ru/; http://minagro.gov.ua; http://mcx.ru

households and small farms (e.g. Ukraine – 60% of the livestock is kept by households,[30] over 80% - by households in Moldova[31]). The countries have developed systems with state veterinarian services with annual mandatory vaccination and medical checks. The governments provide assistance upon outbreaks of epidemics, which decreases the incentives for farmers to insure their livestock.

Livestock insurance programmes are not presently subsidized in CIS countries though this situation might change in the future as the interested parties discuss the option of livestock insurance subsidies similar to crop insurance subsidization.

Private owners and small farmers are the most active clients purchasing livestock insurance. They usually insure (milking) cows and less often pigs. Poultry is virtually uninsured by this category of clientele. Private owners and small farmers purchase approximately 75-80% of the livestock insurance contracts[32] in Ukraine and Moldova. The insurers usually offer special insurance products for individuals and small farmers which include a more extensive list of risks compared to the products offered to large and commercial farms.[33]

Large and commercial farms tend to purchase fewer contracts though they usually insure more livestock (500-1,000 cattle heads or 2,000-3,000 pigs per average contract). These clients usually insure the whole herd or pedigree animals. The insurers indicated that commercial farms started to import expensive pedigree cattle from European countries, Australia, USA and Canada and farmers usually want to insure such animals to avoid possible substantial losses. In Russia's recent national livestock development project, participating farms are eligible for a subsidized credit but they are required to insure their herd according to the terms of the programme. The insurers indicated that large farms often pledge their livestock to obtain seasonal or medium-term credits from the commercial banks. The finance institutions usually demand insurance of the collateral property which is one factor stimulating demand for livestock insurance in most CIS countries. The insurers from Russia and Ukraine stated that bank credit requirements are the main reason for commercial farms to insure their livestock. According to the insurance companies, approximately 90-95% of the insurance contracts were signed with commercial farms who were applying for credits.[34] Only insurers from Moldova claimed that risk management concerns were the main reason for purchasing livestock insurance in their country; however, the number of livestock contracts in Moldova is minor.

Poultry insurance contracts are usually purchased by commercial farms but their share in the total livestock portfolio is small. According to the insurers, poultry contracts constitute up to 20% of the total portfolio (60% is cattle insurance and 15-20% is pigs).[35] After the recent Avian Influenza epidemics this disease is mostly not insured against in Ukraine but the insurance companies in Russia and Moldova offer coverage against "bird

[30] http://www.minagro.gov.ua/

[31] Information provided by Moldova insurance companies during phone interviews

[32] Information provided by insurance companies during interviews (Ukraine, Moldova)

[33] Programmes "Khatynka-Tvarynka" by TAS in Ukraine and "Buryonka" by Rosgosstrakh in Russia, information obtained from other insurance companies obtained during interviews

[34] Information provided by insurance companies during interviews

[35] Information provided by insurance companies during interviews

flu". According to mass media reports, approximately 120 thousand household birds died in Russia in 2005 due to Avian Influenza. About 170 thousand household birds died in Ukraine in 2005 as the result of Avian Influenza epidemics.[36]

The insurers assert that epidemic situations happen rarely and only Avian Influenza epidemics have increased interest in poultry insurance, though it is still not popular. FMD has not been recorded in Ukraine and Moldova over a long, continuous period (about 30 years) so the insurance companies in these countries do not treat the disease as a serious risk for their portfolio. Nevertheless, most companies in Ukraine exclude FMD, Avian Influenza and some other diseases (Brucellosis, Tuberculosis, Leucosis, etc.) from the list of the risks to be covered by their insurance products for livestock.

Livestock insurance in the Russian Federation is offered by approximately 50 companies but 10 companies dominate this market segment. Rosgosstrakh[37] holds the biggest share of the livestock insurance niche as well as in the overall agricultural insurance sector. This company has the most developed network of regional offices that allows them to reach many potential clients throughout Russia. In 2006 there were several claims in the Russian Federation for FMD and Avian Influenza as well as other diseases, but the insurers stated that the loss ratio on livestock insurance products was approximately 30-35% (higher in the private household segment and lower in the commercial farms segment). According to estimates the insurers cover about 500,000 cattle and pigs (100,000 – in commercial farm sector) and up to 20 million birds (chicken, geese, ducks, ostriches, etc.) per annum. The annual insurance sum on cattle and pigs constitutes approximately 350 million US$ and 28 million US$ on poultry. The annual premium sum collected is estimated at the level of 0.8 million US$ for their poultry portfolio and 6-7 million US$ for cattle and pigs.[38]

About 40 insurance companies operate in the agricultural insurance sector in Ukraine, though more than 70% of the market is controlled by 6-7 companies. Oranta insurance company is the leader of agricultural insurance sector with an extensive network of regional offices. This company insures a bigger part of livestock population in Ukraine; however, during the last 3 years its market position has been challenged by other insurers (Etalon, TAS, Credo-Classic, etc.). According to the insurers, livestock insurance occupies about 25-30% of the total agricultural insurance market. The biggest share of the livestock segment belongs to cattle insurance (65-75%) with pigs and poultry insurance splitting the rest of the market evenly (insurance premium basis). According to estimates, Ukrainian insurance companies insure about 200,000 cattle heads and 40,000 pigs. There is no reference information on poultry insurance volumes. The annual premium volume of livestock insurance is estimated at 20 million UAH (approximately 4 million US$).[39]

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[36] http://www.minagro.gov.ua/; http://www.mcx.ru/; Russian and Ukrainian media news

[37] http://www.rgs.ru/

[38] There is no public statistical information on livestock insurance in CIS countries. Information is based on the insurers' assessment provided during interviews. Data from Internet sources (http://www.allinsurance.ru/; http://www.insur-info.ru/; http://www.agroinsurance.com/ was also used.

[39] Assessment of the annual insurance volumes is based on information provided by the insurers during interviews and from tquestionnaires. Data from Internet sources (http://www.uainsur.com/; http://www.forinsurer.com/; http://www.agroinsurance.com/) was also used.

There are 32 insurance companies in Moldova but livestock insurance is offered by approximately 10 companies with two companies dominating the biggest share of the agricultural insurance market (Moldasig and Garantie). The insurance companies advised that the volume of the livestock insurance segment is very small and they have few contracts. At the same time it is interesting that the major reason for the farmers to purchase insurance coverage is risk management considerations but not collateral insurance as it is observed in other CIS countries.[40]

3.3.3. Epidemic livestock disease insurance products currently available[41]

The insurance companies offer similar livestock insurance products in CIS countries. They usually propose a multi-peril package that includes coverage against most livestock diseases. The clients can choose the risks to insure however the list of risks is often agreed or approved by the banks and financing institutions providing credits to farmers. The insurers divide risks into three groups – diseases, accidents and damage or loss due to third party actions.

The insurers use veterinarian standard descriptions (professional reference literature) of the risks/diseases for insurance purposes. The disease risk list usually includes Avian Influenza and FMD coverage as well as other epidemic diseases. Such products are offered in Russia and Moldova though the situation in Ukraine is different from other CIS countries. Some Ukrainian companies include epidemic diseases into risk list (Credo-Classic) but most insurers exclude Avian Influenza, FMD, Brucellosis, Tuberculosis, Leucosis and some other specific diseases (according to the type of animals) from the list of risks covered by the insurance contract. Epidemic diseases are included in the coverage only on products offered to private households and small farmers. Avian influenza is currently not insured by Belgosstrakh in Belarus.

Many insurance companies propose partial coverage (accidents and third party actions) and full coverage sub-products (including diseases). Additionally, the insurers designed separate insurance products for commercial farms and private households/private farmers. These products have slight differences and provide similar risk coverage for both groups of clients. The products for commercial farms provide more sophisticated underwriting procedures to address risk accumulation issues. The commercial product allows for adjustment of the contract terms according to the needs of commercial farms while the products for private households/private farmers are standard and cannot be changed by the agents and regional branches. Examples of standard products for households and private farmers are “Buryonka” designed by Rosgosstrakh (Russia) and “Hatynka-Tvarynka” by TAS (Ukraine).

[40] Analysis of Moldova livestock insurance market is based on the information provided by Moldasig and Garantie insurance companies. Internet-based resources were also used. Not much information was available on livestock insurance in Belarus (http://www.belgosstrakh.by/; http://www.belbroker.com/) and Kazakhstan (http://www.minagri.kz; http://www.theeurasia.kz), although Internet-based resources indicate that this type of insurance is mostly offered by major local insurance companies (e.g., Belgosstrakh in Belarus). The web-site of Belgosstrakh insurance company stated that the company offers full risk coverage for livestock including epidemic diseases but does not insure poultry. The livestock insurance in Kazakhstan is at the same development level as in other CIS countries and description of the insurance programs provides the same information as can be found in Russia and Ukraine.

[41] This section of the report is based on information provided by the insurance companies during interviews and from the questionnaires filled in by seven insurance companies.

3.3.3.1. Product design

In all CIS countries the insurance companies must obtain a license for agricultural insurance (which is a mandatory programme) and for property insurance. The companies must provide standard "rules of insurance" which define the basic terms of insurance for all products offered by the insurer.

On livestock insurance products, insurers usually divide risks into three groups – accidents, diseases and unlawful actions of third parties (stealing, damage, intentional loss). The client can choose all three groups of risks for insurance or select a partial coverage. Epidemic diseases are included into disease groups that also includes poisoning, bites by insects, snakes and animals, etc. There are no separate products for epidemic disease insurance though according to the industry experts, some companies might offer special products if the client would request a specific insurance policy.

Many companies offer several options for the clients to choose full coverage, partial coverage without diseases and forced slaughter, and basic coverage (accidents). The clients can insure separate groups of animals or the whole livestock population at the farm. Some farms prefer to insure only pedigree animals to avoid loss of the most expensive assets.

The insurance companies in Russia and Moldova insure against all diseases that can cause loss of livestock. Rosgosstrakh (Russia) adjusted 5 cases of Avian Influenza and FMD in 2006. Insurance companies in Ukraine mostly exclude Avian Influenza, FMD, Brucellosis, Tuberculosis, Leucosis among others diseases from the coverage of their livestock products.

Livestock can be insured by any person (individual or legal) who can prove the ownership rights of the animals to be insured. Usually these are separate farms or households that sign the insurance policy. Cooperatives and associations are underdeveloped in CIS countries and they are mostly not participating in insurance contract procedures.

The insurance sum is established at the level of 75-80% of the market value of the livestock. CIS insurance companies apply non-conditional deductibles within the range of 5-35% from the insurance sum (the average is 15-20%) depending on the risk level of the client. The deductible can also be applied to each livestock unit according to the insurance contract.

Livestock insurance contracts are usually signed for one year. Some farms can insure shorter life-cycle livestock such as broiler chickens. In this case the contract can be concluded for 3 months. Insurers often provide minimum age restrictions for insurance of the livestock, for example: Cattle – from 1 month (Ukraine) to 6 months (Russia); Pigs – from 4 months; Sheep and goats – from 6 months (Russia) to 1 year (Ukraine); poultry – from 1 month (broilers) to 6 months (egg-layers). The insurers offer longer term contracts for the clients upon their demand. Usually 3-5 year contracts are purchased by the farms that imported pedigree livestock. Long-term contracts are also requested by the farms which have received long-term credits from banks and leasing companies.

The insurance contracts do not cover losses occurred if the client failed to take precautious measures, did not vaccinate livestock or caused loss intentionally. The insurers do not compensate losses if unattended livestock was killed by vehicles.

The insurers usually cover all direct losses. Some insurers (Ukraine) limit culling and rendering costs by 20-25% though this practice is not standard in Russia and Moldova where all direct losses include culling and

rendering costs. Most Ukrainian insurance companies do not cover consequential losses. The insurers in Russia (most but not all), Moldova and Belarus cover all veterinarian costs, medicines, reduction of animal value, and loss of pedigree quality. Some insurance companies in Russia do not compensate consequential losses similar to their Ukrainian colleagues.

The loss sum is calculated on each livestock unit damaged or lost. In case several animals were killed, slaughtered or damaged, the total loss sum is calculated. The insurance companies usually do not impose payout limits (ceilings) on the farm, claim or insurance period. They pay out the loss sum subtracting the value of meat, hide or other assets suitable for consumption or for sale at the market.

3.3.3.2. Underwriting procedures

The insurance companies require all livestock to be subjected to annual or regular veterinarian checks and vaccination. Additionally, the insurers inspect the state of the livestock. The livestock in quarantine zones cannot be insured. The insurers might also refuse to insure the animals if they expect an epidemic disease outbreak (Avian Influenza in 2005 in Russia, Kazakhstan, Ukraine and Moldova).

It is standard for the insurance contract to come into force 10 days after the contract was signed. The animals reported as sick during this time-period are excluded from the livestock insured under the contract.

The farms usually must have all cattle identified (ear tags) and they might be requested to provide registration and veterinarian check documents. Insured farms are required to undertake all the necessary standard prevention measures. The contracts often have a provision that the client is obliged to report any unusual situations to the insurance company and they should follow the instructions provided by the representative of the insurance company. The farmer is required to have a health plan that can be checked by the insurance company.

The clients are required to complete extensive questionnaires prior to signing the insurance contract. The insurers are interested in their livestock management practice, feeding and vaccination issues, staff qualification, their supply of young animals, quality of buildings and security measures used, etc. The insurance companies require information on annual production and loss history.

Some insurance companies (Ukraine) do not visit holdings to inspect the livestock. They usually know the situation in the regions and rely on the agents' knowledge of the operational area.

The CIS insurers do not impose specific triggers to recognize the risk cases. Insured farms should report any case of livestock loss or damage be compensated. In case the veterinarian authorities declare quarantine due to a disease outbreak, the insurers would supervise the insured farms to control the outbreak of the disease and the state of the insured livestock.

3.3.3.3. Ratemaking procedures

Some insurance companies (Ukraine-Vip-Standard, Credo-Classic[42]) use their own epidemiological models. Most CIS companies in Russia, Ukraine and Moldova do not have the models. They use their historical records to adjust the premium rates. The insurance companies apply reinsurers' indicative rates and the premium basic rates of the former Gosstrakh insurance company (ex-USSR) for calculating their own rates. Rosgosstrakh is offering reinsurance capacity to CIS agricultural insurers and many companies apply the indicative reinsurance rates for setting their rates for clients. Rosgosstrakh itself reinsures its portfolio with premium groups of reinsurers (Swiss Re, Frankona Re, SCOR, etc.).[43] The insurers adjust premium rates annually. As a rule, the insurance companies can offer a 10-20% discount to loyal clients that insured their stock during the last 3-4 years.

3.3.3.4. Claim settlement procedures

The clients are required to report suspicion of a disease in a timely manner. Then insurers require a list of documents for the risk case to be accepted. Usually the most important document is the statement of the regional veterinarian office or Ministry of Emergencies that should record the loss or damage case and certify the cause of the risk.

The insurers adjust each risk event investigating the reasons of the livestock loss or damage. The veterinarian office must issue a regulation (direction) for forced animal slaughter otherwise the risk event or animal disposal would not be recognized by the insurer and indemnification would not be provided. The insurance contract regulates that the client is obliged to follow all instructions of the insurer. Failure to follow the instructions is treated as breakage of the contract terms by the client.

In case the farm is located in epidemic zone, the risk event is recognized automatically, but the farm still needs to provide the necessary documents. The household insurance products are usually more prone to losses due to a lower level of livestock management practice and basic technologies used. Moreover, some insurance companies experienced serious payout problems in the previous years when the meat prices went down and many clients managed to produce veterinarian reports of risk events fearing loss of profit due to lower prices.

Some insurance companies might compensate the market price losses if the prices go down. However such practice is not widespread and the insurers often remain with the insurance sum agreed when signing the contract. It is a regular practice to set the insurance sum per livestock unit at 70-80% of the market value. The insurance sum per livestock unit is different amongst the CIS countries. The table below provides the average value of livestock accepted for insurance (the value might change within different insurance companies; the table is constructed on the data provided by some insurance companies from Russia and Ukraine):

[42] According to information provided in the questionnaires filled in by the insurance companies

[43] http://www.rgs.ru/

Table 4: Average value of livestock accepted for insurance

Livestock type	Russia		Ukraine	
	Value in RUR	Value in US$	Value in UAH	Value in US$
Cows (milking)	20,000	650	6,000	1,200
Cows and bulls (pedigree)	75,000	3,000	20,000	4,000
Pigs	4,500	180	2,000	400
Chicken	40	1.4	7 - 12	1.5 – 2.5

3.3.4. Strengths and Weaknesses of existing epidemic livestock disease insurance products

The current insurance products offer coverage for most types of livestock in CIS countries; however, the quality of the products is still not sufficient. The insurance products in Russia, Belarus and Moldova provide wide coverage against most risks including epidemic diseases. The insurance companies in Ukraine exclude some epidemic diseases (e.g., Avian Influenza, FMD) from the risk cover so insurance of epidemic diseases is limited in Ukraine. Only several insurers dare to offer epidemic disease insurance in Ukraine, though their services should be additionally assessed to understand the quality of the insurance services.

According to the insurers, livestock products have 30-35% loss ratio which is an acceptable performance. The products for private households and small farmers have a higher loss ratio (50-60%)[44] though they allow spreading risk coverage throughout big areas, which levels the loss ratio performance.

Insurers from Russia and Moldova consider livestock insurance products to be effective, though, considering the penetration rate (less than 3% in both countries)[45], such assessment should be accepted with caution. Ukrainian insurers considered livestock insurance products to have limited effectiveness considering that epidemic diseases were not insured in Ukraine (except by some companies).

The insurers were basically satisfied with the insurance products though they considered that the products should be modified and improved. Ukrainian insurers proposed to widen the insurance coverage and to improve the products' performance. Moldova insurers pointed out that livestock insurance was not widely used in their country (only several contracts were signed in 2005-2006) and they thought it would not be correct to evaluate the performance of insurance products based on these restricted indicators.

It is interesting that most insurance companies interviewed could not assess the level of satisfaction by the insured farms. Most of the experts checked "don't know" or "not satisfied" cells in the surveys that were circulated which presumes that the insurers might not know their market as they communicate with a limited number of potential clients.

[44] According to the information provided by insurance companies from Russia and Ukraine

[45] Moldovan and Russian insurers indicated in interviews that they currently insure less than 3% of the livestock produced in their respective countries

The insurance companies are not working closely with the veterinarian authorities. The government-supported veterinarian programmes in all CIS countries do not involve the insurance community in risk management practices and these two systems exits parallel to each other.

The insurers lack reinsurance capacities. Ukrainian insurance companies reinsure livestock programmes in Russia, Rosgosstrakh being the main partner for insurers. Some risks are reinsured by Ukrainian insurers at the domestic market though this is currently not important while the number of contracts is minor. The restricted reinsurance capacity for Ukrainian insurers might be a greater problem when the market would accept bigger volumes of epidemic disease responsibility. The restricted reinsurance capacities in Russia (Rosgosstrakh) for smaller companies represents a serious problem for the future as well.

Insurance companies in Moldova reinsure their portfolio in the Romanian market as these countries currently have better relations and cultural ties than with CIS countries. The volume of livestock epidemic insurance is not big in Moldova so the insurers have no problems with reinsurance of small volumes. The situation might change in the future if livestock insurance would develop in Moldova.

3.3.5. Prospects for epidemic livestock disease insurance

All insurance companies interviewed considered that livestock insurance would develop in their countries. The insurers indicated that the commercial farms started to import pedigree animals for improvement of livestock genetics. Such tendency is recognized in all CIS countries. Another factor for livestock insurance could be the government support programmes on agricultural sector and livestock development. Such a programme has been started in Russia recently where over 52 thousand pedigree animals have been imported only for the national livestock project. Similar initiatives have been declared in Ukraine, Kazakhstan and Moldova.

The insurers indicate that more farms insure their livestock for risk management purposes and not for securing credits. This tendency is recognized in Moldova and Ukraine while most livestock insurance contracts in Russia are being signed for securing collateral property on bank credits.

All insurance experts from all CIS countries believed that government subsidies might stimulate livestock and crop insurance. Premium subsidies will make insurance less costly for farmers which could improve access to insurance services.

The governments of Russia, Kazakhstan, Ukraine and Moldova are subsidizing crop insurance programmes and the insurers expect similar initiatives to be developed for livestock insurance. Such initiatives fall within green and amber boxes of WTO support measures for agriculture and the insurers believe that the governments would recognize these opportunities.

The governments might assist insurance companies in the establishment of the reinsurance and/or catastrophic pools. Accumulation of the risks into national pools would help to effectively reinsure the national portfolio of livestock risks. This would allow offering wider epidemic coverage in CIS countries that should definitely stimulate development of livestock insurance programmes.

3.3.6. Country Background: Public and other compensation schemes for epidemic livestock diseases

All CIS countries have developed veterinarian systems for controlling livestock health. These systems originated from the ex-USSR veterinarian inspection. The veterinary inspections have staff and a regional networks of specialists to control the epidemics situation in the regions.

The veterinarian inspections are responsible for annual and regular livestock checks. The governments in all CIS countries subsidize veterinarian services in their countries (they fully cover operational costs of veterinary services and basic medicines). They also provide compensation payments for farmers and households for the animals that have to be slaughtered in the event of epidemic outbreak (Avian Influenza in 2005). According to public information, the governments of Russia and Ukraine compensated the cost of poultry that was slaughtered in 2005 due to Avian Influenza.

The decision on compensation payments has to be made by the central government of each country and the funds are usually coming from emergency reserves of the Cabinet of Ministers in each country. The governments do not plan livestock emergency expenses in annual budgets and the decision is made ad-hoc depending on the livestock epidemic situation in each country. The Russian Federation allocated 3 million US$ for the measures to combat Avian Influenza in their country during 2006-2008. Additionally, Russia will spend 1305.5 million RUR (45 million US$) in 2006 on the activities to limit Avian Influenza epidemics. From this money, Russia plans to spend 430 million RUR on production of the Avian Influenza vaccine, 200 million RUR on creating a store of vaccine for people working in epidemic areas and 242 million RUR will be used for creating a store of anti-viral medicines and poultry vaccination. Russia will purchase medical equipment for 128.7 million RUR for better monitoring and identification of epidemic cases. 73 million RUR will be directed for purchasing diagnosis equipment and prevention measures to control Avian Influenza in the Russian Federation.[46]

Ukraine allocated 39.5 million UAH (7.8 million US$) in the Fiscal Year 2007 budget for veterinarian purposes and disease epidemics prevention (16 million UAH or 3 million US$ were allocated in Ukraine for the same purposes in the 2006 state budget).[47]

The Ukrainian government tried to introduce a mandatory livestock insurance in 2002-2003 but that initiative was not well received by farmers and the government did not provide funds for premium subsidies. The farmers treated mandatory livestock insurance as additional tax and protested this programme. The other CIS countries did not have the similar programmes during 2000-2006.

The insurance companies require reports from the veterinarian service in case the animals were killed or should be slaughtered/disposed. All insurance specialists indicated a lack of cooperation between the state veterinarian services and insurance companies. The existing government livestock support programmes (ad-hoc payments) do not include involvement of insurance companies. The interviewed insurers could not provide basic data on livestock veterinarian programmes or ad-hoc payments, which confirms the lack of cooperation between the private insurance sector and national governments.

[46] ITAR-TASS info, August 09; http://www.strana.ru/

[47] State Budget of Ukraine (2007), http://www.rada.gov.ua/

The veterinarian livestock programmes are managed by the Ministries of Agriculture with involvement of the Ministries of Emergencies and Veterinarian National Services (Inspections). These programmes do not involve private insurance companies and public information on veterinarian prevention activities (epidemic diseases) is limited. The insurers from all CIS countries indicated that they would like to see more cooperation with the government bodies on livestock insurance. The companies are ready to underwrite epidemic risks though they would expect subsidization of insurance premiums and closer cooperation / joint product design with the veterinarian services and other government institutions.

3.4. India

3.4.1. General information

India possesses one of the largest livestock populations in the world. According to the seventeenth Livestock Census conducted in 2003, India ranks first in cattle and buffalo population in the world (with 185 million cattle and 98 million buffaloes). Despite the low productivity of their animals, India is the largest producer of milk in the world.

Despite enormous economic losses arising out of various epidemic diseases to cattle and poultry the country does not have a national law to control infectious diseases in animals and birds. The government has introduced a bill[48] in Parliament called 'The Prevention and Control of Infectious and Contagious Diseases in Animals Bill' to prevent the spread of outbreaks across states and to meet international obligations for trade. Should this Bill be approved (it is currently under examination and awaiting clearance from the Government in Parliament),[49] it would generally cover not just cattle, buffalo, sheep and goat but also dogs, cats, horses, camels, mules, pigs, poultry and bees. In the statement of objects and reasons, the government acknowledges that its efforts to control major diseases like foot-and-mouth disease, haemorrhagic septicaemia and anthrax are constrained in the absence of a uniform legislation and these diseases still continue to be a serious threat to the livestock sector.

Realising the importance of animal husbandry sector to the Indian economy in general and the rural economy, in particular, the government of India has included Livestock Insurance in the Common Minimum Programme in 2003. *Epidemic* livestock insurance products are currently virtually unknown in the region; no insurance companies offer such products except for diseases that are preventable through vaccination and where the insurance cover is only extended to vaccinated animals. A few companies have in the past tried marketing epidemic livestock insurance products but due to a lack of demand, they were removed from the market.

This section is based on a survey of insurers providing livestock insurance products in India, as well as on communication with a significant number of insurance companies in the region, government organizations and academic institutions. Internet-based resources were also researched.

3.4.2. Market situation for livestock insurance

It is estimated that livestock and fisheries sections contribute approximately 6% to India's GDP, i.e. almost one fifth of India's GDP is originates from agriculture and related activities. About 19 million people work in the livestock sector. Equally important, livestock wealth in most cases is made up of "durable assets" which are relied upon not only to diversify their income sources but also assets to fall

[48] Press Information Bureau, Government of India (2005)

[49] PRS Legislative Research (2006)

back on in bad times. In short livestock related activities not only augment rural income but also help to reduce the volatility of rural income.

Recent trends in livestock population in the Indian Economy are based on the 1997 and 2003 livestock censuses conducted by the Department of Animal Husbandry and Dairying under the Ministry of Agriculture[50] (see Table 5):

Table 5: Livestock population in India (1997 and 2003)

Animals	1997 (in thousands)	2003 (in thousands)
Cattle	198,882	185,181
Buffaloes	89,918	97,922
Sheep	57494	61,469
Goats	122,721	124,358
Pigs	13,291	13,518
Horses and ponies	826	751
Mules	220	176
Donkeys	881	650
Camel	916	632
Yaks	177	65
Mithun	176	278
Poultry	347,611	489,012
Total	485,385	485,002

Source: Ministry of Agriculture, Department of Animal Husbandry Dairying and Fisheries, Government of India. And National Insurance Academy, Pune.

Additional to the direct output contribution of the livestock sector, the livestock sector plays an important role in many other sectors via contributions of its raw material by-products such as hides and skins, blood, bone, fat, etc. The value of output from the meat group was Rs. 2.93 billion in 2003-2004 (63.9 million US$).[51]

India has not been a significant exporter of livestock products. Livestock, poultry and related products earned Rs.47.34 billion (US$ 1.08 billion) in exports and leather accounted for Rs.25.68 billion (US$ 584.2 million)[52].

[50] Ministry of Agriculture, Department of Animal Husbandry Dairying and Fisheries, Government of India

[51] Converted at 1 Rs. = 0.02182 US$ (2003-2004 average)

[52] Converted at 1 Rs. = 0.02275 US$ (2005 average)

There are eight non-life insurers offering livestock insurance in various forms in the Indian market place out of a total of 13 non-life insurers. Most public sector banks and cooperative banks have collaborated with insurers to offer livestock insurance to their customers in rural parts of the country. Insurance penetration for the year 2005 was 1.6% and insurance penetration of the breed-able population was 6.5%.[53] Livestock insurance figures can be seen in Table 6.

Table 6: Premium collected and animals insured in India over time (2001-2004)

Year	Total premium (in million Rs.)	Animals covered (in million)
2001	1,450	8.9
2002	1,340	9.2
2003	1,210	6.3
2004	1,100	6.7
2005	1,380	7.9

National Insurance Academy, Pune, India

In spite of a more than 30-year history of livestock insurance, the Indian experience has not been commendable. The main reason for this is that livestock insurance is not seen as an attractive business, neither from the viewpoint of the livestock owner nor from that of the insurance provider. From the viewpoint of the livestock owner, the causes for not buying insurance may be diverse, but from the viewpoint of the insurance provider the dominant cause is the absolute or relative lack of profitability of that line of business.

Loss ratios for livestock insurance in India are very high and are nearly unprofitable; the loss ratio has averaged 82% in the last 5 years (see Table 7). Considering up to 15% of premiums are paid as commission, and supposing remaining management expense to be 5% of premiums, then the loss ratio stands at just a little over 100%.[54] This may explain why there is no financial motivation from the insurance providers' side to expand the livestock insurance business.

[53] National Insurance Academy, Pune

[54] Dr. K.C. Mishra, Director, National Insurance Academy, Pune

Table 7: Loss ratio of livestock insurance in India

Year	Number of animals covered	Premium	Amount of Claims Paid	Incurred Loss Ratio
	(in Million Rs.)	(in Million Rs.)	(in Million Rs.)	(%)
1997-98	6.3	1,440	800	56
1998-99	7.9	1,530	1,260	83
1999-00	9.8	1,370	1,140	83
2000-01	8.9	1,450	1,360	90.20
2001-02	9.1	1,340	1,070	79.41
2002-03	6.3	1,210	1,110	92.45
2003-04	6.7	1,090	960	83.41
2004-05	7.9	1,380	890	66.24

Source: National Insurance Academy[55]

3.4.3. Epidemic livestock disease insurance products currently available

The Indian market has livestock insurance products available by type of animals and not type of disease. Disease based loss control is made through backstop, stop-loss, exclusions and vaccination conditions, etc. Common exclusions are disability of any kind, disease contracted prior to and/or within 15 days of inception of risk, breeding and furrowing risks and immunizable disease covered only on successful vaccination. Diseases arising out of contagious infectious agents - viral, bacterial and protozoan parasitic - are generally excluded, except those that can be prevented by prophylactic vaccinations. Disease like Glanders, SA, HS, RP, Anthrax, FMD, BQ, Tetanus etc. are covered only if a successful vaccination certificate can be provided.

3.4.3.1. Obligation of policy holders

The policyholders are expected to have proper feeding of animals as per advice, proper management, timely deworming and vaccinations, timely reporting of ill health if any, presenting the animals for periodic check by the veterinarian, etc. The identity of insured animals is maintained with the help of ear tags, which need to be properly maintained by the cattle owner.

3.4.3.2. Product design

Livestock insurance schemes in India cover individual animal owners, private dairies, cooperative dairies and National Dairy Development Board (NDDB)[56] owned dairies. Milch cows[57] and buffaloes,

[55] National Insurance Academy, in reference to the following insurers: New India Assurance, Oriental Insurance, United India Insurance, National Insurance (1997-1998 to 2002-2003); New India Assurance, Oriental Insurance, United India Insurance, National Insurance, Royal Sundaram Insurance, IFFCO-Tokio Insurance (2003-2004 to 2004-2005).

calves/heifers, stud bulls, bullocks (castrated bulls) and castrated male buffaloes are covered. Animals within a specified age group are accepted under the Standard Insurance Scheme. The sum insured under the policy will be the market value of the animal. The basic premium rate per annum is in most cases 4% of the sum insured.[58] Long-term policies are also issued with long-term discounts. The premium rates under the policy allow for covering animals under government-subsidised schemes (see below). Group discounts are also available.

3.4.3.3. Underwriting procedures

There are various underwriting criteria / guidelines depending upon different types of livestock. The proposal is underwritten on the basis of scope of cover required, age, market value and sum insured of livestock. The cover includes standard exclusions (common & specific) and sometimes additional policy conditions like veterinary examination, etc.

3.4.3.4. Ratemaking procedures

Epidemiological models are not employed to determine premium rates in India. Rates are in most cases set under a market agreement that is dependent on past claim experience and on the prevalent diseases in the region.

3.4.3.5. Claim settlement procedures

In the event of death of an animal, immediate notification is to be given to the insurer. Death certificate, post mortem report from a qualified veterinarian and the claim form are to be submitted to the company along with the ear tag applied to the animal. The value of the animal is established according to the veterinarian's assessment of the age of the animal. After compliance of all the formalities, the claim is settled and the loss voucher issued on receipt of which a cheque is issued to the claimant. In case of a permanent total disability claim (PTD),[59] the company's liability is limited to 75% of the total sum insured if the cover has been taken. In case the animal is under the standard insurance scheme, the company does not insist for post mortem report and the claim is accepted with the death certificate jointly given by two local government officials. Claims within 15 days of insuring are not accepted.

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[56] The NDDB was created to promote, finance and support producer-owned and controlled organizations. NDDB's programmes and activities seek to strengthen farmer cooperatives and support national policies that are favourable to the growth of such institutions.

[57] Milch cows – cattle that are reared for their milk

[58] The four nationalised non-life insurers – New India Assurance, Oriental Insurance, United India Insurance & National Insurance charge 4% and the private companies also keep within that percentage.

[59] PTD – In the case that milch cattle result in permanent and total incapacity to conceive or yield milk; in the case that stud bulls result in permanent and total incapacity for breeding purpose; in case that bullocks, calves / heifers and castrated male buffaloes result in permanent and total incapacity for the purpose of use mentioned in the proposal form.

There is no maximum compensation per year or per single claim for livestock insurance in India. However, companies pay the claim for 100% of the sum insured in case of animals covered under a government sponsored scheme, and the sum insured or market value prior to illness (whichever is less), in the case of animals not covered under a government sponsored scheme. Cattle, sheep and goat insurance have no deductible[60] but covers for horse, pony, mule, donkey, pig, camel have a deductible.

3.4.4. Strengths and Weaknesses of existing epidemic livestock disease insurance products

The strength of existing epidemic livestock disease in India lies in animal-wise coverage insurance schemes irrespective of diseases but the disease should have immunization process in place. The weakness of this scheme lies in not covering or rather excluding pandemics whose immunization is yet unknown.

3.4.5. Prospects for epidemic livestock disease insurance

Livestock epidemic is covered in India as described above and is subject to immunization and backstop conditions. But pandemic (as a special case of epidemic) is yet not covered and there is no possibility to affect the cover due to very adverse loss ratios of livestock insurance at present.

Without pandemics coverage, the industry is far above the prudential loss ratio maximum of 70%; as such, the insurers have no incentive to enlarge the scope of coverage further without gross subsidization. The livestock insurance business in India thus far mostly belongs to the four public sector-undertaking insurers (PSUs).

Moreover, 22 out of 32 states and Union Territories of India are vulnerable to some disaster or other, which has the potential to cause large-scale death and destruction and also spread disease among the livestock population. Between 1953-1990 over 100,000 cattle were killed due to earthquakes and other natural calamities in India. Though animals are the main source of livelihood to the poor and the landless, concrete steps towards disaster management of livestock and other animals are yet to be taken in the country.

3.4.6. Country background: Public and other compensation schemes for epidemic livestock diseases

Immunizable epidemics are compensated by risk transfer process. Insurance of livestock operates with a low profile. Most epidemic losses are part mitigated by the government as relief. For example during recent outbreak of Avian Influenza requiring large scale poultry culling for safeguarding humans against disease, the government paid per bird compensation of Rs40.

[60] No deductible is considered for cattle, sheep and goat as these species are particularly relevant for the livelihood of the rural population

The Government of India approved a 'Livestock insurance scheme'[61] that is being implemented as a pilot project in 100 selected districts during 2005-06 and 2006-07. The government has subsidised half of the premium that has to be paid, with the entire cost of the subsidy being borne by the Central Government. The government has, through this scheme, targeted insuring 1.5 million animals with an estimated expenditure of Rs 1.2 billion.

The premium subsidy was being restricted to two animals per beneficiary and will be given for one-time insurance of an animal up to three years. The scheme has been formulated with the twin objectives of providing protection to farmers and cattle rearers against any eventual loss of their animals due to death. It also seeks to demonstrate the benefits of the scheme to the people and popularise it with the ultimate goal of attaining qualitative improvement of livestock and their products.

The districts that have been selected are those where livestock is a potentially important source of income supplementation and where special efforts are being made to introduce crossbreed and high-yield cattle. Extension of the scheme during the 11th Five-year Plan will be considered after reviewing the performance of the scheme over the past two years. The insurance scheme will also be implemented through the Livestock Development Board in coordination with the Panchayati Raj institutions (decision making bodies in rural areas of the country).

[61] Ministry of Agriculture, Department of Animal Husbandry, Dairying, and Fisheries, Government of India

3.5. China

3.5.1. General information

The survey of insurers active in livestock insurance in China was performed between January and February 2007. Agriculture insurance covering crop, livestock and aquaculture has never been profitable in China.[62] The People's Insurance Company of China (PICC) has scaled down its agriculture portfolio since its listing in the Hong Kong stock exchange in 1993. Chinese agricultural insurance business is generally not popular amongst the agriculture sector as most farms are family run and lacking in economies of scale and capital and technological inputs. On the average, farm earning is only RMB 2,600[63] per annum per family.

Premium rates are high as anti-selections and frauds are common in agriculture insurance. Frauds in agriculture insurance were reported to be 10% higher than property & casualty insurance business.

Since 2004, the China Insurance Regulatory Commission (CIRC) has worked closely with some provincial governments in carrying out agriculture insurance trials in order to formulate the appropriate compensation models that may be acceptable to farmers, insurers and both provincial and central governments. Agriculture premium was RMB 396 million in 2004, RMB 729 million in 2005 and RMB 846 million (US$ 108 million) in 2006.

A few new agriculture insurance companies were approved recently and this could be an early sign that the central government is determined to implement more agriculture insurance programmes throughout the nation in the very short run.

3.5.2. Overview of Chinese agriculture insurers

There are five Chinese insurers active in agricultural insurance. They are:

1. Sunlight Agriculture Insurance Co (Formation in 2005)

This agriculture mutual has a history dating back to 1991; it operates solely in Heilongjiang province, northeastern part of China. It has 9 branch offices, 105 regional mutual, and 2,000 local mutual with 200,000 members.[64] It was granted a national agriculture cum property & casualty license on January 11, 2005.

In 2006, Sunlight has received RMB 24 million and RMB 10 million subsidies from central and provincial governments.[65] Farmers enjoy a 20% subsidy from the government and 15% from farms owned by

[62] Financial Times 20th September, 2006

[63] USD 1= RMB 7.76

[64] http://www.chinainsurance.com; (Xinhua News; Agriculture Insurance Benfits Farmers) 5th November, 2005

[65] http://www.chinainsurance.com; 8th September, 2006

Reclamation and Cultivation Area of Heilongjiang.[66] 10% of the premium is set aside in a catastrophe fund. Thirty percent of written premiums are retained by branch offices and a balance of 70% is kept by insurance associations. Insurance associations provide covers to members of mutual cooperatives. Currently insurance associations have 145,317 insured members. Insurance associations reinsure, on quotas-share basis, 50% of its business to Sunlight.

Insured crops are mainly rice, wheat, soybean, corn and barley. Cropping season is from May to Oct. Perils covered are drought, flood, water-log, hail, wind, frost, disease and insects. Drought, flood, water-log, hail are catastrophe perils in Heilongjiang. Sunlight needed reinsurance protection in providing such catastrophe covers. The mutual encountered severe drought loss in 1998.

Sunlight underwrote around RMB 230 million and RMB 300 million premiums in 2005 and 2006 respectively.[67] It provide covers for swine, dairy cattle and poultry on trial basis. Farmers pay RMB 180 for each insured dairy cattle whereas the provincial, city and district governments subsidised RMB 40 each.[68]

2. An Hua Agriculture Insurance Co. (Formation in Dec, 2004; Paid-up RMB 200 million; Strategic cum Commercial Agriculture Insurer; Owned by Jilin state enterprise)

This is the first commercial and multi-lines agricultural insurer in China. It has the license to operate throughout China but is currently more active in Jilin and Shandong provinces. It underwrites risks in direct proportion to the allocation of government premium subsidies. It is obliged to write at least 60% agriculture related business including crop, livestock, rural engineering projects, farm property and agriculture machinery.

An Hua writes selected livestock risks such as poultry, swine, beef and dairy cattle, goose, deer but its clients are mainly major agro-companies, cooperatives and contract farmers. Total premium income was RMB 55 million and RMB 248 million in 2005 and 2006 respectively.

3. China United (Formation in 1986)

China United is the country's fourth largest insurer with its headquarters based in Urumuqi, Xingjian province. It has the license to operate throughout China and its main shareholder is the Xingjian Army Corporation.

From 1986 to 1990, China United underwrote solely commercial agriculture insurance. In 1990, the company began to underwrite property and casualty business. With 35 branches and more than 10,000 staff, it underwrites an annual premium income of more than RMB10 billion. Agriculture business, however, represents a small fraction of its total premium income. 95% of the agriculture portfolio is underwritten in Xingjian province itself and this accounts for about 78% penetration rate of cropping

[66] http://www.chinainsurance.com; (Shanghai Security, First Mutuals, Premium Income Exceeded 200 Million) 26thMarch, 2006

[67] http://www.chinainsurance.com (Shanghai Security) 7th February, 2007

[68] http://www.chinainsurance.com (Suggestions For Development of Chinese Livestock Insurance) 29th April, 2006

projects managed by Xingjian Army Group. To avoid anti-selection, all livestock within the same county or project must be insured. Ear tagging and digital photos are kept to identify each insured dairy cattle.

Since 2005, CU began taking part in nation-wide crops and livestock insurance trials led by some provincial governments.

4. Shanghai Anxin Agriculture Insurance Co. (Formed in September, 2004. Paid-up RMB 200 million)

This insurer is owned by various Shanghai state enterprises, writing business within Shanghai City or for Shanghai investors with agriculture investments in the neighbouring provinces. Same as An Hua, Anxin is obliged to underwrite at least 60% of agriculture related business, including crop, livestock, rural engineering, farm property and agriculture machinery.

Anxin provides 'almost' full perils covers (except for drought as Shanghai is not susceptible to this condition) for crops, livestock and aquaculture. Most policies are marketed through 80 of the approximately 200 local farmers' cooperatives. One hundred percent of the rice growing areas and poultry farms plus 90% of the swine and dairy cattle farms within Shanghai city is insured with Anxin. They provide 65 types of agro-insurance policies, with crops, swine, dairy cattle, and poultry and 6 others being subsidised by the local government (subsidies ranging from 30% to 35%). In 2006, subsidy allocation from City and district finance departments was RM 32 million.[69]

Selected diseases including epidemic diseases such as Avian Influenza and FMD are provided as covers. Livestock risks are not reinsured as per event loss in agriculture portfolio above RMB 50 million and losses beyond company claims payment capability (after taking into consideration crop stop-loss treaty) are borne fully by the city government.[70]

Anxin has written RMB 132 million and RMB 163 million of agriculture and farm property business in 2005 and 2006 respectively. [71]

5. People's Insurance Company of China (formation in 1949)

PICC started writing agriculture insurance in 1982 after they resumed writing commercial insurance business; agricultural insurance was carried out partially on behalf of the government with the aim of providing covers to the farmers. Losses in agriculture business were usually cross-subsidized with profits from the property and casualty business. With commercialisation of PICC's operations (listing in the Hong Kong stock exchange) in 1993, agricultural insurance business was gradually reduced. Total agriculture premium income accounted only for 0.23% of PICC's overall income in 2004.

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[69] http://www.chinainsurance.com (Liberation Daily) 16th January, 2007

[70] http://www.chinainsurance.com (Eastern Morning daily) 10th October, 2006

[71] http://www.chinainsurance.com, 6th January, 2006 and (Shanghai Security) 7th February, 2007

Types of livestock insurance written are mainly beef or dairy cattle, swine and poultry. PICC does not insure small farms or family livestock except for crop and livestock farmers within trial projects and commercial farms with veterinarians (with the aim to minimise losses). Sum insured seldom exceeds 70% of purchase value so that farmers have the incentive to carry out loss mitigation and prevention. PICC also does not provide claim bonuses to farms with good records.

From 2005 onward, PICC has been involved in several livestock insurance trials, e.g.:

1) Inner Mongolia province: In 2005, PICC provided dairy cattle insurance for commercial dairy cattle farms. No government subsidy was involved. Sum insured ranged between RMB 7,000 to RMB 8,000 per animal with premiums between RMB 400 to RMB 500.[72] Due to the lack of subsidies, only 5,000 animals of the 2.51 million animals within Inner Mongolia were insured. In 2006, in another trial, farmers paid between RMB 150 to RMB 300 per insured animal, government subsidised RMB 50 and dairy processors contributed another RMB 50. [73]

2) Hunan province: Swine insurance; government provides 1/3 premium subsidy.

3) Sichuan province: Dairy cattle insurance; local government provides 1/3 premium subsidy, provincial government subsidies another 1/3 of the premium.

4) Shannxi province:Dairy Cattle insurance no government premium subsidy involved.

5) Shandong province: This trial project was launched in October 2006 with a premium subsidy provided by local government. Premium subsidies for dairy cattle is 40%, corn 50%, wheat 50%, vegetables 40%, etc. The trial involved coverage for 10,000 head of dairy cattle. Maximum indemnity for the whole trial project is 3 times the gross net premium income (GNPI). PICC is liable for the first 100% losses, and for additional losses above 100%, the indemnity is to be drawn from the catastrophe reserve fund. In the event that this fund is drained, PICC will be liable for an amount equal to 30% of the GNPI and the remaining losses will be borne by the provincial, city and district governments in the ratio of 3:3:4.[74]

6) Liaoning province: This trial project was launched in 2006 with a 100% premium subsidy provided by the local government for contract and integrated farms;[75] the subsidy is to be reduced to 60% in 2007 and 40% in 2008. This subsidy is provided only to dairy cattle, swine and poultry farms. The maximum indemnity for the whole trial project is 3 times the gross net premium income. PICC is liable for the first 100% losses and for additional losses above 100%, the indemnity to be drawn from the catastrophe reserve fund. In the event that this fund is drained, PICC will be liable for an amount equal to 30% of the gross net premium income and the remaining losses will be borne by provincial, city and county governments in a 3:3:4 proportion (up to a maximum indemnity of 3 times the gross net premium income). In August 2006, premium

[72] http://www.chinainsurance.com 8th September, 2006

[73] http://www.chinainsurance.com 29th April, 2006

[74] http://www.chinainsurance.com (Jinan Times) 16th October, 2006

[75] Financial Times, 20th September, 2006

income has reached 1.096 million and loss ratio was 61%. Insured perils include epidemic diseases such as Avian Influenza and FMD. With livestock insurance as security, local agriculture cooperatives have provided RMB 480 million credit to some of the insured farms

7) Tibet province: This trial project was launched in November 2006 with a 90% premium subsidy provided by the local government. It involves crops, livestock and farm property.[76]

8) Gansu province: This trial project[77] was launched in August 2006 with a 50% premium subsidy provided by the local government. It involves crops, livestock and farm property. For cattle insurance, insured perils are compulsory slaughter, major diseases, fire, lightning, explosion, flood, breeding risks, etc. The sum insured ranges from RMB 1,000 to RMB 5,000 depending on the age of animals. The premium has ranged from RMB 20 to RMB 100 per animal. An additional feature is that an insured farm is entitled to a loan from a specific dairy cattle development fund set up by the City Finance Department. In 2006, Total Sum Insured (TSI) stood at RMB 5.065 million with 1,013 head of dairy cattle from 83 farms. Local dairy stocks stand at 43,000 head

9) Zhejiang Agriculture Pool: PICC is the leader of the Zhejiang Agriculture Pool with an 80% share of the Pool business. All insurers within Zhejiang province have to participate with a minimum share of 1% of the Pool business. Pool members have the opportunity to write other Zhejiang government related insurance business according to their share in the pool.

The Pool was established in 2006 on a 3-year trial basis involving P&C business, crops, livestock and aquaculture risks. Annual government premium subsidy to the pool is RMB 25 million. The Pool covers catastrophe losses such as typhoon, flood and drought for crops plus selected diseases and epidemic diseases for swine and poultry.

The maximum indemnity for any single year is 500% of gross net premium income GNPI. Losses within 200% are retained by the Pool; losses between 200% to 300% is borne by the Pool and provincial government with a 1:1 ratio, whereas losses between 300% to 500% are borne by the Pool and provincial government at a 1:2 ratio. Farms are first paid 50% of the payable claims during the year, if total losses exceeded 500% of GNPI, all claimants have to bear the reduction in payable claims proportionately so that total loss is capped at 500% GNPI.[78]

This Pool requires compulsory subsidies crop insurance cover where all farms within the trial area are automatically insured from 30% to 80% of the TSI without having to contribute to the premium. The farms can top-up the balance from 20% to 70% TSI with additional premium payment. Proposal for cover is based on county basis; all risks within a county must be submitted for insurance cover. The premium subsidy available for livestock is 60%.

[76] http://www.chinainsurance.com, 17th November, 2006

[77] http://www.chinainsurance.com,21st November, 2006

[78] http://www.chinainsurance.com, 6th January and 15th March, 2006

For livestock covers, premium rate is 3% for poultry and the minimum population is 2,000 for layer or breeder birds and 8,000 for broiler birds. The premium rate is 5% for swine with a minimum population of 10 head for breeder sow and 200 head for porker.[79]

3.5.3. Market situation for livestock insurance

The market potential is huge but there is generally very low demand for livestock insurance as a majority of the livestock farms are small and cannot afford to pay the normal premium rate set by the commercial insurers. Insurers find it hard to secure quota share and stop-loss treaty support to write these sporadic family-run risks. Placement through facultative reinsurance is only possible for fairly large modern livestock farms. To date, only Zhejiang Pool has reinsured its livestock risks. A major portion of the livestock insurance premium comes from trial projects led by provincial governments.

It is common for insurers to keep a cap on the claims payable for livestock in any trial project, e.g. 3 times the gross net premium income; losses above this amount may or may not be borne by the provincial governments.

There is hardly any competition amongst agricultural insurers for crop, livestock, as well as aquaculture insurance business. In fact, it was because of the strong mandates from China Insurance Regulatory Commission that most agriculture insurers get involved in the provincial agriculture insurance trials.

3.5.4. Epidemic livestock disease insurance products currently available

3.5.4.1. Product design

Below are examples of the types of covers, exclusions, deductibles, terms and conditions provided in livestock insurance policies:

- Perils covered:

  A. Basic covers

     Fire and lightning, explosion, drowning, attack by wild animals, falling of flying objects, collapse of permanent structure, collision within farm, falls from slope, electrocution, flood, hail, windstorm, heavy rainfall, cyclone and typhoon, attack by wild animals.

  B. Breeding risks

     Death of animal caused by dystocia or death within 72 hours after giving birth.

  C. Disease (certify by Veterinary department only)

     I. Specify the type of diseases covered, e.g.

        1. Death or intentional slaughter due to:

[79] http://www.chinainsurance.com, 6th December, 2005

a. Brucellosis;

b. Bovine Tuberculosis.

2. Death due to:

a. Traumatic recreticulitis;

b. Traumatic pericarolitis.

3. Intentional Slaughter order for animals with mastitis and endometritis (to be mutually agreed by both Insurer and Insured)

4. Slaughter order caused by Foot and Mouth Disease only

II. Not specifying name of the diseases covered

Slaughter orders and loss resulting from all major diseases

Some policies do not provide clarity on the type of diseases insured so as to leave room for claims negotiations in the case where both insurer and insured dispute the amount of loss or admissibility of claims.

Generally, insurers are very selective in providing cover for compulsory government slaughter for epidemic diseases. For example, Anxin do provide such cover, as the municipality has agreed to reimburse Anxin in the event of lossess above company's claims payment capability or per event claims above 50 million.

China is free from contagious bovine pleuropneumonia (eradicated since 1996), rinderpest (eradicated since 1955), bovine spongiform encephalopathy, African horse sickness, African swine fever, Vascular stomatitis, skin diseases, Rift valley fever and Peste-des-petits Ruminants.[80]

- Exclusions are:
    1. War, terrorism, etc.;
    2. Theft;
    3. Heat wave;
    4. Poisoning;
    5. Slaughter order (common exclusions for insurers without livestock reinsurance treaty or financial backing of provincial government);
    6. Ill treatment of animals by insured and his family members;
    7. Non-adherence to vaccination programme;
    8. Collapse of cow sheds;
    9. Disease occurrence during waiting period;

[80] All issues of Veterinary Bulletin, Ministry of Agriculture, China

10. Losses occurred outside the insured location;
11. Pollution;
12. Action of nuclear weapon, nuclear radiation, etc.;
13. Earthquake;
14. Natural mortality.

- Insurable age[81], e.g.:
    1. Swine – above 10 to 15 Kg up to 120 to 130 days fattening period (or 100 Kg weight);
    2. Breeder Swine – 1 or 2 months old to 3 years old;
    3. Dairy cattle – 18 months to 8 years old;
    4. Beef cattle – 1 to 6 or 7 years old;
    5. Poultry layer – pullet - day-old to 140; layer – 141 days to 500 days old;
    6. Poultry broiler – 10 to between 60 days to 90 days depending on type of bird.
- Waiting period, specifically for diseases and epidemic covers:
    1. Dairy and beef cattle - 15 days from inception for disease cover only;
    2. Poultry - 7 days from inception for disease cover only;
    3. Swine, rabbit – 10 days from inception for disease cover only.
- Period of Insurance:
    1. Dairy and beef cattle – annual policy;
    2. Swine - annual policy;
    3. Fattening cattle - 90, 120, 180 or 240 days short period policy;
    4. Poultry – annual policy.
- Sum Insured:
    1. Insured value is around 70% of the market value. For example, dairy cattle are insured at RMB 5,000 each if its market value is RMB 8,000;
    2. For fattening cattle, insured value is 70% of the market value plus feed cost for the whole fattening period;
    3. Expenses for disposal of carcass is indemnified only disease stricken animals.
- Deductibles, some examples:

I. Annual aggregate, usually for commercial farms:

[81] The term "insurable age" refers to the age of the animal insured. Animals with a lower age than the minimum insurable age or a higher age than the maximum insurable age are excluded from coverage.

1. Total Loss, e.g.

   Deductible for total loss: 10 % of total loss. For slaughter order caused by Foot and Mouth Disease, any government compensation is to be deducted from the claims payable and the maximum indemnity is fixed at 50 % of the total loss.

2. Partial Loss, e.g.

   Annual aggregate deductible of 10 animals per annum for all insured perils except slaughter order (which is always a total loss); for all losses above 10 head, the deductible is RMB 5,000 per head for all perils except for intentional slaughter order due to mastitis and endometritis where no deductible is applied but maximum indemnity is set at RMB 6,000 per animal.

II. Each and every loss (E.E.L) deductibles are generally applied to family-run farms:

1. 5% deductible E.E.L in case of poultry diseases, all losses within consecutive period of 7 days is counted as EEL for poultry diseases;
2. 30% deductible EEL for dairy cattle in case of accidental perils such as electrocution, drowning, and falling from slope;
3. 50% for intentional slaughter;
4. Maximum indemnity of 60% of sum insured per animal for specific perils.

- Cancellation:

  Normally policies are issued with non-cancellation clause.

M.O.F, M.O.A and CIRC are currently carrying out joint reviews of existing policy wordings and will submit their proposed standard wordings to the State Council for approval, most likely before mid-2007.[82]

3.5.4.2. Underwriting procedures

Since agriculture insurance has seldom been profitable for insurers, management generally pays more attention to underwriting procedures of agriculture risk as compared to P&C risks. In fact, most insurers prefer not to write agriculture business whenever possible. Underwriting is usually done by agriculture underwriters in the head office as branch personal often lack technical expertise to deal with the complexity of this class of business.

Government policy, price of raw materials, supply and demand, occurrence of epidemic diseases, fluctuation in livestock market price are being taken into consideration when setting the sum insured in order to avoid over insurance and possible frauds.

Acceptance criteria are generally as follows:

- Health inspection of each animal proposed for insurance by qualified veterinarian;
- Animals must have record of proper vaccination programme;

[82] Shanghai Security, 7th February, 2007

- Photograph of owners with each dairy cattle for identification purpose;
- Animals from non-epidemic zone;
- Animals from area outside flood-prone zone;
- Breed or species which is suitable for the purpose of its production, such as meat, milk, eggs, etc.;
- All animals within farm must be proposed for insurance cover;
- Ear tagging and proper records such as date of purchase, sale, death, etc.;
- Routine animal health check by qualified veterinarian;
- No movement of animals between farms without agreement of the insurer;
- Minimum number of animals per farm to qualify for insurance cover, e.g. 2,000 birds for poultry, 200 head for cattle, etc.;
- The breed or type of animal or bird proposed for insurance has been reared in the location for at least a year.

Insurers conduct a stringent screening process for all insurance proposals in order to minimise anti-selection and any feasible opportunities for the insured to make fraudulent claims.

3.5.4.3. Ratemaking procedures

Premium rate is generally determined by historical loss results which are indirectly influenced by the insurers' ability to curb anti-selection and frauds. Premium rates for each policy vary with the type of perils covered, total numbers of animals insured in a county or trial project, distance from the nearest branch office since it has bearing on pre-acceptance survey cost and loss adjustment cost, whether vaccination is provided or not (one insurer provides free vaccination to all insured animals), etc. More often than not, premium rates are negotiated between the insurer and the party involved such as producer associations, district government representatives, organising committee of provincial agriculture insurance trial, commercial farm, livestock integrated farm, etc.

New agriculture insurers usually make references to policy designs as well as premium rates set by PICC. Premium rates for small dairy cattle farms generally ranged from 3% to 10%. Commercial cattle farms, with their modern farming facilities, high standard of sanitation and proper vaccination programme, are normally charged from 0.8% to 2%. Swine porker farms pay from 5% to 8% depending on loss history, whereas poultry broiler farms pay around 0.8% to 1.5% for each batch of production.

Premium rates are normally divided into rates for basic cover (accidents/weather perils) and extension cover (disease/slaughter order).

3.5.4.4. Claim settlement procedures

It is a pre-requisite for claims admissions that loss should be notified immediately. Loss adjustment is usually carried out within 24 hours by loss adjusters or underwriters from the insurance company. There is no independent loss-adjusting firm that deals with livestock loss adjustment in China. Loss adjusters will

usually seek out clues whether such loss is caused by mismanagement, non-adherence to pre-agreed vaccination programme, or carelessness of the insured or perils excluded in the wordings.

For dairy cattle, each dead animal must be identified by an accompanying ear tag and matching it against the photograph taken during the pre-acceptance survey in order to avoid fraudulent claims (e.g. submitting claims twice with the same carcass, dead animal was not previously insured, etc.). The exact date and time of loss must be determined and recorded as it is important for computation of EEL.

The numbers of dead animals/birds and weight of loss must be recorded precisely. There are usually three ways to determine the value of loss. The first method is by taking the total weights of the dead animals or birds and measure them against a preset loss settlement scale There is a cap to the maximum insurable weight of animals; for example, the maximum weight to be indemnified is 100kg for swine porker. The second method is by pre-agreed indemnity value (not in direct proportion to increases of feed cost with time, etc.) for a pre-agreed age group and the third is by the pre-agreed percentage of sum insured for the pre-determined age group.

Loss record is then checked against the number of animals or birds insured; if the farm is found to be under insured, an average shall be applied.

In case of poultry loss adjustment, normal mortality shall first be deducted from the loss before applying the normal deductibles. Any salvage is to be deducted from the claims.

In Heilongjiang, the mutual cooperative utilises two or three tier claims checks and approvals before payment are made. Claims authorities differ among the branch manager, claims manager and general manager. All losses, loss adjustment results and claims payable are displayed on the cooperative notice board and are open to every member in order to minimise fraudulent claims. Claims can only be paid if no objection is received within two weeks after public display. Fraudulent claims are not uncommon amongst small livestock risks. Small loss with high frequency and high loss adjustment cost are some of the challenges faced by the insurers.

It is a normal practice for most insurers and the insured to negotiate openly in the event of any kind of disagreement on loss adjustment or claims payment.

3.5.5. Strengths and Weaknesses of existing livestock disease insurance products

1. Breadth of coverage

Livestock policy in China could not fully satisfy the needs of farming community due to the following deficits:

- Low numbers of sum insured as compare to actual production cost, purchase price or market value at time of loss; sum insured is usually at not more than 70% of the actual value;
- High deductibles, ranging from 30% to 50% (slaughter order), except for poultry which is about 5% of Total Sum Insured (TSI);
- Insured is usually not allowed to cancel policy; in cases where cancellation is permitted, premium is usually not refundable;

- Policy is normally sold only to groups of livestock farmers instead of individual, non-commercial farms;
- High premium rates of 3% to 10% for selected covers;
- Inadequate covers, full risk mortality covers for death due to accident or diseases is uncommon in China. Covers are usually limited with named diseases plus one or two extended epidemic diseases;
- Policy terms and conditions are less flexible;
- For slaughter order, livestock farmers normally pay full premium for 100% sum insured even though indemnity may be pre-set at a 60% limit;
- Single animal policy is uncommon in China.

Livestock farmers are usually not given the choice to freely select the type of covers they wish to have; the covers are normally offered as they are and the livestock owners just have the option either to purchase it as is or not at all. Farmers in most trial projects are willing to purchase these covers since they are provided with a 60% to 80% premium subsidy. Generally farmers outside these trial areas do not purchase any form of covers.

2. Operational effectiveness

Beside government trial projects, livestock policies are usually sold through the following channels:

- Insurance agents;
- Producer associations or cooperatives;
- Credit department of financial institutions;
- Veterinary department;
- Brokers.

High agency commissions, pre-acceptance survey cost, loss adjustment cost, overheads, operational cost, etc has prevented insurers from making reasonable profits once the loss ratio gets close to 70%.

3. Financial performance

Given the scenario of sporadic small scale farming, local insurers have tried their best to balance their book of livestock business in the past years.

On average, loss ratios fall between 55% and 70%, with occasional much worse results on few bad years.

Level of satisfaction of both insurers and insured stakeholders

Generally, the Chinese insurers are trying their best to provide adequate covers to small livestock farms that survive on marginal profit. The current modus operandi for these insurers is to cross subsidies their loss in crop, livestock and aquaculture portfolio with profit from P&C business within the trial projects. Livestock farmers are willing to purchase the covers provided as long as the government is able to subsidise more than 50% of the premium. Comparing this to livestock farms located outside the current trial project area, farmers insured are more than happy to take part in the subsidised programme even

though it does not provide full protections or compensation in full either on market value, production cost or purchase price.

Insurers on the other hand are willing to provide limited livestock covers if there is a preset limit on maximum indemnity to be provided in a given year, e.g. 3 times of GNPI for any trial project. Chances are these insurers are able to cross-subsidise losses from crop, livestock and aquaculture risks with profit from P&C business.

Prospects for epidemic livestock disease insurance

The government plans to increase the amount of premium subsidy allocation to the agriculture sector. A proposal was made in recent high-level meetings for central, provincial governments and farmers to share the premium in the proportion of 4:4:2 for selected crops, livestock insurance programmes in the near future.[83]

Given the large population numbers of livestock in China, the potential for livestock epidemic disease insurance is good. There are close to 500 million head of swine, 160 million head of cattle and 370 million head of goat and sheep in the country. Annual production of poultry meat, eggs and milk produce are 13 million tonnes, 27 million tonnes and 23 million tonnes respectively.

The Chinese government has vowed to improve the annual income of 230 million farming families. The annual agriculture premium in 2006 was US$ 108 million, farming families account for nearly a billion (79% of the 1.3 billion) of the total population. Implementation of agriculture insurance has been set as one of the important goals for the government since 2004. All agencies and ministries involved in implementation of agriculture insurance such as M.O.A, M.O.F, State Council and CIRC have held several meetings this year to discuss ways to expedite growth in agriculture insurance.

In 2002, mortality of swine due to natural calamities and diseases was 6.6 million head with another 850,000 head destroyed by slaughter order; for cattle it was 210,000 head for normal mortality and 130,000 head slaughtered by slaughter order; and for goat and sheep, the figures were 660,000 head for mortality plus 420,000 head slaughtered by slaughter order.[84] Demand potential for livestock epidemic covers could be huge in the future given China's high economic growth, which in turn has resulted in greater demand for high quality meat, egg, milk and fish products.

However, given the current trend in premium growth, it is envisaged that agriculture insurance will only grow in proportion to the amount of subsidy allocation from central, provincial as well as district governments. Insurers would not want to jeopardise their own well being or survival by providing natural catastrophe, epidemic diseases and slaughter order covers unless these are reinsured fully or there are adequate financial guarantees from governments to pay for all losses beyond their reserve for this class of business.

[83] http://www.chinainsurance.com (21st Century Economic Report) 20th January, 2007

[84] http://www.chinainsurance.com, 29th April, 2006

3.5.6. Country Background: Public and other compensation schemes for epidemic livestock diseases

The government may or may not pay compensation for slaughter orders issued to any livestock farm. The decision to compensate depends greatly on the financial capability of the provincial governments, the scale of the epidemic or outbreak of diseases, the economic importance of such livestock, etc. The larger the scale of epidemic outbreaks, the greater is the chance of farmers getting compensation. Compensation varies between provincial governments and among different livestock species and breeds. The level of compensation is never fixed but generally compensation is around RMB 10 for each poultry bird, RMB 3,000 to 5,000 for dairy cattle and RMB 100 to 200 for sheep or goat.

There is no other form of compensation other than the public compensation described above for epidemic diseases, and rather limited and localised provision of slaughter insurance for epidemic diseases by insurers, as outlined above.

3.6. Other markets

3.6.1. Uganda[85]

Lion Assurance, an insurance company in Uganda, derives much of their expertise from their parent company in Zimbabwe and Botswana; they have taken most of the products offered in these countries and implemented them in Uganda for bovine livestock owners. Their livestock products cover risks related to livestock mortality and emergency slaughter on medical grounds. However, certain diseases are excluded, namely: Tuberculosis, horse-sickness, redwater or gall sickness, FMD in the western region, and AI. Epidemic diseases are specifically excluded however since the beginning of 2006, Lion Assurance has begun to offer a product for FMD for livestock owners in the Northern part of the country. This has only been issued with a small number of livestock owners, but has been implemented under the initiative of the East African Development Bank, which requires that farmers secure insurance against FMD on their livestock before they can receive a loan. Consequently, the East African Development Bank is better able to protect the loans they give to these farmers. This is will not be available throughout the whole country, as the western side is currently under quarantine due to a high prevalence of FMD. This FMD product is currently re-insured by Munich Re. For their other livestock products, there is no re-insurance market in Uganda; their livestock products are currently re-insured by companies in Kenya, Zimbabwe, Nigeria and South Africa.

In Uganda, Lion Assurance anticipates a demand for epidemic livestock disease products for bovine species, especially considering recent outbreaks of FMD in the western region where farmers have reportedly been suffering from high losses without insurance. Mr. Daka from Lion Assurance predicted that the best way to promote the development of such epidemic livestock disease products would be to promote higher bio-security standards at the government level so that it would be easier for insurance companies to enter areas when they know the farmers operate their farms adequately in order to prevent disease outbreaks. Once this can occur, the government should support insurance products for epidemic livestock disease by subsidizing premiums, which can be quite prohibitive. He anticipates that a global programme would be useful to engage the relevant national ministries and encourage their support for these insurance products. Theoretically, this would promote a larger pool of livestock farmers, thereby making these products insurable.

3.6.2. Chile[86]

The Asociación de Aseguradores de Chile reported that there are no livestock related products with the exception of two coverages existing for cattle, one against fire in stables and the other against losses due to land transport. These coverages specifically exclude epidemic diseases. There is no perception of a growth segment for epidemic livestock disease insurance in terms of future development for insurance

[85] This section is based on a questionnaire and an interview on December 18, 2006 with Munyaradzi Daka of Lion Assurance, Uganda

[86] This section is based on a questionnaire provided by Asociación de Aseguradores de Chile

companies in Chile, as the potential market for such products is rather small; agriculture is only about 5% of the country's GDP. The required premium would consequently be relatively high and restrictive. The main barrier to the development of such products is that a culture of insurance is not currently common in Chile and subsequently, there are no incentives to develop the insurance. They also cited very high costs to develop these programmes as prohibitive to the introduction of epidemic livestock disease products.

3.6.3. Argentina[87]

Insurance cover for livestock related risks is available in Argentina covering accidental death, loss of reproductive functions, and death or incapacity during transport. Diseases are also integrated in this cover, as well as epidemic livestock diseases. Diseases covered include Bovine Viral Diarrhoea (BVD), Infectious Bovine Rhinotracheitis (IBR), Parainfluenza (PI3), Haemophilus somnus, Enterotoxemias and Anthrax. Only a few epidemic diseases are specifically excluded such as: Bovine spongiform encephalopathy, Mastitis, and FMD. Sancor Cooperativa de Seguros Limitada insurance company operating in Argentina has excluded diseases such as FMD, which are subject to the official government policy of compulsory slaughter; then they consider the government responsible for the losses.

Two insurers cover epidemic livestock diseases in Argentina. These companies do not use a specific definition of epidemic diseases within the conditions of their policy. Sancor Cooperativa de Seguros Limitada insurance company collected US$ 19,700 in 2005 as their total premium income received for epidemic livestock disease cover. These products are reinsured by Munich Re. Cover for epidemic diseases is systematically offered with non-specialised covers for livestock and cannot be purchased as a supplementary or separate cover. These livestock insurance products do involve a deductible. It is offered only to individual livestock owners on an annual basis.

Direct losses included in the cover include the value of the cattle as it is declared in the policy and some consequential losses are also compensated for loss of production of milk animals that have been killed. Loss of milk production is calculated based on the average litres of production per animal per day and multiplied over 60 days. There is no maximum compensation limit. Livestock owners are required to follow specific prevention measures but are not subject to further obligations. Underwriting procedures for these products involve an obligatory inspection of the farm. No epidemiological models are used.

The government does not provide support to private epidemic livestock diseases insurance nor do they require livestock owners to take out livestock insurance. The government has also not provided ad-hoc compensation for epidemic diseases during the period from 2000-2005.

Sancor Cooperativa de Seguros Limitada indicated that there is presently no demand for epidemic livestock disease insurance that was not already satisfied. FMD was considered to be a disease product that is uninsurable. They also indicated that they did not consider epidemic livestock disease insurance to be a growth segment in terms of future development for insurance companies due to a lack of interest and a lack of a culture of insurance. However, they did indicate that appropriate public measures to encourage the development of this market segment would be to present such products and promote them.

[87] This section based on a questionnaire provided by Sancor Cooperativa de Seguros Limitada, Argentina

3.6.4. Korea[88]

The Korean agricultural insurance market is organised nearly entirely under a mutual farmers' cooperative, the National Agricultural Cooperative Federation (NACF), and most of their work is operated through local brokers. They offer livestock related risk products covering accidental death (including non-epidemic disease), emergency slaughter, and sterility mainly resulting from natural catastrophes. Only non-epidemic diseases for pigs are covered, including Transmissible Gastroenteritis (TGE virus), Porcine Epidemic Diarrhoea (PED) virus, and Rota virus. Much of the direct losses are covered and even consequential losses are covered for business interruption. All epidemic diseases are explicitly excluded.

In the event of an epidemic livestock disease, the government compensation scheme in Korea is the only source of compensation for livestock owners' losses. This compensation scheme, the "Livestock Epidemic Disease Precautionary Code", allows for financial reimbursement of losses to livestock owners of diseases that are classified under OIE Lists A and B. The extent of government compensation is scaled depending on how many of their pre-defined 5 criteria have been implemented on the farm (criteria such as vaccinations, check-ups, and other loss prevention measures); if all 5 have been implemented, livestock owners are compensated 100%, if 4 criteria has been implemented they are compensated 80%, and then the level of compensation is further scaled down to 60%, 40%, and 20% for 3 criteria, 2 criteria and 1 criterion respectively.

Munich Re, operating in Korea, perceives a demand for epidemic livestock disease by the private sector. The governmental compensation scheme is the farmer's sole source of reparation following an outbreak of epidemic disease. As sometimes they are not fully compensated (depending on the degree to which these 5 veterinary and bio-security standards have been implemented), Munich Re perceives that the private sector naturally would demand a cover for epidemic livestock disease. Barriers identified were a lack of support in the reinsurance market. Munich Re, Hanover Re, and Swiss Re are all active in Korea for various other products and all reinsurance companies have, for the time being, excluded coverage of epidemics as no company has yet calculated the cost this risk would entail should the scope of coverage be extended to include epidemic livestock diseases. It is estimated that the premiums for this coverage could be prohibitively high unless it was subsidised by the government (during the interview it was estimated between 30% to 50% subsidies would be necessary). Insurance brokers also do not show any desire to enter this market as they also have not calculated the risk and, additionally, they have no risk appetite since there is no reinsurance market to protect them from the potentially high and volatile losses often associated with epidemic diseases. Finally, because the government has not been explicit about whether they would provide subsidies for such a product, the insurers cannot be certain that they will have a market demographic who could afford to purchase such a product. On the other hand, it was reported that other common barriers expressed by other developing nations are not a problem in Korea; Korea has well-developed veterinary services (i.e., with standard practices such as mandatory vaccination, registration of all livestock, labelling of all livestock, etc.) as well as detailed statistics collected by the government on outbreaks which could be useful for calculating risks later and strict import policies to prevent the spread of disease among other good practices.

[88] This section based on a questionnaire and an interview on December 12, 2006 with Thomas Farny, Randy Hong, and Ike Kim of Munich Re, Korea

Munich Re has estimated that the government could encourage the development of epidemic livestock disease products in the private insurance sector if they offered to subsidise the premium for the individual farmers and also provide the reinsurance to protect the insurance companies over the loss capacity of the companies. On a global level, it was anticipated that an international reinsurance pool could be a useful tool to support these programmes in order to share the burden of disease costs; however, Munich Re questioned the effectiveness this pool would have on a practical level when such a pool would be subject to political factors as well as regional disease and risk differences. Therefore, a large reinsurance pool was considered more reasonable at the national level and the international level may be better situated to encourage risk prevention measures (such as the development of veterinary services, etc) and allow national solutions to address the real risk coverage and payments after an outbreak.

3.6.5. Thailand

Insurance is relatively undeveloped in Thailand for the livestock industry. In the past, there was only one company which used to underwrite dairy cows but this products has since been discontinued. Reasons cited were due to its poor underwriting results as well as the high administrative costs experienced by this company when operating this product.[89] There was, however, a discussion in 2005 on setting up a livestock insurance scheme for 1 million cows through a pool of insurance companies but that scheme was imposed on the companies by the ex-government and further progress or implementation has not occurred to date under the new government.[90]

[89] Email communication with Thanad Jeerachaipaisarn of the Thai General Insurance Association, November 15, 2006

[90] E-mail communication

3.7. Conclusions: Strengths and weaknesses of existing products

Problems where products are not available

Epidemic livestock disease insurance products are not commonly offered in many parts of the world. Coverage ranges from relatively widespread in regions such as Europe to virtually nonexistent in, for example, many parts of Africa or Asian countries. This is also illustrated by the responses to our survey of insurers active in agricultural insurance, that was circulated widely but where responses were only received from the following countries: Germany, Switzerland, Greece, Netherlands, Spain, Korea, Uganda, UK, China, Thailand, USA, Ukraine, Russia, Israel, Sweden, Chile, and Argentina. However, when taking into account the low level of development of the livestock insurance market, the total number of responses (30) is quite satisfactory and can be expected to provide a rather good picture of the sector.[91]

Regions with more developed veterinary services, as well as more developed countries, have higher coverage of epidemic livestock disease insurance, as in the case for many countries in the European region. However, this is not always the case, only a few companies in the United States offer epidemic livestock disease coverage. It is often reported that demand for coverage is rather volatile depending on frequency of disease outbreaks. Regions without coverage of epidemic livestock disease most often are countries with limited infrastructure (veterinary as well as other general public infrastructure). However, even in such situations, sometimes products are offered; Zimbabwe and Botswana offer limited epidemic disease coverage (mostly for bovine species)[92] and a small number of farmers have received coverage for FMD in Uganda in areas that not suffering from a recent outbreak[93].

There are several factors influencing whether products for epidemic disease insurance are available. Important factors include the state of the veterinary infrastructure and disease status within the region. Another factor is the technical and financial capacity of the insurers operating within a country. Insurers perceive epidemic livestock disease insurance as a risky product that could jeopardise their profitability. Additionally, many re-insurers also lack motivation to move into countries where local insurers operate with limited capacity as the statistics necessary to calculate their risk portfolio is often not available in many countries. As such, lack of insurer capacity and re-insurer capacity are, in many countries, closely related barriers to the development of epidemic livestock disease insurance products.

A major obstacle to development of these products is also a lack of demand. In many countries, epidemic livestock disease is only offered as an separate, supplementary product which may be purchased in addition to general livestock disease coverage; in countries which do not suffer from frequent epidemic diseases, as in the US example, farmers are not willing to pay extra for coverage of a low-probability risk. In other countries a lack of financial capacity for farmers inhibits the demand for such products. For this reasons, and because risk adjusted premiums can be prohibitively high, in some cases government subsidises insurance premiums, such as in Spain or China.

[91] The number of responses per country is provided in section 2 of this report

[92] Personal interview with Munyaradzi Daka of Lion Assurance Uganda on 18th December 2006

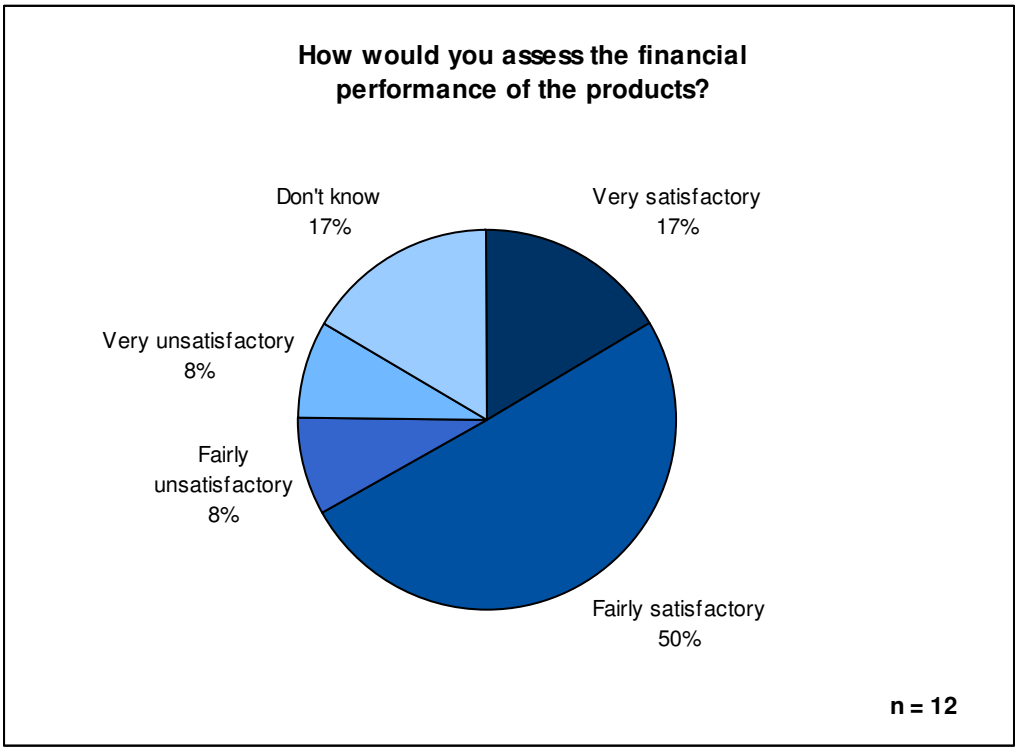
[93] Ibid

Additionally, as losses from a disease outbreak are strongly dependent on government intervention, re-insurers have stated that epidemic livestock disease products only seem feasible once some form of government compensation scheme also creates a liability for the government, thereby assuring that the government will not irresponsibly implementing disease control and prevention policies without taking into consideration related costs. Regarding the government's role, it appears that ad-hoc compensation and a lack of a compensation scheme is a limiting factor to the development of these products.

Strengths and weaknesses (where products are already available)

In countries where epidemic livestock disease insurance exists, the products are often reported as performing fairly or even very satisfactorily (in 67% of responses received to the survey of insurers):

Figure 1: Financial performance of epidemic livestock disease insurance products



Source: Civic Consulting survey of livestock insurers

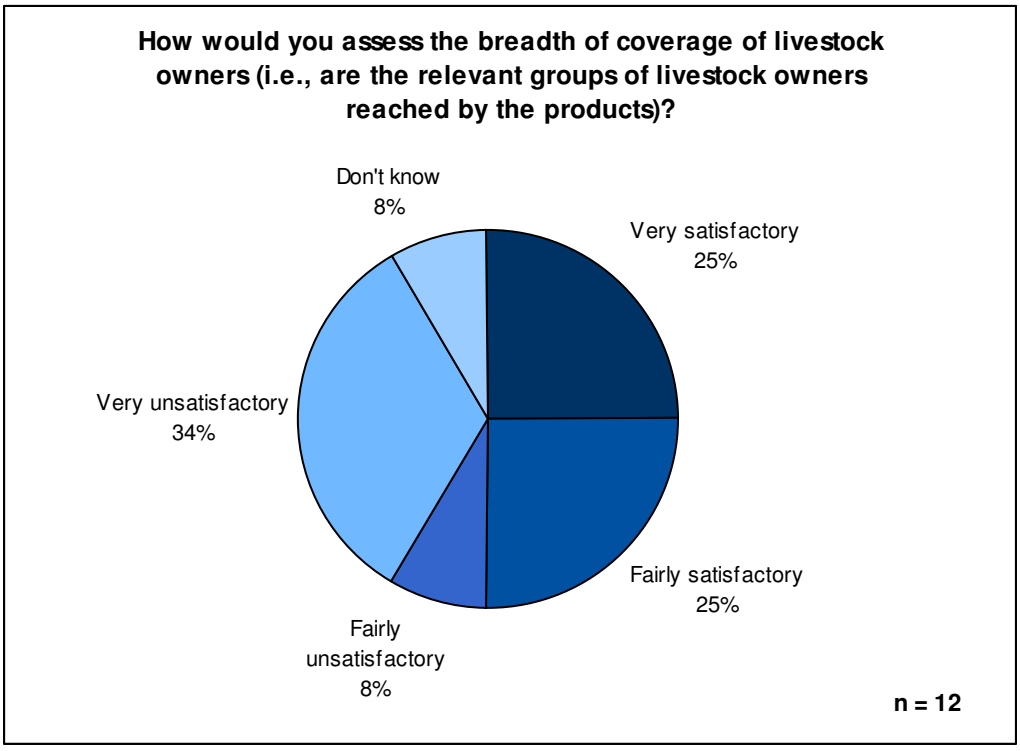
Insurers from Korea and Ukraine reported that they were very unsatisfied with the financial performance of their products, whereas insurers from countries with a higher level of economic development, e.g. in Europe, indicated higher levels of satisfaction.

Most epidemic livestock disease products offered are tied to good bio-security standards in their country of operation and indemnification is in many cases not awarded when it appears as if the owner has been at fault of poor practices. Consequently, especially in countries where in general bio-security standards are relatively low, insurance cover can provides incentives at the farm level that could lead to less frequent outbreaks and help to contain them.

One critical limitation in countries where epidemic livestock disease insurance products are offered has been a lack of cooperation between veterinary and insurance companies (e.g., as was reported from Russia and the Ukraine). This is a major issue because insurers often rely on the veterinary infrastructure for their loss assessment when indemnifying farmers following an outbreak, as well as to determine whether there has been misconduct or if proper bio-security standards have not been in place.

The breadth of coverage was also relatively limited in many countries where epidemic livestock disease insurance products were offered, in many cases products were offered for only a few diseases or covered only a share of the total possible losses of livestock owners. However, as in many markets the epidemic livestock disease product is not expected to reach a very broad coverage anyhow, the degree of satisfaction of insurers was nearly evenly split, with 42% of respondents perceiving the breadth of coverage as fairly or very unsatisfactory, and 50% perceiving it as fairly or very satisfactory (see graph below).

Figure 2: Satisfaction of breadth of coverage of livestock owners



Source: Civic Consulting survey of livestock insurers

Indicating higher levels of dissatisfaction were insurers from Korea, Ukraine, and the United States. Insurers in some countries indicated high levels of satisfaction (e.g., Sweden and Russia). Breadth of coverage is reportedly especially low in developing countries due to a variety of reasons limiting the ability or demand of farmers to purchase such products, for example: (1) indemnification levels offered by insurance companies are too low; (2) deductibles are too high; (3) high premium rates; and (4) inflexibility in policy terms and conditions.

4. Pre-conditions for market-based epidemic livestock disease insurance in developing and in transition countries

4.1. Overview

4.1.1. Insurance sector

The development of the insurance sector in emerging markets remains limited in comparison to industrialized countries. In 2005, industrialized countries accounted for 88% of global premium, and emerging countries 12%. Average per capita non-life premiums were $3,287 in industrialized countries compared to $77 in emerging countries, accounting for 3.82% and 1.42% of GDP respectively. However, growth rates of premium income have been stronger in emerging markets.[94] Most developing countries have liberalised domestic insurance markets, which were dominated by state owned insurance companies. International insurance groups have increased their involvement, by joint venture or acquisition of local, state-owned or private companies.

In developing countries, insurers have concentrated on motor, industrial and life business, mainly focused in urban areas. There are significant difficulties for insurance companies to penetrate into rural areas. Small farm size, low insurance awareness, low economic capacity, poor rural distribution networks and high rural transaction costs all conspire to make rural markets unattractive to insurers. In spite of this, there has been a strong desire by governments and insurers to find solutions allowing improved access to risk management and insurance for farmers. Microinsurance has increased, but less rapidly than microfinance. There is a long experience of crop and livestock insurance in developed countries, where markets are mature. Where agricultural insurance has been tried in developing countries, the focus has been on crop insurance. Creating viable crop insurance programmes in developing countries has proved problematic. Innovative product development, such as weather index products, has been introduced in a few countries to try and overcome limitations of traditional crop insurance products.[95] Crop insurance has been a higher focus than livestock insurance for most developing countries.

In terms of global *agricultural* insurance premium (crop and livestock), most is generated in North America (58 percent) and Western Europe (28 percent). Asia accounts for about 4 percent and Latin America has 3 percent. The rest of the world comprises the remaining 6 percent. World-wide most agricultural insurance is for crops – representing 71 percent of the global premium for agricultural insurance (hail crop insurance is 22 percent and multiple peril crop insurance is at 49 percent). Only about 12 percent of global premium is for livestock (not including sporting or companion animals).[96]

Livestock insurance products which are marketed in developing countries are individual animal accidental mortality policies, sometimes including limited disease, targeted at high value breeding stock. Penetration is very low, reflecting the fact that this type of product is not attractive or economic to small farmers, and

[94] Swiss Re (2006) in from Sigma Report No. 5 (2006): World Insurance in 2005

[95] World Bank (2005)

[96] International Cooperative and Mutual Insurance Federation (2004), p12-13

because of major underwriting and loss adjustment challenges for insurers. Where such individual-animal policies are sold, for example in India and some South East Asian countries, they have often been linked to credit for livestock, or linked to government programmes for the introduction of improved breeding stock. Individual-animal mortality policies are not feasible for lower value production livestock. Insurers have considered the introduction of herd-based deductibles, where a given number or value of animals must be lost before a claim can be made. Such policies would only be feasible for large herds, and sales of such policies are very limited even in developed countries.

Industrial pig and poultry sectors can be more attractive to insurers, due to controlled indoor production conditions. Cover for livestock within these units has been offered through an extension of a property insurance policy, to cover consequential loss mortality arising from specific property insurance perils, such as fire, smoke or machinery breakdown. Property and business interruption policies do not normally cover disease.

From the above review, it can be seen that from a global perspective, the current involvement of the insurance sector in agricultural areas, and particularly with livestock producers, is very limited. Epidemic cover is even more limited, and restricted to a few developed countries.

This review also shows that there is limited potential product overlap with an epidemic product, which could be linked to government measures for disease control or eradication, and there are limited existing distribution channels to livestock producers. Further, as few insurers are specialized in agriculture, they would generally require significant capacity building to become involved in epidemic insurance programme design and implementation.

4.1.2. Reinsurance sector

Reinsurance (the insurance of insurance companies) is a way of insurers for accessing additional capital, allowing efficient transfer of risk, and expansion of risk acceptance capacity beyond the scale which would be allowed by internal capitalisation and reserve accumulation of the insurer. Reinsurance is particularly important for products with catastrophic (co-variate) exposure, such as drought, flood or epidemic disease. Financial capacity of national insurance markets is limited in many developing countries, and reinsurers play an important role.

Reinsurance availability for agricultural schemes has been highly problematic in developing countries. Whilst international reinsurers have been willing to support domestic insurers in well established property, casualty and motor lines, both crop and livestock insurance present a different level of underwriting difficulty for both insurers and reinsurers.

Acceptance of any reinsurance business by a reinsurer only follows a process of due diligence, which includes not only the analysis of the specific risk or portfolio of risks being offered, but also assessment of the integrity, operational capability and financial status of the insurance company, and of country risk. Relationships between insurers and reinsurers become established over a period of time, normally based on core business (motor, property, engineering, aviation, etc). Insurers in developing countries have, either through their own initiative or under government pressure, sought to develop agricultural products and expand in the rural areas. The reinsurers are normally the first port of call of the insurers, seeking technical assistance as well as financial capacity.

Reinsurers have found it difficult to meet the demands of insurers in developing countries, mainly for the following reasons:

- First, there has been a high need for technical assistance in design and implementation, particularly in the start-up phase. The costs of technical assistance are often high in relation to expected transaction size;

- Secondly, there have often been poor underwriting results, particularly in crop insurance, so the attractiveness to provide technical assistance and reinsurance capacity is limited;

- Thirdly, agriculture is often faced with more important infrastructure constraints than lack of insurance. Both insurers and reinsurers are frequently faced with small farm sizes, high costs of distribution, low economic capacity and lack of insurance awareness of farmers. Underwriting and loss assessment is difficult for individual-farmer policies, and there is often a lack of long term, reliable statistics needed for risk assessment and pricing.

Reinsurers have provided livestock reinsurance treaties for mortality, normally on a restricted basis and for accidental mortality. Disease is often excluded, and certainly epidemic disease, or government slaughter. Demand for livestock insurance was often from a few breeders with high value animals, or for wealthy bloodstock owners. Many insurers, however, wish to demonstrate that they can offer bloodstock and livestock, even if volumes of business are minimal.

Reinsurance for agriculture is dominated by a few of the major reinsurance companies operating internationally. There are very few domestic or regional reinsurers with technical departments familiar with agricultural risks.

In spite of this negative background, some reinsurers are actively interested in expanding and diversifying their agricultural portfolios, and are willing to consider new programmes and proposals, provided that there is a prospect of viability, and volume of business which is of interest. The prospect of building a global portfolio of diversified epidemic risks would be more attractive to reinsurers than individual national programmes. However, the situation of each country is unique, requiring adapted national programme design.

4.2. Design considerations for epidemic livestock disease insurance programmes

This section considers some key factors affecting the insurability of a market-based livestock epidemic programme.

4.2.1. General considerations

Linkage to governmental controls and compensation

Any epizootic disease insurance programme in the private sector will be highly dependent on sound government measures for epidemic disease prevention and control, as has been stressed from re-insurers interviewed for this study.

This linkage to government measures provides both opportunities and concerns for the insurer. The *opportunity* is that if significant resources are allocated by governments to develop and manage epidemic disease programmes, this provides a framework for the development of market-based insurance. Epidemic disease insurance could not be considered without an effective government prevention and control programme. The *concern* for an insurer is that the risk being underwritten is highly dependent on the effectiveness of the government's veterinary services. The insurer would need to assess the operational capacity of the government services to handle emergency disease outbreaks, and to ensure its independence, for example ensuring that it was conducted on technical criteria, outside of political interference. The insurer must also evaluate the financial capacity and willingness of the government to meet potentially major direct compensation obligations, which requires pre-planning of provincial, national and international funding.

The existence of the OIE's Performance, Vision and Strategy (PVS[97]) instrument is highly relevant to insurers and reinsurers, as an objective measure of the performance of a government's veterinary services, if linked to data on the disease threats and the national livestock industry.

The dependency on government services both alters the risk, and makes the evaluation more difficult, for the insurer. The insurer must carry out due diligence on the adequacy of the government's veterinary services, emergency preparedness, testing, and eradication programme, in addition to making an assessment of the *probability* and *severity* of the original disease outbreak.

Enrolment procedures for epidemic insurance

Under a conventional livestock mortality insurance programme, the individual farmer is inspected to determine conformity to accepted standards of husbandry, and conformity to any official veterinary requirements of the government, particularly concerning disease prevention and vaccination. It would also be normal that a veterinary certificate is issued at the time of insurance enrolment, together with animal identification (tagging). Cost-effective conventional insurance enrolment is highly dependent on the inspection and veterinary certification required, and level of skills needed of the staff concerned. It is also dependent on the herd size distribution of the potential client group, geographical distribution, availability of distribution channels and many other factors. Enrolment is more cost effective for herds normally kept on a highly commercialised basis, e.g. pig or poultry breeding or rearing; dairy herds, under fixed housing. Small herds, nomadic herds, or extensive systems of smaller livestock such as sheep or goats become progressively more difficult to enrol.

This depth of registration detail seems unlikely to be feasible for a market-based epidemic insurance programme in developing countries, in particular inspection and individual animal identification. An important question in the viability of market-based epidemic insurance is, therefore, the current systems for government registration of herds, particularly for ex-ante preparation for epidemic disease outbreak. A simplified product (requiring more minimal enrolment requirements than traditional products) would seem necessary to allow distribution of epidemic insurance in developing countries.

[97] OIE (2006b)

Classification of livestock sectors and disease risks

The insurer needs to have a clear basis for classification of livestock into categories for insurance purposes, by livestock type, age, use and production system. The valuation basis for government direct compensation, and valuation basis for any market based insurance payments, must be transparent. Similarly, the insurer requires unambiguous classification of those diseases which are covered, and those which are not.

Such a management information system should also be a pre-requisite for government authorities responsible for disease management, and is therefore complementary to insurers' requirements.

Client and livestock database

An essential requirement for any insurance programme is that there is a comprehensive database of farmers, and of the livestock held on farms. A client database is required by insurers in order to allow identification of the insured livestock. It is also needed for the geographical zoning of insured livestock for accumulation control purposes. The data requirements for market-based insurance are greater than for government compensation, since a contract of insurance needs to exist between insured client and insurer. With government compensation, even if rules are clear, there may be no individual contractual arrangement with farmers, as government obligations after an event will be set out in appropriate legislation and associated regulations. The opportunities to enhance the operation of government epidemic preparedness, and to manage direct compensation, through an effective database of livestock and livestock farmers, are obvious.

4.2.2. Insurable risks

Some basic criteria of insurability can be applied in considering the potential scope of an epidemic insurance programme, if all other pre-conditions could be met.

To be insurable, the covered peril must be identifiable and able to be defined in the insurance policy. Epidemic insurance programmes acceptable to insurers will name specific diseases, normally following named diseases within the OIE classification. The occurrence of new strains of an existing disease emphasize the need for clarity in defining the insured peril. Difficulties in identification can arise (see the Taiwan example in the following box).

Taiwan Foot and Mouth Outbreak in Swine 1997

Taiwan, 1997: On March 19, 1997, a sow at a farm in Hsinchu was diagnosed with a strain of FMD that infected swine only. The cause of this outbreak remains unknown. However, the farm was located near a port city with a thriving pig smuggling industry and illegal slaughterhouses. It is likely that FMD was introduced through contaminated meat scraps or introduction of smuggled swine into the herd.

There are several reasons why the disease spread so rapidly:

- very high swine density;
- garbage feeding;
- hog farms close to slaughterhouses;
- frequent social farm visits;
- incomplete diagnostic laboratory capability;
- no vaccination programme.

In addition to these problems, swine vesicular disease (SVD) was endemic to Taiwan. The clinical signs of this disease are virtually indistinguishable from FMD. To further complicate matters, laboratory analysis was often not employed to diagnose SVD. Therefore, it is likely that several reported cases of SVD were actually FMD. Also, once FMD was confirmed, there was considerable delay between diagnosis and the implementation of depopulation and disposal. Finally, the compensation payments offered to farmers for swine infected with FMD were often higher than the market value of the pig, leading many farmers to intentionally introduce FMD onto their farms.

These factors contributed to the rapid spread of FMD across Taiwan and the destruction of over 3.8 million swine at an estimated cost of US $6.9 billion. Prior to this outbreak, Taiwan had been the leading exporter of pork to Japan. The disease devastated the Taiwanese pig industry and eliminated the export market.

Source: Extension Disaster Education Network http://www.eden.lsu.edu/

Under an epidemic insurance policy with named specific diseases, new or unknown diseases, or strains of diseases, (e.g. H5N1 Avian Flu), are excluded, until specifically included by insurers.

To be insurable, a risk must be able to be measured and valued. It is assumed that in any market-based epidemic insurance, the trigger for a claims event will be the declaration of an outbreak, and defined government actions (e.g. slaughter, standstill). Thereafter, loss adjustment would follow the actions of the defined veterinary services, and agreed procedures. This places a high dependency by insurers on sound practices of the veterinary services, which insurers would wish to monitor. It is noted that speed of diagnosis and implementation of emergency action can impact strongly on the extent of claims suffered by insurers.

A risk should not be able to be altered by the farmer, for example by increasing the probability of payment (moral hazard). For conventional mortality insurance, this is one of the main difficulties faced by insurers. For epidemic insurance there may also be moral hazard, if it becomes advantageous for financial or other

reasons for a farmer to infect stock (see above box). This is especially true if adverse incentives are created by too high direct government compensation payments for culled animals (see Part II).

A risk should also be able to be estimated in terms of expected frequency and severity of occurrence, in order to determine the required premiums. The resulting premium should be affordable by farmers. Lack of data on past outbreaks, and the lack of ability to model potential future outbreaks in developing countries are very important factors which seem likely to constrain the interest of insurers and reinsurers in covering epidemic insurance (see section 4.4 below).

One factor affecting the expected frequency and severity of occurrence of disease outbreaks is the disease status of a country or region. A disease to be included in the insurance cannot normally be endemic in the relevant country or the part of the country where insurance is to be offered.

The knowledge of the actual disease status of the national livestock population varies from one country to another, as a function of the effectiveness of national authorities responsible for monitoring and veterinary services. Countries where there is little confidence in the disease status would not be deemed as meeting pre-conditions for insurance. It is not easy to define the "threshold of insurability" of a country, although the OIE Scientific Commission for Animal Diseases' categorisation of countries as "officially free" from specified diseases could provide a basis for determining whether insurance pre-conditions were met. Such OIE procedures exist for FMD, Rinderpest, Contagious Bovine Pleuropneumonia and BSE. Other diseases outside of this list require countries to follow standard measures contained in the OIE Terrestrial Animal Health Code.[98] Future work would be needed to investigate the insurability of specific diseases.

4.2.3. Types of consequential loss and valuation for insurance purposes

There are many categories of direct and indirect losses and costs which may occur during and after an outbreak of epidemic disease. The main loss suffered by the farmer is likely to be the value of animals which are compulsorily culled (including pre-emptive and welfare slaughter), and these are the primary focus of government compensation. Costs such as costs of culling, disposal, cleansing and disinfection may also be incurred by the farmer, and are normally compensated by government in industrialized countries. Other costs may be incurred by parties other than farmers, such as contractors, laboratories etc (see overview of cost categories in Part I). In a large outbreak, the additional costs, and the number of parties involved in operations, may be substantial and difficult to predict in advance. For farmers, it is essential that the government obligations for compensation, and livestock valuation methodology (market valuations or a proportion of market valuations, agreed values, proportions of actual costs etc) are clearly specified, in order to provide clarity to farmers. Clear rules concerning government compensation categories, and valuation methodology, are also an essential pre-condition to insurers considering any supplementary market-based insurance products.

From the farmer's perspective, government compensation for slaughtered animals, even if at market value, do not cover all the financial loss suffered. *Consequential on-farm losses* fall outside of government compensation. There are two types of insurance programmes, which have been introduced in the private sector for epidemic cover. The first is an "agreed value" policy, where a set financial sum is paid to the

[98] http://www.oie.int/eng/info/en_statut.htm?e1d6

farmer, in addition to government compensation, according to the livestock slaughtered. This agreed sum is intended to reflect a part of the expected consequential loss, but there is no specific calculation of the actual consequential loss incurred. The sum payable is set out in a scale depending on livestock type, use and age. A second approach (principally adopted in Germany) is where the gross margin reduction is calculated for each insured farmer. Whilst the adjustment of individual claims will more closely reflect the true loss of the farmer, it is very unlikely to be a feasible approach in most developing countries. An agreed-value approach would have advantages of simplicity in claims administration. The principle task in the event of a claim would be the identification of animal ownership, and confirmation that the farmer concerned was insured under the market-based programme. Identification of specific insured animals would be a significant additional level of administrative requirement for the insurer.

In existing private sector "agreed value" consequential loss policies, claims are normally only payable for animals actually slaughtered by government order. It does not cover losses incurred as a result of standstill orders, or market price reduction resulting from the outbreak. Such consequential losses are more complex for an insurer to define, and loss adjustment more complex.

Loss of market or price drop is not considered an insurable risk, according to reinsurers surveyed. Border closure to export of livestock or meat may be politically influenced, and the systemic nature of price risk creates a highly catastrophic exposure.

4.3. Pre-conditions for market-based epidemic livestock disease insurance programmes in developing countries

This report considers that there are many barriers to the introduction of market-based epidemic insurance in developing countries. However, pre-conditions can be listed, and would apply on a country-by-country basis:

The most significant pre-condition for the introduction of market-based epidemic insurance in a developing country is that there must be at least one insurance company in the country willing and able to take a commercial interest in establishing and distributing an epidemic disease product. Several insurers can be involved in a pool, and a lead insurer would normally be appointed by pool members. This collective approach has benefits where each company and specific individuals can be allocated by each insurer to contribute during the developmental phase. Once operational, the pool would agree to an annual plan, and appoint a lead insurer who would be responsible for risk acceptance. These insurer(s) would form a stakeholder group with other parties interested in market-based epidemic insurance. In reality, such an initiative would only follow a government plan to strengthen disease management and direct compensation, and would be linked to external technical assistance, and to the support of interested reinsurers.

Other pre-conditions for developing the insurance sector regarding epidemic disease insurance products would be likely to include:

- insurable client base of farmers in engaged in the commercial livestock sector;
- existence of an effective national epidemic disease strategy and operational infrastructure including veterinary services;

- agreed government compensation system for direct losses, backed by access to adequate national or international funding;
- defined linkage of the market-based programme to the rules and operations of the government programme of compensation, for the purposes of declaring outbreak, defining slaughter and quarantine zones etc;
- clear definition of covered and excluded diseases, and diagnostic capacity;
- existence of, or establishment of, a geographically zoned client and livestock database;
- distribution channel(s) to reach farmers, either directly or through linkage to other organization(s);
- access to external specialists able to provide the insurer with technical assistance during the feasibility study and design phase, and ongoing support;
- access to data and modelling of each covered disease, to permit estimation of maximum probable losses, establishment of appropriate financial limits, and setting of premiums;
- access to reinsurance and financial structuring;
- a viable business plan able to demonstrate the prospect of a profit margin to the insurer, after considering distribution and overhead costs, and reinsurance costs;
- adequate legal and regulatory framework.

Pre-conditions for developing the reinsurance sector regarding epidemic disease insurance products include those points listed under "insurance sector", plus:

- assessment of the capacity of the insurance company(ies) to manage the proposed market-based programme;
- assessment of the adequacy of operational procedures of the original programme, including risk acceptance, loss assessment, veterinary testing and controls, including catastrophic event preparedness;
- assessment of exposure to anti-selection and moral hazard;
- assessment of adequacy of proposed premium rating, limits, terms and conditions of the original programme;
- setting of reinsurance structure, particularly the layering of risk for non-proportional reinsurance, in relation to expected frequency of claims. Reinsurers will require defined limits to their financial liability, by district, province and in total;
- acceptable return on capital allocated, according to each company's internal acceptance practices;

- an opportunity for diversification of risk nationally or internationally would make the overall programme more attractive but need not be a pre-condition to a particular national proposal.

4.4. Financial considerations for epidemic livestock disease insurance programmes

Risk assessment, data, and disease modelling

In European countries, considerable research has been carried out for insurance purposes to estimate the frequency and severity of major livestock diseases, using Monte Carlo simulation.[99] Relevant national input data for modelling includes: number of historical primary and secondary outbreaks of the disease; slaughter policy of infected animals; pre-emptive slaughter policy; protection and surveillance restriction zones; movement standstills; vaccination and emergency ring vaccination policy; and animal welfare slaughter policy. Data on livestock numbers and density is needed on a regional basis in each country, and in adjacent countries; herd density and herd size; and economic data relating to defined types of consequential loss.

From the above list, it is apparent that simulation of disease risk, and of the expected frequency and value of economic loss, is complex, and highly dependent on data quality. Furthermore, the construction of effective models is a skilled task. The models also require that disease management rules have been set by authorities: for example, the radius of farms within pre-emptive slaughter and standstill zones; standstill durations; quarantine periods prior to re-stocking; breeding prohibitions, etc. This re-emphasizes the pre-condition of well-defined government emergency procedures. Further, economic data are required to value the consequential losses.

It seems unlikely that data is available to allow modelling in sufficient detail for insurance premium rating purposes or for estimation of maximum probable losses in most developing countries. Development of models in each country and for each disease would be a major task and would not seem likely to be justified if carried out solely for insurance rating purposes. However if carried out for other national disease management purposes, there could be a synergy of interest in creating risk assessment tools which are appropriate to wider needs.

A further conclusion from the above is that a simplified "agreed value" basis for any consequential loss ("indirect") market-based insurance product would seem advisable, rather than an individually-adjustable gross margin basis of calculation.

Premium calculation

The premium of any insurance product is the sum of

Expected Loss + Expense Load + Cost of Capital

[99] Meuwissen et al. (2003)

The *Expected Loss* is the product of the expected frequency of claims multiplied by the severity (average value) of claims. In the case of livestock epidemic insurance, claims are expected with low frequency and potentially high severity. Epidemic modelling would be the optimum way to estimate scenarios of Expected Loss from individual events. *Overcoming the lack of data to estimate the Expected Loss is a major constraint to development of market-based epidemic insurance products.*

The *Expense Load* comprises the operational costs to the insurance company of distributing the product, overhead administration of the insurance company (e.g. staffing, legal, management, etc.), inspection costs, and loss adjustment costs. These are considered in the next section. *Products for epidemic insurance in developing countries would require simplified design, which minimized the costs of delivering and underwriting such insurance, and adjusting losses.*

The *Cost of Capital* relates to the amount of capital that an insurer needs to allocate to meet potential claims. Since epidemic insurance is a catastrophe risk, the Probable Maximum Loss (PML, an estimate of the worst expected payout in a given time period) may be high. The larger the loss PML, the higher will be the insurer's capital allocation, and cost of obtaining sufficient access to contingent capital, for example through reinsurance. In common with other catastrophe programmes, the cost of capital for epidemic cover is relatively high. *Costs of capital would need to be minimized as far as feasible. One option would be to consider providing government and donor access to high level catastrophe layers of reinsurance, allowing international reinsurers to be involved in intermediate layers of risk, and domestic insurers in primary layers of risk.*

If other preconditions are met, premium costs for market-based epidemic insurance could be high, due to capital allocation costs and uncertainty loading[100] in modelling the financial outcome of such programmes.

Willingness and ability of farmers to pay for market-based epidemic livestock insurance

Research into farmers' perceptions of risk in relation to crop insurance has shown that farmers do not recognize the importance and potential impact of infrequent but severe losses, and are not *willing* to pay the premiums associated with protection from such events ("cognitive failure"[101]). This affects the ability of insurers to sell catastrophe crop insurance products at actuarially fair premium rates. A similar attitude could be expected regarding the purchase of livestock epidemic insurance policies. This view may be reinforced if farmers are aware of the existence of a government compensation scheme, and of likely ad-hoc disaster relief following an outbreak. This implies that only the most risk aware farmers might be willing to consider such insurance. Responses from reinsurers in the present study suggested that farmers only purchase epidemic insurance during and shortly after an outbreak. Lack of continuity of voluntary participation in epidemic insurance makes it more difficult to calculate premium rates based on long-term participation.

[100] Uncertainty loading is required by insurers to allow for uncertainty in deriving premium rates, due to poor data, new disease epidemiology, and as a safety margin

[101] Skees et al. (2005)

The *ability* of farmers to pay for epidemic cover in developing countries is also a significant hindrance. Poverty and low annual average income of farmers in most developing countries means that the profit margin available to accommodate such premium is likely to be generally low, but will depend on degree of commercialisation of each livestock sub-sector. Many subsistence producers may be outside the formal financial sector. Narrow profit margins often exist even in the more industrialized livestock sectors, such as poultry.

In the case of crop insurance, uptake has been highest where there is a linkage of insurance to protect financing of crop production (crop credit insurance). The same is the case for livestock insurance in India. This emphasizes the need for an integrated approach for insurance in agricultural areas, linking finance or marketing channels to insurance sales. Private sector insurance agricultural programmes are normally voluntary, although may be indirectly made compulsory if lending institutions require that the insurance is purchased.

Premium subsidy

Due to the low average income of farmers, and importance attached to risk management by governments, premium subsidies have extensively been made available for crop insurance. However, epidemic insurance differs in that there is already a heavy implied cost to government in meeting direct compensation costs, and any additional costs of premium subsidy for market-based insurance might not be considered justified or feasible.

Operational costs

Costs incurred by an insurance company in operating an insurance scheme include the following categories:

- Overhead costs (management, administration, IT, legal, salaried staff, etc.);
- Distribution costs (commission to agents or distribution organisations, sales staff, etc.);
- Enrolment costs (inspections, registration of farmers, database management, etc.);
- Loss adjustment costs (assessors, inspectors, testing, etc.).

As noted, the high costs of distribution and loss adjustment are one of the major barriers to insurers operating in rural markets in developing countries. There is a balance to be made between levels of underwriting controls, the degree of simplification of product design, and operational costs. This would be a critical issue in the design of an epidemic product for livestock in developing countries. The key cost issue would appear to be in whether farm inspection is necessary at enrolment, since loss adjustment will be expected to follow government processes for slaughter. Insurers would not be directly involved in the decision concerning slaughter, which would be based on the pre-established disease control regulations. The insurer and reinsurer would, however, wish to monitor the decisions taken by government officials and be concerned to know that these were based solely on technical grounds.

Distribution is also a critical issue since product distribution options are closely linked to the level of skills necessary for enrolment, itself directly related to simplicity of product design. It also dictates the extent to which third party agents could be trained in sales. Distribution agents could, depending on the product

sophistication, could be rural banks or microfinance institutions, or rural input or service suppliers, as well as individual agents.

Reinsurance layers

A typical structure for agricultural reinsurance is that non proportional (stop loss) reinsurance protects the insurer, in the event that loss ratio of all disease claims (claims divided by gross premiums, in percentage) exceed a given threshold (for example 100% loss ratio). The reinsurers then pay the next claims, up to the reinsurance limit (for example when the loss ratio reaches 200%). In most forms of agricultural insurance, the insurer will try to purchase reinsurance up to their best estimate of the Probable Maximum Loss (PML).

Given the nature of catastrophe epidemic diseases, where events are expected to be infrequent but potentially severe, the majority of the risk has, of necessity, to be transferred to reinsurers. Reinsurers providing protection for conventional livestock mortality business can expect a far less volatile result, as individual risks are not correlated, or only partially correlated, and the insurer can retain a higher proportion of the risk.

Government catastrophe reinsurance

An alternative consideration for support by government (or international development organisations) would be for government to provide high-level reinsurance capacity in excess of layers of risk placed into the international reinsurance market place. This approach has been implemented for a different scenario of livestock mortality index insurance in Mongolia, where World Bank backed contingency funding will operate at extremely high levels of loss.

5. Options for an Animal Epizootics Insurance Scheme to support the development of market-based insurance products

As has been described in the previous sections of this report, there is limited or no experience of epidemic insurance, and rather limited experience of traditional livestock insurance, in most developing countries. The insurance sector is often weak in rural areas. This provides a very challenging background to the introduction of products such epidemic disease insurance that are highly technical and covers catastrophic risk. Before discussing options for an Animal Epizootics Insurance Scheme to support the development of market-based insurance products, it is important to recall the other challenges that such a scheme has to address.

5.1. Challenges faced in supporting the development of market-based insurance products

A main pre-condition for developing this type of insurance is the existence of a well-planned government disease prevention and control programme. It is assumed that a market-based product would need to be fully aligned to a well-prepared government slaughter and compensation programme. A crucial element is an appropriate veterinary service. The OIE PVS instrument could be very valuable in assessing it. However, the effectiveness of the veterinary services, and of its ability to implement disease prevention and control, is also affected by the structure and degree of commercialisation of the livestock sector in each country. This varies significantly from one country to another.

Any scheme to support the development of epidemic livestock disease insurance would have to take into account that each country has different circumstances concerning rural insurance, capacity of insurers, as well as organization and disease status in the livestock sectors. Each country would require tailored adaptation of epidemic disease insurance solutions, although this could be eased within a framework for international standardization in product design, backed by international technical assistance, capacity building and reinsurance. Innovative solutions for product distribution, farmer enrolment and loss assessment seem essential in the absence of existing synergies and the current poor development of livestock insurance. Key factors from an insurer's perspective include:

- In terms of **product design,** an agreed-value policy, with a claim triggered by defined government slaughter for **specified diseases**, and providing a payment to farmers which was supplementary to government compensation, would offer the simplest approach.

- In terms of **marketing**, few existing marketing channels exist for insurers to reach the rural community, and innovative solutions would need to be developed, preferably allowing **low distribution costs**. Often farmers have limited insurance awareness, and may have low willingness and ability to pay premium, and sales of such a market-based policy would need to overcome these hurdles. Demand for such a market-based product would need to be tested, as experience in crop insurance indicates that there is an unwillingness to purchase insurance for events occurring with low frequency.

- In terms of **risk acceptance**, simplified minimum acceptance criteria would need to be developed, compared to more complex risk acceptance needed for conventional livestock mortality insurance, which requires farm inspection and veterinary certification.

- In terms of **underwriting**, the key difficulty lies in **product pricing**, due to the absence of data required for risk assessment of frequency and severity of whichever specified diseases are to be insured, and difficulties in modelling expected future outbreaks. Further, new strains of disease (e.g. AI) may have unknown epidemiology and unpredictable financial impacts.

- In terms of **loss assessment**, it may be possible to follow government slaughter decisions, which for the insurer means a need for confidence in the independence and integrity of the services responsible for government slaughter decisions.

These factors demonstrate that a high level of capacity building would be needed by the insurance sector in most developing countries, and high levels of technical assistance to undertake development of products, risk assessment, product pricing, and support for insurers. Within each country, an integrated approach to any market based insurance solution is required, where linkages could be forged to initiatives such as creation of farmer databases, livestock registration, classification of herds, and disease prevention. Insurers could play a part in such process, but they would only be one stakeholder in a wider range of organisations and initiatives aimed at prevention and management of epidemic disease.

Finally, the financial management of the consequences of disease outbreak, with infrequent but potentially severe claims, require major risk transfer by domestic insurance sectors, which have low financial capacity and may be unwilling to commit significant risk capital to such types of insurance. International re-insurers would need to play an important role, and would be more interested in a programme which aimed to develop such cover in many countries, achieving some economies of scale in product and mechanisms, and some risk spread. The financial capacity and willingness of the insurance sector in each country means that major risk transfer is needed. Financial structures for national retention of risk, layers of commercial reinsurance, and possibly high-level government-backed catastrophe cover could be foreseen.

5.2. Conclusions on options for an Animal Epizootic Insurance Scheme to support the development of market-based insurance products

Global versus national approach to a scheme

Given the infrastructural and technical constraints to market-based epidemic insurance identified throughout this pre-feasibility study, our conclusions are very guarded as to the potential for a "scheme" for the development of market-based insurance products. In particular, no "universal" scheme can be foreseen which would be suitable for application in all countries. The extent to which market-based insurance could develop is strongly influenced, country-by-country, by the following national features:

- Degree of commercialisation of the livestock sector(s): Market-based epidemic insurance is a financial instrument and could only be feasible for farmers operating in the emergent or commercialised livestock sectors, where clients were willing and able to pay insurance premiums.

- Degree of development of the insurance sector in the rural areas: Current penetration of insurance markets into rural areas is, on average, low. Epidemic product sales would be hard where insurers do not have a rural client base or linkages to a distribution network. Similarly, the capacity of the national insurance market to develop expertise in underwriting an epidemic product varies according to the degree of sophistication of the market.

- Degree of development of government capacity for epidemic livestock disease management is a pre-condition to commercialised insurance: for example, veterinary services, epidemic risk management capacity, advance planning for epidemic outbreak, herd registration and databases. These characteristics differ widely from country to country, as does the current status of endemic and epidemic disease in each country.

A conclusion is that there is a wide diversity between countries in the pre-conditions existing for an epidemic product. This is in a context that there are very limited private sector epidemic insurance programmes even in industrialised countries. Hence, there is limited experience, in comparison to other classes of insurance, of epidemic scheme design and of best practices to act as examples for international transfer of know-how.

Countries could be classified according to the status of their livestock sector, of their insurance sectors, and of their government veterinary services to identify those that are likely to be most favourable to market-based epidemic insurance.

The existence of the PVS instrument provides a strong objective measure of veterinary services, and could be a starting point for assessment of the key preconditions. This is complementary to the objectives in terms of eligibility to GERFAE (see Part II).

Synergy of market-based insurance and GERFAE objectives

In spite of the negative outlook for a scheme for market-based epidemic insurance, there are high degrees of synergy between the needs of the insurance market, both for conventional livestock mortality insurance, and for epidemic disease insurance, in the strengthening of governments' measures to improve veterinary services, and associated measures, in particular in establishing a database for the registration and identification of the national livestock herds and their owners.

Further, the operation of a market-based product would need to be integrally linked to a government compensation system for livestock. All the measures foreseen as necessary to strengthen the effectiveness and efficiency of emergency preparedness, for example development of pre-outbreak emergency preparedness, and developing compensation protocols, and post-outbreak response capacity, are fully aligned with the needs for commercial insurance (see Part II). Thus, in spite of the constraints identified, the development of a sound governmental epidemic prevention and response programme could lay the foundation for the private insurance market to offer parallel products. This seems most likely to occur only in those countries with better developed or innovative insurance markets, where there are insurers specialising in the rural sector, where commercial livestock sectors exist, and developed distribution networks such as agricultural banks and microfinance organisations. Wider penetration of livestock insurance is seen in some transition countries.

A complimentary synergy between public compensation and private sector insurance is that insurance creates a formal contractual arrangement between insurer and the individual farmer, whereas public

compensation standards, guidelines and rules are targeted to livestock owners in general. This contractual arrangement requires *ex ante* establishment of databases of insured farmers and their herds, and legally binding rules for claims payment. It requires accurate definition of insured and excluded diseases, which may be more generally defined under government compensation guidelines. In crop insurance, there are examples where the databases of insured farmers are superior to any government records of farmers and their production systems.

Strategies which could *directly* encourage private sector epidemic insurance include:

- Premium subsidy: Subsidisation of private sector epidemic insurance does not seem convincing, given that limited government financial resources are required, as a priority, to implement national risk prevention and control services, and in particular to provide financial compensation for compulsory slaughter. Subsidisation of a supplementary, private-sector, consequential loss insurance product would not seem sustainable, and certainly not in the context of a global scheme, although might be considered as a government measure in specific countries.

- Public sector reinsurance: This measure does not seem to a priority, unless bottlenecks in private sector reinsurance are identified. Private sector reinsurance may be forthcoming, provided that the original insurance programmes are viable. Key factors identified by reinsurers remain data for pricing, and independence of government veterinary services. The main constraints to epidemic insurance are in building national "ground up" programmes capacity, as "top down" financial instruments will not substitute for viable local programme design and operation. The existence of a national pool of insurers, or international pool of reinsurers, cannot substitute for sound local implementation, such as animal identification systems, animal health information, and database development.

- Promotion of public – private partnerships: Encouragement of pilot projects funded by a scheme similar to the Canadian PSRMP programme. PSRMP is a Business Risk Management (BRM) programme funded through the Agricultural Policy Framework which provides financial and technical advice to industry-led projects seeking new risk management tools developed and/or delivered by the private sector, in order to cover gaps in available farm-level risk management coverage. Such an initiative would bring together national and international representatives of the financial services industries to create projects, which may receive technical assistance funding.

- Technical assistance: As noted, it is unlikely that insurance or reinsurance markets will act as the prime movers for the development of private sector epidemic insurance. Preconditions to insurability are completely linked to the existence of government services, so that the development of such services is a pre-cursor. Hence, direct technical assistance to insurers does not seem useful in isolation. A phased approach could be foreseen, where insurers are increasingly involved, building on the initial development of sound epidemic preparedness and response. A degree of international standardisation implied by the current project would increase the cost-effectiveness of global technical assistance. Key aspects where technical assistance could be needed are to advise governments in strengthening disease management and in putting in place an *ex-ante* programme for direct compensation. Risk assessment tools required by governments would also benefit insurers.

Strategies which could *indirectly* encourage private sector epidemic insurance include:

- Development of government and international veterinary services capability: as a foundation for an insurance programme which supplemented the government compensation system. The synergy of this approach is described above.

- Establishment of improved information systems: available to insurers, to allow better assessment of livestock health and disease, and to encourage development of some internal technical capacity within insurers as a first step towards developing products (both epidemic insurance and traditional mortality insurance).

- Client and livestock database: An essential requirement for any insurance programme as well as for government compensation programmes is that there is a comprehensive database of farmers, and of the livestock held on farms. This is not only needed for the identification of livestock, but also geographical zoning for control purposes. An important issue in this respect is the definition of minimum requirements regarding the systems for (government) registration of herds.

- Classification of livestock sectors and disease risks: Development of best practices for management information system for a classification of livestock into categories, by livestock type, age, use and production system, which could also be a pre-requisite for government authorities responsible for disease management and direct compensation, is fully complementary to insurers' requirements. Development of herd identification, classification and databases, and access to animal health inspection and status reports, could benefit animal health management as well as provide a basis for confidence of insurers in livestock risk management by potential clients.

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Annex 1: Survey questionnaire

CIVIC
CONSULTING

QUESTIONNAIRE ON
INSURANCE COVERS FOR EPIDEMIC LIVESTOCK DISEASES
*****
CONDUCTED FOR THE OIE, THE WORLD ORGANISATION FOR ANIMAL HEALTH

Please return questionnaire by email to survey@civic-consulting.de or by fax to +49-30-2196-2298 before
20/12/2006
We also offer to jointly fill in the questionnaire and discuss your comments during a phone interview, should you prefer this (see contact details below).

IDENTIFICATION DATA

a) Name and country of organisation:

Please specify

b) Type of organisation:

Insurance company ☐ Association of insurers ☐ Re-insurance company[1] ☐

Broker ☐ Other ☐ *Please specify*

c) Questionnaire completed by (Name of person, position, contact details):

Please specify

INTRODUCTION

The World Organisation for Animal Health (OIE), with support from the World Bank, has commissioned Civic Consulting to carry out a study on market-based insurance products for losses related to epidemic livestock diseases such as Foot-and-Mouth Disease or Avian Influenza. The study will describe the insurance products currently offered by insurers worldwide. It will also assess options for a global Livestock Disease Insurance Programme to provide technical and/or financial support for the development of market-based insurance products for epidemic livestock diseases.

The information you will provide through this questionnaire will be crucial to assess the feasibility of different options for supporting the development of the livestock insurance market. We therefore greatly appreciate your contribution.

Do not hesitate to contact the person listed below should you have any further questions:
Kristen Schubert (survey@civic-consulting.de) *Phone: +49-30-2196-2295 Fax: +49-30-2196-2298*

[1] Note for re-insurers providing services on more than one national market: Please provide in the country specific questions an overview of the situation in the major markets you cover.

I) MARKET SITUATION FOR LIVESTOCK INSURANCE

1. Is insurance cover for livestock related risks available on the market in your country?

Yes ☐ No ☐ *If no, please continue with section IV*

- **If yes,**

a) What are the risks covered by the insurance?

Please specify

b) For which animal diseases is insurance cover available? Please specify by type of livestock.

Please specify

c) Are epidemic livestock diseases defined in the insurance as a non-covered risk?

Please specify

2. Is insurance cover for epidemic livestock diseases available on the market in your country?[2]

Yes ☐ No ☐ *If no, please continue with section IV*

- **If yes,**

a) What is the definition of epidemic livestock diseases used in the insurance? Is it a statutory definition?

Please specify

b) What is the approximate market share of epidemic livestock disease insurance (insured/total)? Please differentiate by type of livestock and disease.

Please specify

c) What is the approximate number of insurers providing this cover presently? Please differentiate by type of livestock and disease.

Please specify

d) What is the approximate number of farmers and number and type of livestock insured presently? Please differentiate by type of livestock and disease.

Please specify

[2] Please fill in this section even if the insurance cover is part of a more general cover for livestock related risks.

e) Could you indicate the total premium income received for epidemic livestock disease cover[3] in each of the years 2000-2005 (in Euro or USD)? Please differentiate by type of livestock and disease.

Please specify

f) What were the most significant claims against epidemic livestock disease cover in the period 2000-2005 (in Euro or USD)? Please differentiate by type of livestock and disease.

Please specify

3. Is there demand for epidemic livestock disease insurance that is not satisfied at present?

Yes ☐ No ☐

- **If yes,** for which type of livestock and undertakings? Please provide reasons why demand is not satisfied.

Please specify

4. What reinsurance is used for the existing insurance covers and who is the reinsurer?

Please specify

5. Does the government provide support to private epidemic livestock disease insurance?

Yes ☐ No ☐

- **If yes,**

a) Since when? What is the name of the support scheme?

Please specify

b) What is the national legal basis? Administering institution?

Please specify

c) For which type of livestock and type of disease?

Please specify

d) Is the government support dependent on specific conditions (e.g., prevention measures, etc.)?

Please specify

[3] Provide general figures for livestock insurance if epidemic disease is included as part of animal accident and disease mortality policy.

e) What type of support is provided (e.g., subsidy of insurance premiums, governmental reinsurance, etc.)?

Please specify

II) INSURANCE PRODUCTS CURRENTLY AVAILABLE

6. Type of cover - Is cover for epidemic livestock diseases …

a) Systematically offered with non-specialised cover (e.g., general livestock insurance)?

Yes ☐ No ☐

b) At an additional premium?

Yes ☐ No ☐

c) Or is it supplementary cover?

Yes ☐ No ☐

d) In this case, is it:

Optional ☐ Compulsory ☐

7. Are separate covers available for epidemic livestock diseases (i.e., stand alone insurance products)?

Yes ☐ No ☐

Please specify

8. For which epidemic livestock diseases is insurance cover available? Please specify by type of livestock.

Please specify

9. Which epidemic livestock diseases/types of livestock are considered to be uninsurable?

Please specify

10. Who is the holder of the insurance policy (individual farmers, farmers' associations, etc.)?

Please specify

11. What is, generally, the period of validity of cover?

Please specify

12. What exclusions are generally included in contracts?

Please specify

13. Subject of the cover

a) What direct losses are included in the cover (e.g., value of livestock, culling and rendering costs)?

Please specify

b) What is the basis for the indemnification of direct losses (e.g., value of livestock, number of affected livestock)?

Please specify

c) What consequential losses are included in the cover (e.g., reduction of animal value, interruption of production, movement and marketing restrictions, costs for vets/medicines, safety measures)?

Please specify

d) What is the basis for the indemnification of consequential losses (e.g., a percentage of insured sum, duration of business interruption or actual losses)?

Please specify

e) What losses cannot be indemnified?

Please specify

14. Do the insurance products available have a maximum compensation limit (ceiling of coverage)? Per year or per single claim?

Yes ☐ No ☐

- **If yes**, what are the amounts used as ceiling of coverage (in Euro or USD)?

Please specify

15. Do the insurance products available include a deductible?

Yes ☐ No ☐

Please specify

16. What are the obligations of the policy holder:

a) Specific prevention measures? (e.g., on-farm health plans, etc.)

Yes ☐ No ☐

Please specify

b) Other obligations?

Yes ☐ No ☐

Please specify

17. What is the definition of the trigger of coverage (i.e., what are the criteria that must be fulfilled in order for the insurance to apply)?

Please specify

18. What are the underwriting procedures used? (E.g. eligible/target market, acceptance criteria, national disease status, farm inspection, farm limits, zonal limits)

Please specify

19. Is there, on your market, legislation requiring farmers in certain sectors to take out such cover?

Yes ☐ No ☐

- **If yes**,

Please specify

20. Are epidemiological models employed to determine premium rates?

Yes ☐ No ☐

- **If yes**, have you developed this model yourself?

Please specify

21. What are the claim settlement procedures used?

Please specify

III) STRENGHTHS AND WEAKNESSES OF EXISTING EPIDEMIC LIVESTOCK DISEASE INSURANCE PRODUCTS

22. How would you assess the breadth of coverage of livestock owners (i.e., are the relevant groups of livestock owners reached by the products)?

Breadth of coverage of products is ...	Very unsatisfactory	Fairly unsatisfactory	Fairly satisfactory	Very satisfactory	Don't know
	☐	☐	☐	☐	☐

Please specify which group of livestock holders is specifically reached (e.g., small livestock owners, cooperatives, etc.)

23. How would you assess the operational effectiveness of the epidemic livestock disease insurance products?

Operational effectiveness of products is ...	Very unsatisfactory	Fairly unsatisfactory	Fairly satisfactory	Very satisfactory	Don't know
	☐	☐	☐	☐	☐

Comments

24. How would you assess the financial performance of the products?

Financial performance of products is ...	Very unsatisfactory	Fairly unsatisfactory	Fairly satisfactory	Very satisfactory	Don't know
	☐	☐	☐	☐	☐

Please specify the average loss ratio over the last decade

25. How would you assess *your* general level of satisfaction with the existing epidemic livestock disease insurance products?

We are ...	Very unsatisfied	Fairly unsatisfied	Fairly satisfied	Very satisfied	Don't know
	☐	☐	☐	☐	☐

Comments

26. How would you assess the general level of satisfaction of *livestock owners that have insured their livestock* with existing epidemic livestock disease insurance products?

Livestock owners are generally ...	Very unsatisfied	Fairly unsatisfied	Fairly satisfied	Very satisfied	Don't know
	☐	☐	☐	☐	☐

Comments

IV) PROSPECTS FOR EPIDEMIC LIVESTOCK DISEASE INSURANCE

27. Do you consider epidemic livestock disease insurance to be a growth segment in terms of future development for insurance companies?

Yes ☐ No ☐

- **In either case**,

a) What are the reasons?

Please specify

b) What are the main barriers to the development of appropriate insurance products?

Please specify

28. What public measures could encourage the development of this market segment and what would be an appropriate role of the government?

Please specify

29. What should according to your view be the focus of a possible global programme of support for the development of epidemic livestock disease insurance products?

Please specify

V) COUNTRY BACKGROUND: PUBLIC AND OTHER COMPENSATION SCHEMES FOR EPIDEMIC LIVESTOCK DISEASES

30. Is there a public compensation scheme for losses of farmers due to epidemic livestock diseases in your country (without involvement of private insurers)?

Yes ☐ No ☐ Don't know ☐

- **If yes,**

a) What are the name and the legal basis of the public compensation scheme?

Please specify

b) What type of scheme is it (sector-wide fund etc.)? How is it financed?

Please specify

c) What epidemic livestock diseases are covered by the public compensation scheme?

Please specify

d) What costs are covered by the public compensation scheme?

Please specify

e) Who is covered by the public compensation scheme (livestock owners, third party, others)?

Please specify

f) Who administers the public compensation scheme (please provide name of institution/s and contact details)?

Please specify

g) Is the public compensation scheme partly co-financed by the livestock holders in your country?

Yes ☐ No ☐ Don't know ☐

31. Was there ad-hoc compensation paid by the government to farmers (not related to a public compensation scheme) in case of epidemic livestock diseases in the period 2000-2005?

Yes ☐ No ☐ Don't know ☐

- **If yes,**

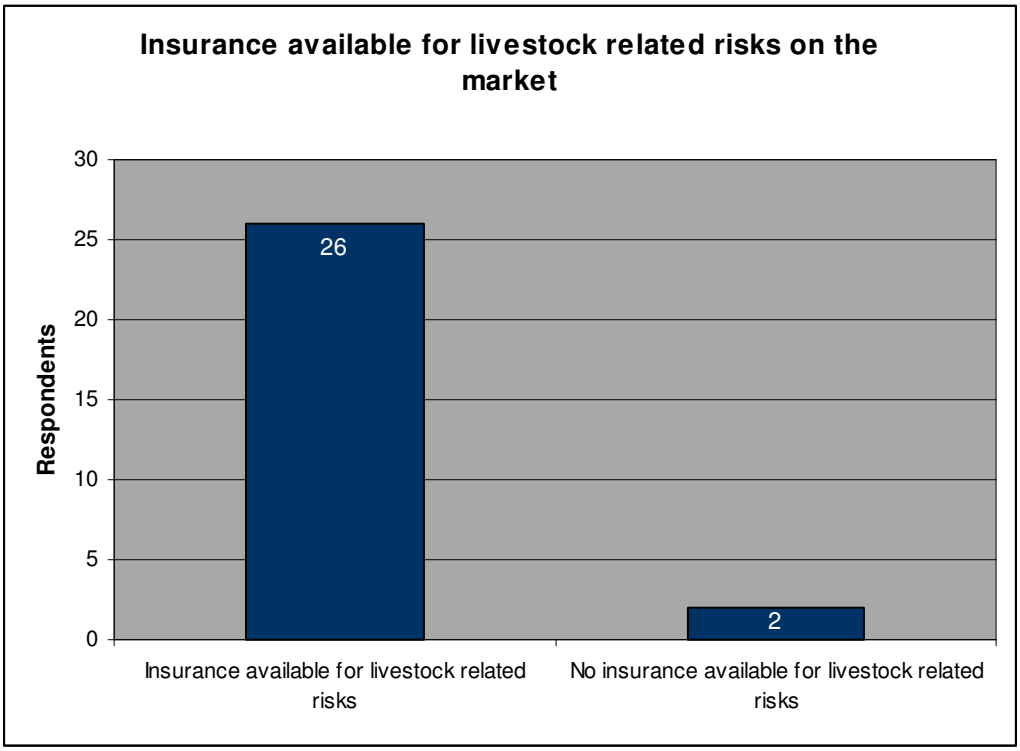
Please specify

Annex 2: Results of survey of insurers

Annex: Responses received from Questionnaire to Insurance Representatives

I) MARKET SITUATION FOR LIVESTOCK INSURANCE

Question 1: Is insurance cover for livestock available on the market in your country?



Answers indicating that there was no insurance available for livestock related risks were received from Chile and the US, though many other insurers from the US indicated that there was indeed insurance available for such products. In general, it is quite clear from responses to the questionnaire that insurance products for livestock related risks are common.

Question 1: What are the risks covered by the insurance, for which animal diseases in insurance cover available, and are epidemic livestock disease defined in the insurance as a non-covered risk?

Country	Risks covered by the insurance?	Animal diseases for which insurance cover is available	Are epidemic livestock diseases defined in the insurance as a non-covered risk?
DE-Munich Re		Big industry in Israel insured under the national scheme headed by David Kinsberg-10 million dollars in premium in livestock. It is a state-funded scheme (government subsidizes premium and the reinsurance capacity). This is a similar scheme to Agroseguro but superior in that they have secured a much larger market. Other countries with livestock risk insurance products: Turkey, Japan, Southeast Asia, South Korea (with some individual animal compensation scheme), Latin and South American (specifically Chile) has some related products (though it is not actively marketed, only available upon the request of the farmer and not widely available), Mexico	
CH-Swiss Hail Insurance	Death as a result of diseases and accidents	All kinds of acute life-threatening diseases	Yes
GR-Association of Insurance Companies	Mortality risk	All diseases apart from epidemics and few exclusions, named in each type of policies.	YES
NL- Verbond Van Verzekeraars	Accident and diseases	All livestock diseases, except those for which a compensation scheme exists managed by the authorities	Yes all diseases which are covered by a compensation scheme managed by the authorities
ES-MAPFRE		- Cattle - Loss of production (in terms of milk or calves) as a result of slaughter following Brucellosis (BCL), Leucosis, Tuberculosis (TBL), Contagious bovine pleuropneumonia, Bovine Spongiform Encephalopathy (BSE). - High value animals' cover: Difference	The epizooties are excluded as per default. Those that are insured are "named covers".

		between Ministry of Agriculture compensation and additional investment to enhance livestock (i.e. genetic improvement). - Swine - Loss of production (activity interruption) following Swine Fever (Classic or African). - Horses - Slaughter following African Horse Sickness. The indemnification will be the difference between the animal value and the Ministry of Agriculture compensation.	
CH- Partner RE	Almost every country has some sort of livestock insurance against mortality. Due to the catastrophic exposure of epidemics most policies exclude government slaughter order or any other order given by the government. e.g. import restriction Mortality, loss of use, sometimes extended to cover fertility risks, loss of profits following natural perils and other named perils such as accidents poisoning theft,	Under standard livestock policies mortality due to List B and C disease. Treatment cost, vet cost are usually not covered. In rare cases (Spain Israel) mortality of List A diseases is also covered when vaccinated against. However governmental slaughter order is then still excluded avoiding the cat risk.	In standard covers excluded, but specific covers exist.
20-CH-PartnerRE-interview.doc	Livestock is relatively well insured -loss of use -fertility -loss of profit -fire -usually they exclude epidemic -accident -theft -perils	Those that offer--normally restrict it to the list c and b (normally exclude epidemic) sometimes farmers assoc will cover it not insurers Spain or Israel: epidemic are included, the insurer will pay for dead animals but when govt starts culling as control measure, those are not paid (losses by government control not the disease). When government slaughter sets in and whole areas are shut down--liability is much larger and then it is excluded from insurance cover (though they may cover a single farm) Too systemic: expensive. Epidemics are	

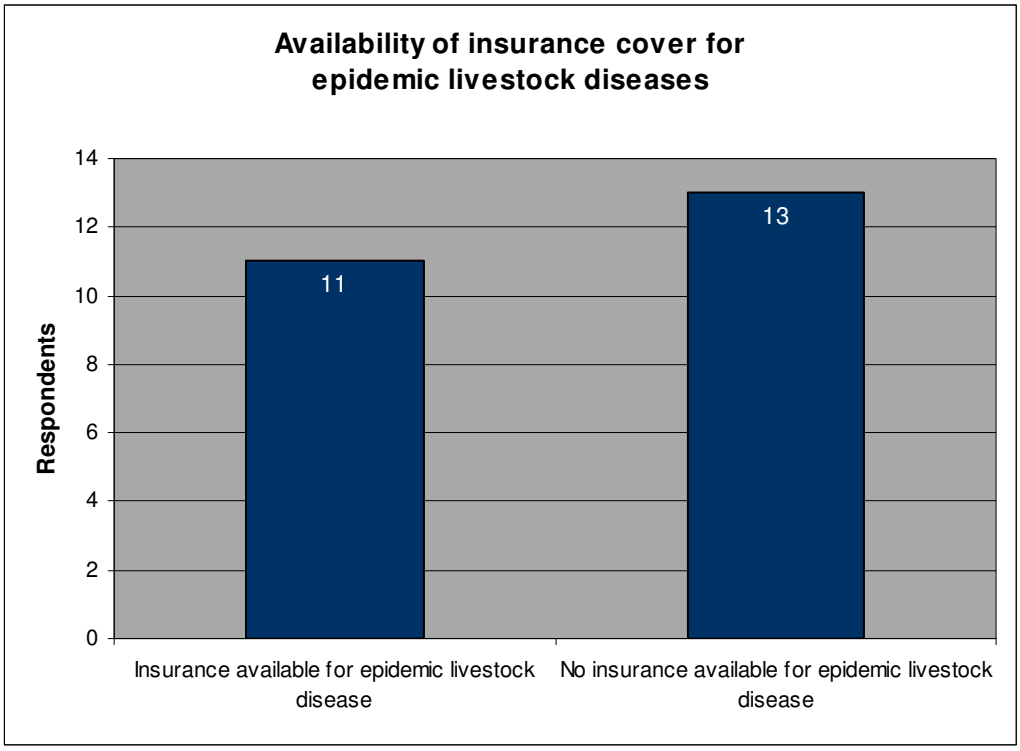
		expensive when govt controls shut down whole area	
Korea-Komill Broker Service Co., Ltd.	Accidental Death (including any disease except legal Epidemic), including Emergency slaughter, Sterility mainly result from Natural catastrophe	Pigs only, covering Transmissible Gastroenteritis(TGE virus), Porcine Epidemic Diarrhoea (PED virus, and Rota virus	Yes, all kind of legal Epidemic is not covered
Uganda-Lion Assurance-rev-after Interview.doc	LIVESTOCK MORTALITY EMERGENCY SLAUGHTER ON MEDICAL GROUNDS The following diseases are however excluded	Policy covers all other diseases except - tuberculosis - horse-sickness - redwater or gall sickness - foot and mouth for the western region of Uganda - avian flu . Cover is for all bovine species	Epidemic diseases are specifically excluded. However , since beginning of 2006 a product is offered that includes FMD(only in the Northern part of Uganda). This insurance policy is required by the East African Development Bank for farmers that want to receive a loan. Until now only few farmers have concluded a contract
Uganda-Lion Assurance	LIVESTOCK MORTALITY EMERGENCY SLAUGHTER ON MEDICAL GROUNDS The following diseases are however excluded	Policy covers all other diseases except - tuberculosis - horse-sickness - redwater or gall sickness - foot and mouth for the western region of Uganda - avian flu . Cover is for all bovine species	Epidemic diseases are specifically excluded
GB-Heath Lambert Group	Animal Mortality, Specified Perils + Whole Herd Disease Insurance.	Anthrax - all species. Foot + Mouth Disease - Bovine, Ovine, Porcine, Camelids. Aujeszky's, European Classic Swine Fever + Swine Vesicular Disease - Pigs. Avian Influenza + Newcastle's Disease - Poultry.	Yes, Government Slaughter Diseases are excluded under a standard All Risks of Mortality policy unless specifically extended.
FR -Groupama SA, Chinese branch	In CHINA: mortality of livestock in case of health and accident	all type of health , depend of reinsurance agreement	Bird flu
Thailand-General Insurance Association	All Risks	Dairy Cow	Yes, but there is a waiting period between the first 15-30 days.
USA-Hartford Financial Services Group	Fire, lightning, other weather related perils, theft	Diseases are excluded for most all food value animals, i.e., cattle, sheep, swine, poultry	Not defined

USA-McMillan Warner Mutual Insurance Company	Basic insurance perils plus Death by Electrocution, Attack by Dogs or Wild Animals, Accidental Drowning, Accidental Shooting, Injury from loading or unloading, Collapse, Collisionor overturn of Conveyances	None	No
USA-National Farmers Union Property and Casualty Insurance Company	We write livestock farms, including hog confinements and cattle feedlots, for property and liability.	We do not specifically cover the animals for any diseases, the livestock are covered for specific perils such as fire, windstorm, theft, etc.	Yes
USA-Rural Mutual Insurance Company	Named Perils, drowning, attack by wild animals.	I am not aware of any disease coverage	
UK-Crowe Livestock Underwriting Limited	(1) All risks of mortality (2) FMD / SWF / AI (1) 100% of market value (2) % of market value if slaughtered	As above for all farm animals	Yes excluded unless purchased separately
USA-Marysville Mutual Insurance Co.	Lightning/Wind/Hail/Drowning/etc	NA	
USA-Little Black Mutual Insurance Co	Wind, Hail, Fire, Theft, etc.	Our company does not offer disease coverage	Our policy only covers specific perils listed, thus, if the dieases is not listed as a covered peril, the disease itself is not covered.
USA- Farmers' Mutual Insurance Company	Named perils Fire:, Extended Coverage, Vandalism, Malicious Mischief &, Theft and Option Animal Perils (Accidental shooting, Drowning, Attack by Dogs or Wild Animals and Collapse of a Building) are widely available. Animal Mortality policies are less available. There may only be 10 - 15 domestic (USA) companies in the USA that I have heard of writing such.	None known	Not Known
USA-Hastings Mutual Insurance Company	Named Perils: Fire, Wind, etc. Accidental Shooting, Drowning, Attack by Wild Animals, Electrocution	None…No Covered Name Peril.	No…Again, only covered Named Perils apply
Ukraine- Etalon Insurance Company	Infectious disease (excluding brucellosis, leucosis, tuberculosis, foot-and-mouth disease, Marek disease, New Castle, avian flue). Fire. Natural risks (lightning, earthquake, mudslide, landslide, storm, hurricane, heavy rain, hail, heavy snow, etc.	From all but for exclusions. The livestock is not insured in quarantine regions	No

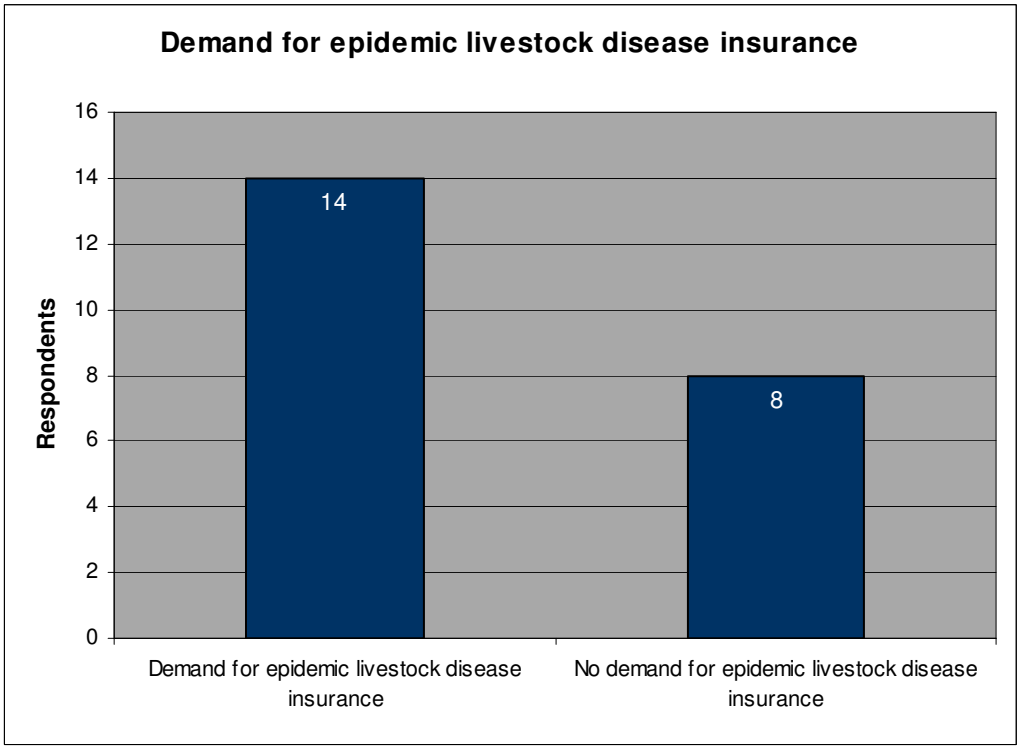
	Accident - blast, electric power stroke, drowning, death by transportation, suffocation, impact by wildlife or stray dogs, poisoning by plants or any substances, bite by snakes or insects, animal falling in canyons, etc.; Unlawful actions by third parties including stealing (breaking in through mechanical breakage of windows, doors and/or locks, robbery, damage by purpose		
Ukraine-TAS Insurance Company	Death of animal, stealing or problems with livestock's health due to : a) infectious disease, except brucellosis, leucosis, tuberculosis. Foot-and-Mouth disease is insured; b) fire, natural calamities, lightning, heat or sunstroke, freezing, earthquake, mudslide, landslide, hurricane, storm, heavy rain, hail, strong snow; c) accident, blast, impact of electrical power, drowning, death by transportation, suffocation, impact by wildlife or stray dogs, poisoning by plants or any substances, bite by snakes or insects, forced slaughter as instructed by veterinarian authorities, etc.; d) unlawful actions by third parties including stealing, robbery, damage by purpose	For all infectious diseases excluding brucellosis, leucosis, tuberculosis and avian flue	On all types of livestock brucellosis, leucosis, tuberculosis are excluded from coverage, avian flue is excluding for poultry
USA-Oklahoma Farmers Union Mutual Insurance Co	Named perils: fire & lightning, windstorm or hail, explosion, riot or civil commotion, aircraft, vehicles, sudden and accidental damage from smoke, vandalism, theft, sinkhole collapse, volcanic action, earthquake loss to livestock, flood loss to livestock, collision, electrocution of livestock, loading and unloading accident. Can endorse on the additional perils of freezing or smothering in snowstorms or ice storms and falling through ice, accidental shooting, drowning, attack by dogs or wild animals, collapse of a building.	None	Not defined, but it is a named peril policy and since they are not listed as a covered peril, they are excluded from coverage.
USA- Cooperative Insurance Companies			
Russia-First Insurance Company LTD	Diseases including infectious, contagious disease, invasive diseases. Diseases - non-infectious, non-contagious, non-invasive	All types of animals	Sick livestock Livestock that had positive reaction on brucellosis, leucosis, tuberculosis and other epidemiological diseases at the last check Livestock in the quarantine zone

			except for the animals resistant to such a disease
Israel- IFNRA Insurance Fund for Natural Risk in Agriculture	Death of animals, theft, veterinarian quarantine	All the diseases are covered for cattle, turkey and poultry, fish in ponds	Only if the government authorities decide to kill the animals (we don't cover damages through our insurance company) it is paid out by the government.
USA-COUNTRY Insurance and Financial Services Group	On our Farm policy, covered broad form perils are provided (which includes theft, drowning by flood, accidental shooting, attack by dogs or wild animals and electrocution by artificially generated currents).	On our Livestock Mortality policy, all disease that causes death to cattle, horses, swine, sheep, goats and dogs insured on the policy would be considered covered risk.	No
Chile-Asociacion de Aseguradores de Chile			
US-Nationwide Agribusiness	Broad Form Perils	None	No
SE-Agria Djurförsäkring AB	Life insurance Milk production loss Veterinary charges	All diseases, except for some epizootic diseases.	The epizootic diseases covered by the insurance are specified in the insurance policy.

Question 2: Is insurance cover for epidemic diseases available on the market in your country?



Question 3: Is there demand for epidemic livestock disease insurance that is not satisfied at present?



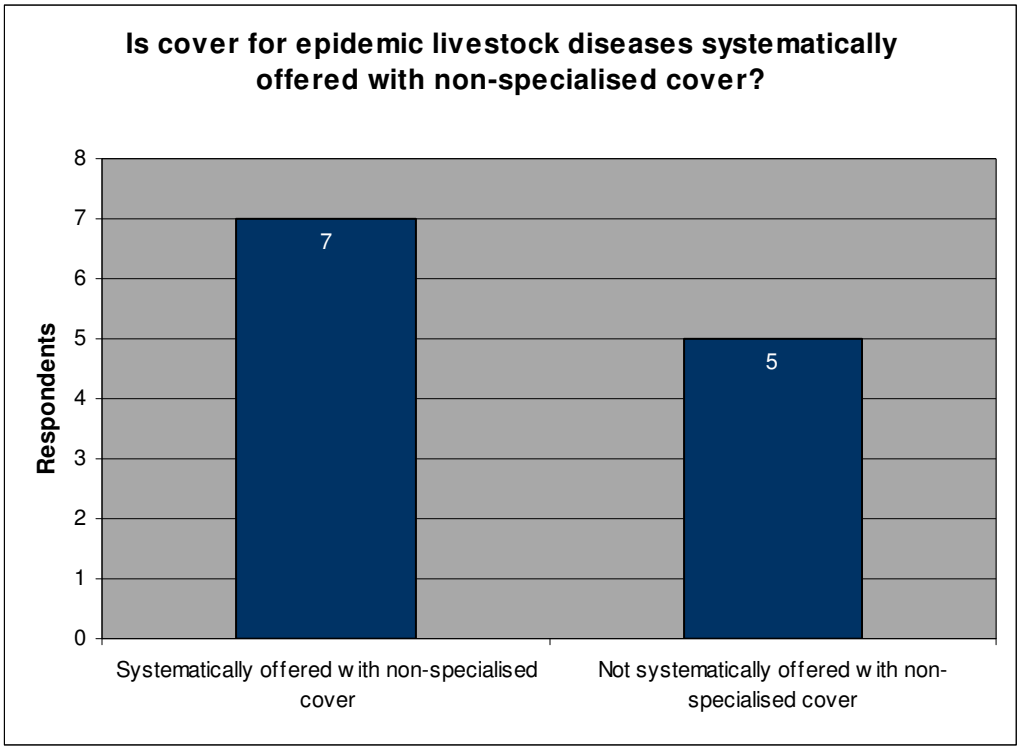
Diseases explicitly listed as a demand product were AI (8 respondents), FMD (3 respondents), Brucellosis (2 respondents), BSE (2 respondents), and several other respondents either specified listed leucosis,

tuberculosis, Aujeszky's Disease, as well as several respondents listing that cattle diseases in general are in demand or all types of diseases are in demand.

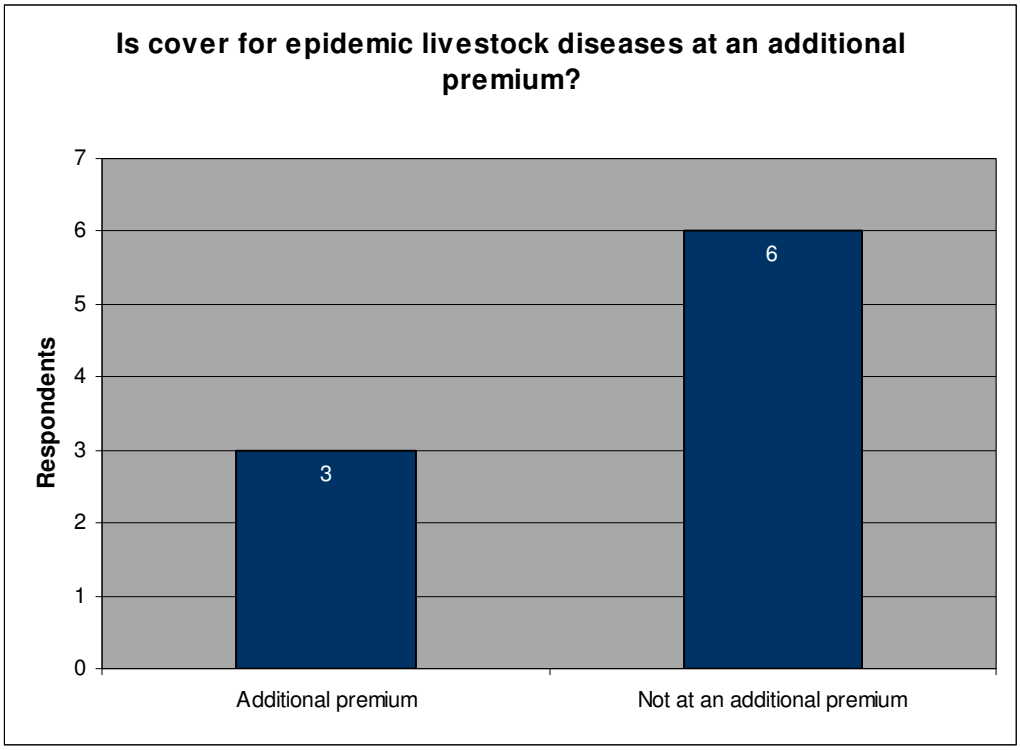
II) INSURANCE PRODUCTS CURRENTLY AVAILABLE

Question 6: Type of covers for epidemic livestock diseases

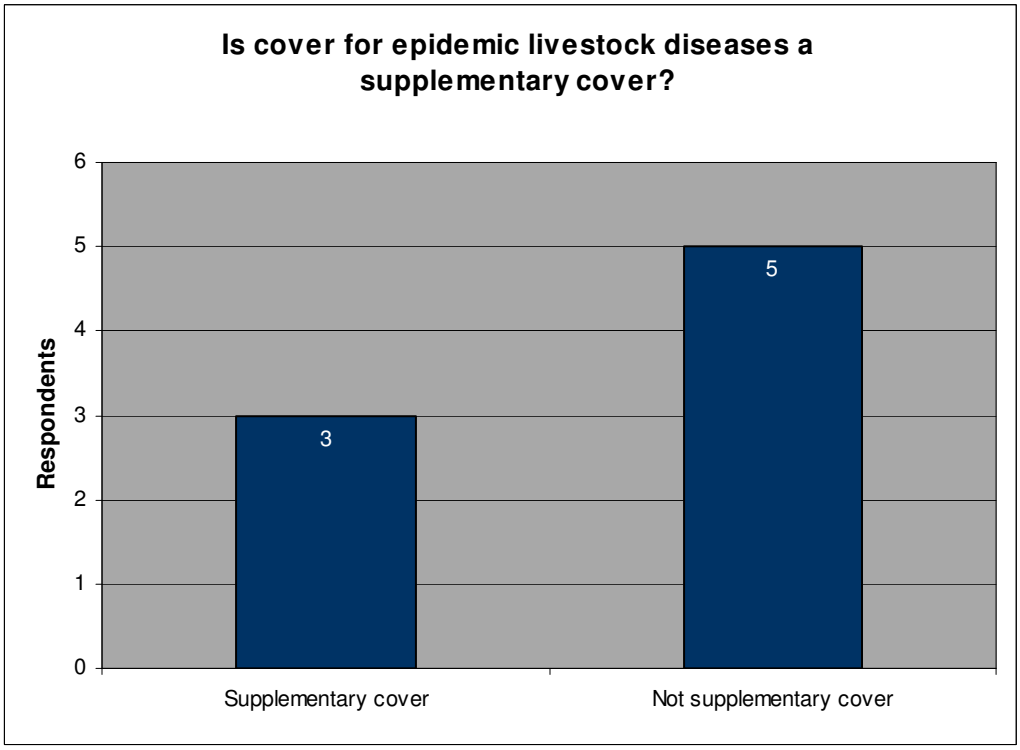
a) Systematically offered with non-specialised cover?



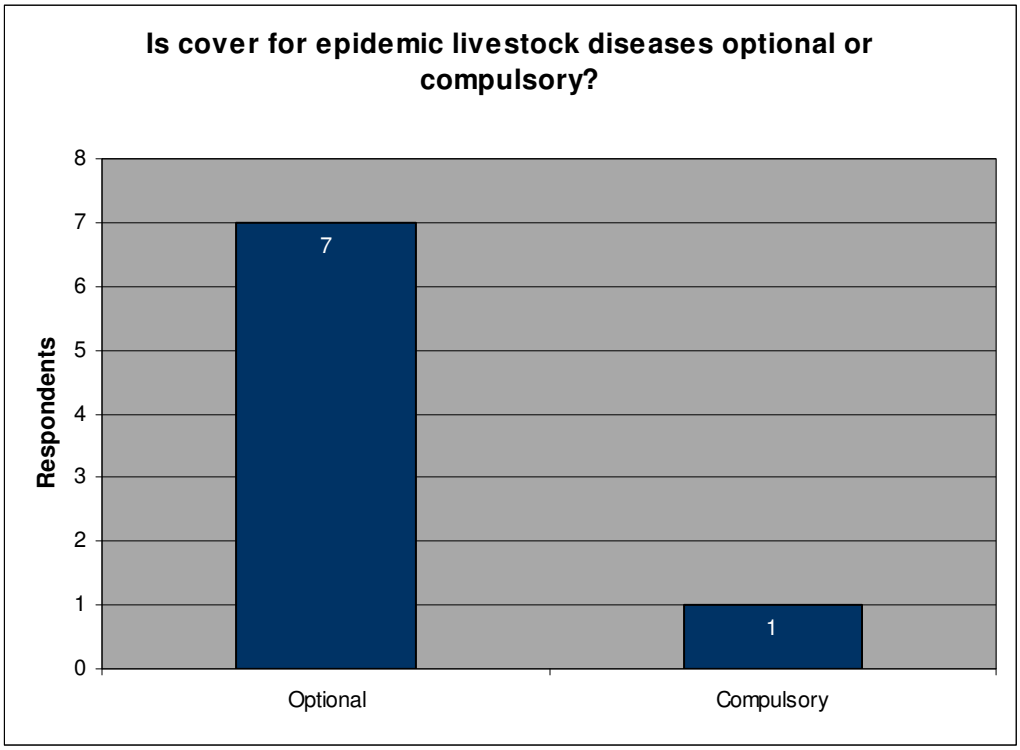
b) At an additional premium?



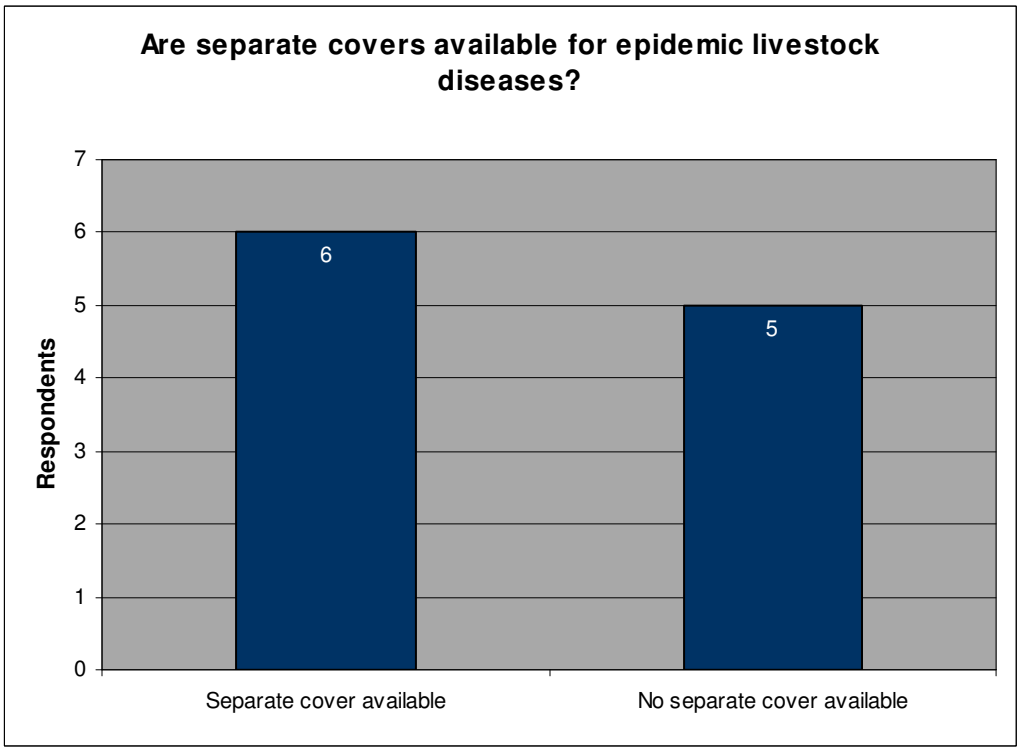
c) Or is it a supplementary cover?



d) In the case that it is a supplementary cover, is it optional or compulsory?



Question 7: Are separate covers available for epidemic livestock diseases (i.e., stand alone insurance products)?



Question 13: What is the subject of the cover?

Country	What direct losses are included in the cover?	What is the basis for indemnification of direct losses?	What consequential losses are included in the cover?	What is the basis for indemnification of consequential losses?	What losses cannot be indemnified?
DE-Munich Re					Losses caused by excluded risk Losses smaller than franchise
CH-Swiss Hail Insurance					
GR-Association of Insurance Companies	Value of livestock	Value per animal X No of dead animals minus deductible.	None		Lost of Profit and State compensations.
NL- Verbond Van Verzekeraars					Loss of export market, loss of market share, loss of breeder herd. Such covers would also require longer indemnity periods.
ES-MAPFRE	Please refer to question 4.	Both. Difference between standard state compensation and additional investment to improve livestock characteristics.	Stipulated production value * number of animals * months of paralization (limited to 4 months milk, 6 months fattening livestock and 1 month breeding livestock)	Please refer to previous question.	The loss of profit is limited to what has been listed in c- -loss in export market -loss of breed or herd (can take years to build up that herd)
CH- Partner RE	This is left to the compensation fund	According to the agreed terms of those funds usually market value of carcass before the loss	All of abovementioned	Ideally agreed values on above items, sometimes market value before the loss. Always on time units/ day or per week interruption. LOP max indemnity period often 6 months.	
20-CH-PartnerRE-interview.doc					
Korea-Komill	Cattle - death due to	Value of livestock	Pigs - Business Interruption	Expected profit rate	

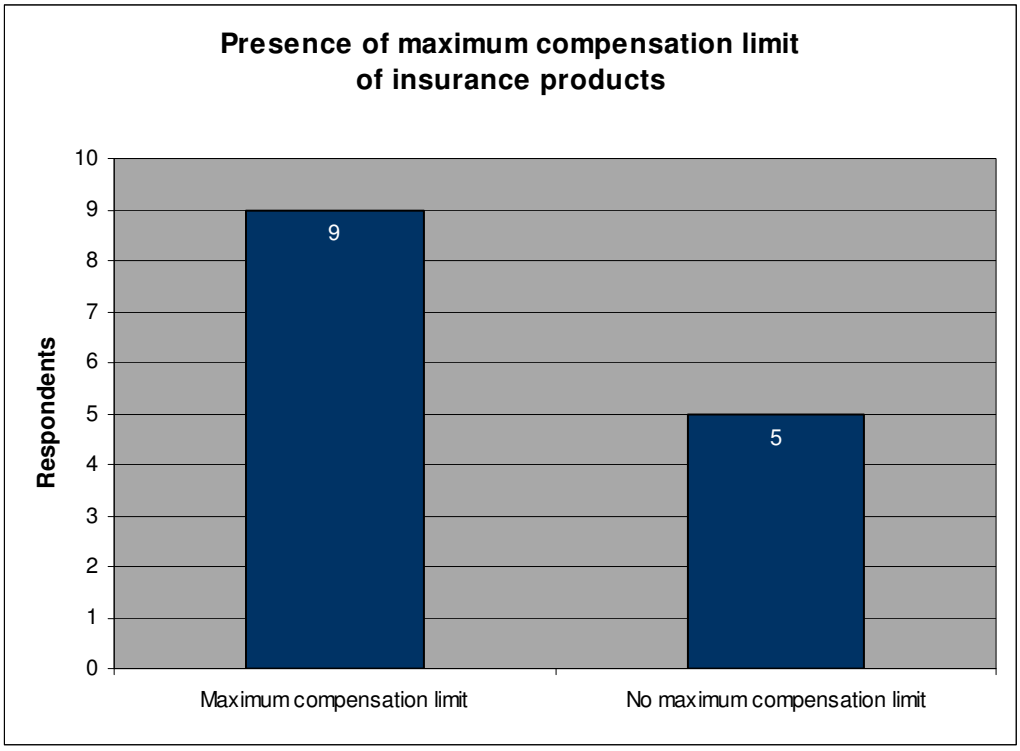
Broker Service Co., Ltd.	disease, emergency slaughter except legal Epidemic, Emergency slaughter, Sterility in case of cattle sire Pigs - death due to fire, and natural disaster(extended coverage for TGE, PED, Rota virus) Poultry - death due to fire and natural disaster Horse - death due to disease except legal epidemic, Emergency slaughter, Sterility		covered by extended coverage (optional)	considering the value and management cost (max 12% of livestock value)	
Uganda-Lion Assurance-rev-after Interview.doc					Please specify: Currently, business interruption (too expensive), clean up costs or general movement restrictions.
Uganda-Lion Assurance					
GB-Heath Lambert Group	Please specify: A percentage "Top Up" payment is made calculated on the value of the herd/flock.	Please specify: Indemnification is based on a percentage of the Government Compensation and any settlement shall not exceed the insured, scheduled value stated under the policy.	Please specify: Simply a percentage based on the value of the animal. There is no ensuing Loss of Revenue &/or clean up costs are excluded.	Please specify: The indemnity is calculated as a percentage of the insured sum or herd/flock value Average Clause would apply for over-valuation.	
FR -Groupama SA, Chinese branch	Value of livestock and rendering cost		See left.	See left	See 2a above
Thailand-General Insurance Association					
USA-Hartford	See 2a above	See 2a above	See 2a above	See 2a above	

Financial Services Group					
USA-McMillan Warner Mutual Insurance Company					Unknown
USA-National Farmers Union Property and Casualty Insurance Company					Business interruption at this time.
USA-Rural Mutual Insurance Company	Unknown	Unknown	Unknown	Unknown	
UK-Crowe Livestock Underwriting Limited	Value of livestock	% Of market value at time of loss	None.	Market value - % of.	
USA-Marysville Mutual Insurance Co.					NK
USA-Little Black Mutual Insurance Co					
USA- Farmers' Mutual Insurance Company	NK	NK	NK	NK	Vaccination - subsidized by the government
USA-Hastings Mutual Insurance Company					The insurance company does not cover costs for vaccination and other actions to immunize livestock that should be done on order of veterinarian authorities or are planned.
Ukraine- Etalon Insurance Company	Cost of animals, slaughter and rendering costs	Cost of animals, quantity of animals affected	Cost of veterinarian services, medicines, sanitary measures.		

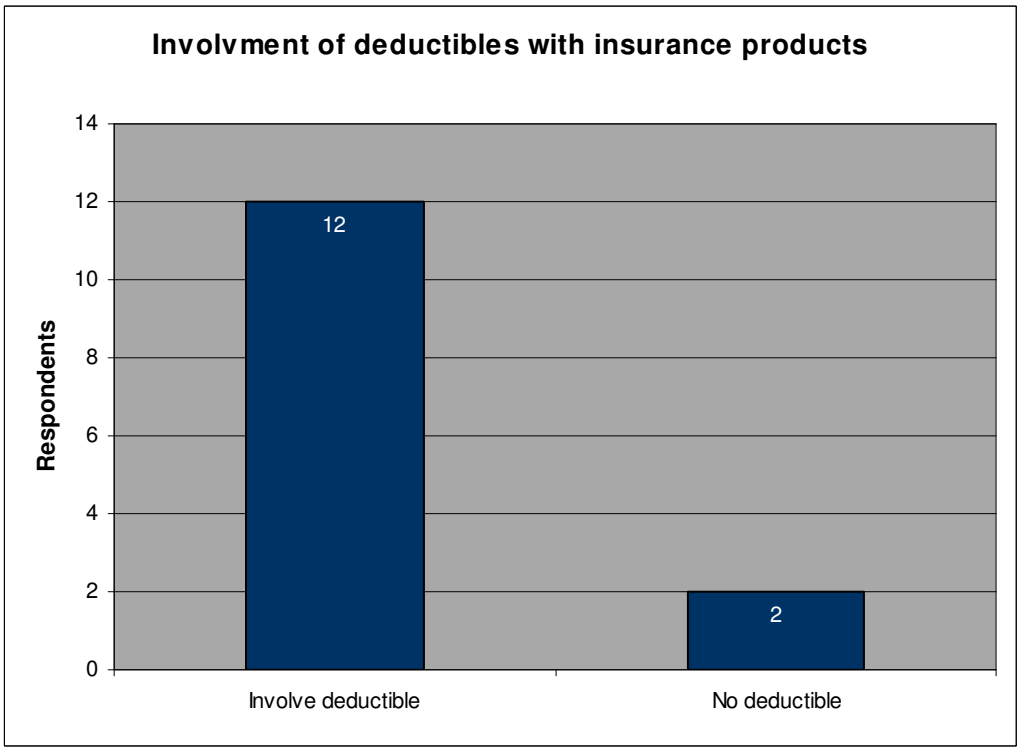
	Pedigree cattle is insured at purchase value. Cattle - cost of products at the open market (4 UAh per kg of live weight), chicken - 7 UAH, poultry - market value.				
Ukraine-TAS Insurance Company	Cost of animal, cost of medical treatment, forced slaughter, rendering costs limited at 25% from the insurance sum	The basis for indemnification is the cost of one animal, quantity of animals lost/damaged, prescription by veterinarian, receipts confirming purchase of medicines	Reduction of expected income	Claim application from the insured client and all documents that confirm loss of income, documents confirming the order to slaughter the livestock, record of animal check, dismemberment of corpses, certificate that meat was allowed for sale, certificate from government bodies that the farm did not get the planned income, etc.	
USA-Oklahoma Farmers Union Mutual Insurance Co					Losses indicated in para 12
USA-Cooperative Insurance Companies					Negligence, poisoning, war etc.
Russia-First Insurance Company LTD	Value of slaughtered or utilized animals	The basis for claim is the confirmed risk events with the supporting documents provided by the insured. The payout is done based on the Insurance act (report) within the established time period	Cost of veterinarian services and medicines. Reduction of livestock value due to loss of pedigree quality	Real loss or coverage in %	
Israel- IFNRA Insurance Fund for Natural Risk	Cattle- cost of evacuation for dead animals and the value of	Poultry-maximum value and age of livestock and number of infected	Interruption of production in the event of quarantine-poultry and expenses of	Dependant on the time until rehabilitation and sanitation by direct expenses	

in Agriculture	the animal. Poultry the value of the animal	livestock. Cattle per cow per age group	sanitizing the area.		
USA-COUNTRY Insurance and Financial Services Group	The value of the livestock, up to our policy limit, is the direct covered loss.	The basis for the indemnification of the direct losses is the value of the livestock, again up to our policy limit, and settled at actual cash value.	Additional coverage via policy endorsements, such as interruption of business production, loss of income, loss of value for high valued livestock, suffocation and suffocation coverage for non-owned livestock, etc. can be added to an existing Farm policy, for an additional premium.	The basis for the indemnification for consequential losses is defined in each of the endorsements that can be added to a Farm policy for an additional premium.	
Chile-Asociacion de Aseguradores de Chile					Only costs related to livestock production are covered.
US-Nationwide Agribusiness					Losses caused by excluded risk Losses smaller than franchise
SE-Agria Djurförsäkring AB	Value of livestock	Value of livestock x number of affected livestock that qualify for insurance cover	Interruption of production (production losses), decontamination	Actual losses	

Question 14: Do the insurance products available have a maximum compensation limit (ceiling of coverage)?

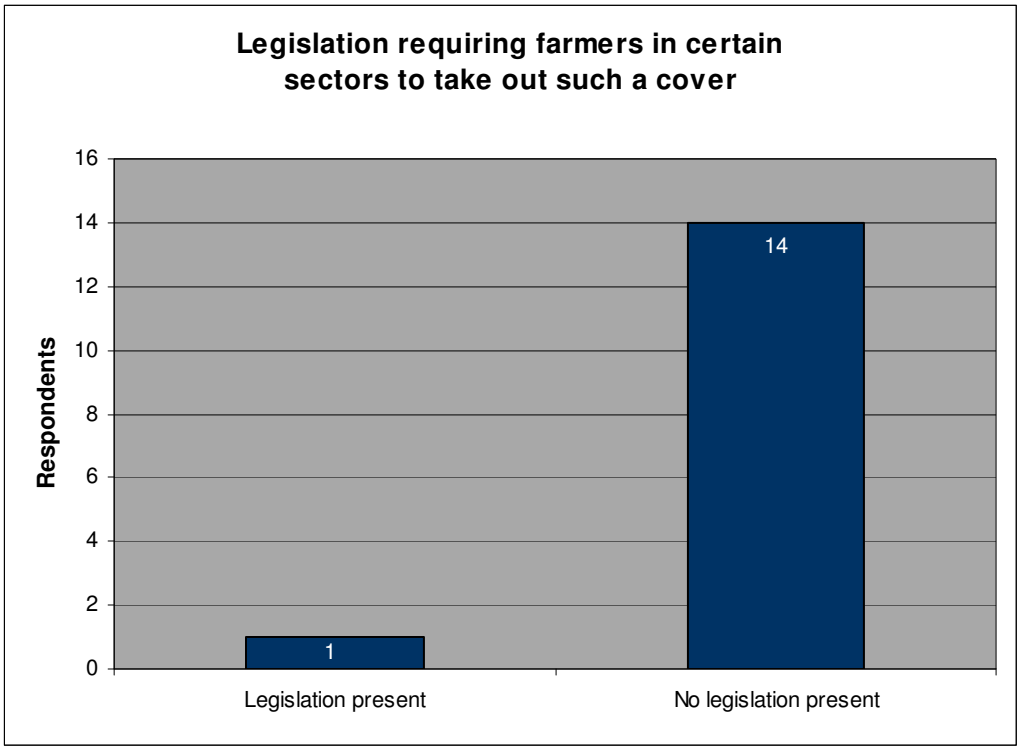


Question 15: Do the insurance products available include a deductible?



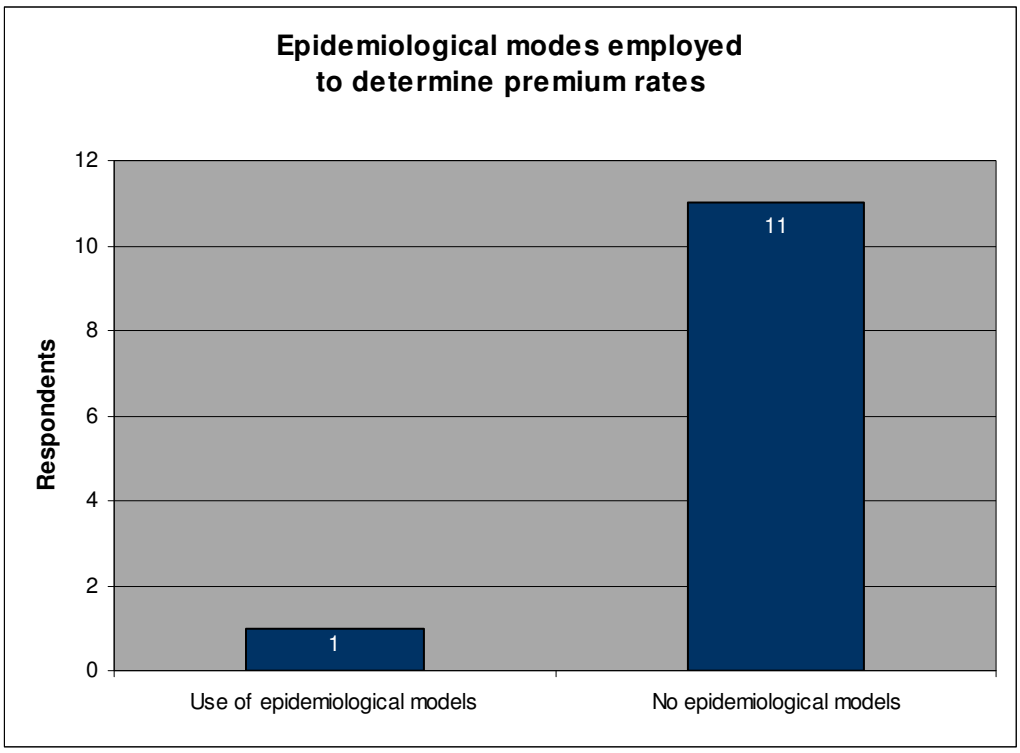
Two insurers offer insurance products without a deductible, in the United States and Great Britain. Otherwise, it seems more common to include a deductible for livestock insurance coverage.

Question 19: Is there legislation requiring farmers in certain sectors to take out such cover?



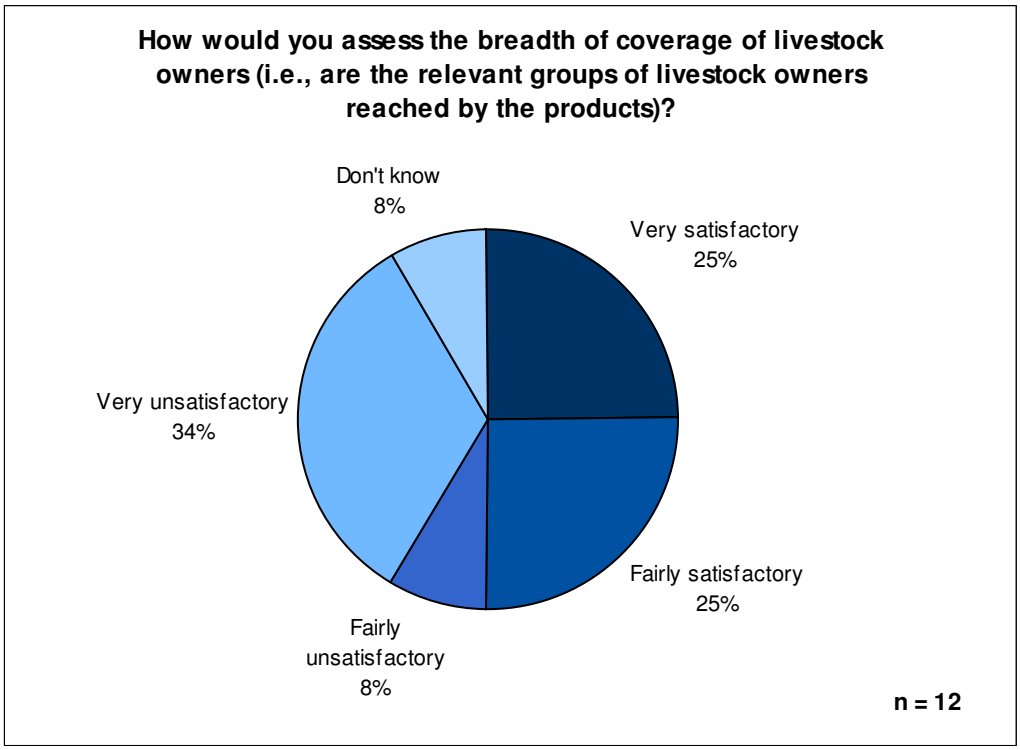
The one respondent to indicate that legislation was present for farmers to take out a cover was in the Ukraine, though the other insurer from Ukraine did not indicate the same thing.

Question 20: Are epidemiological models employed to determine premium rates?

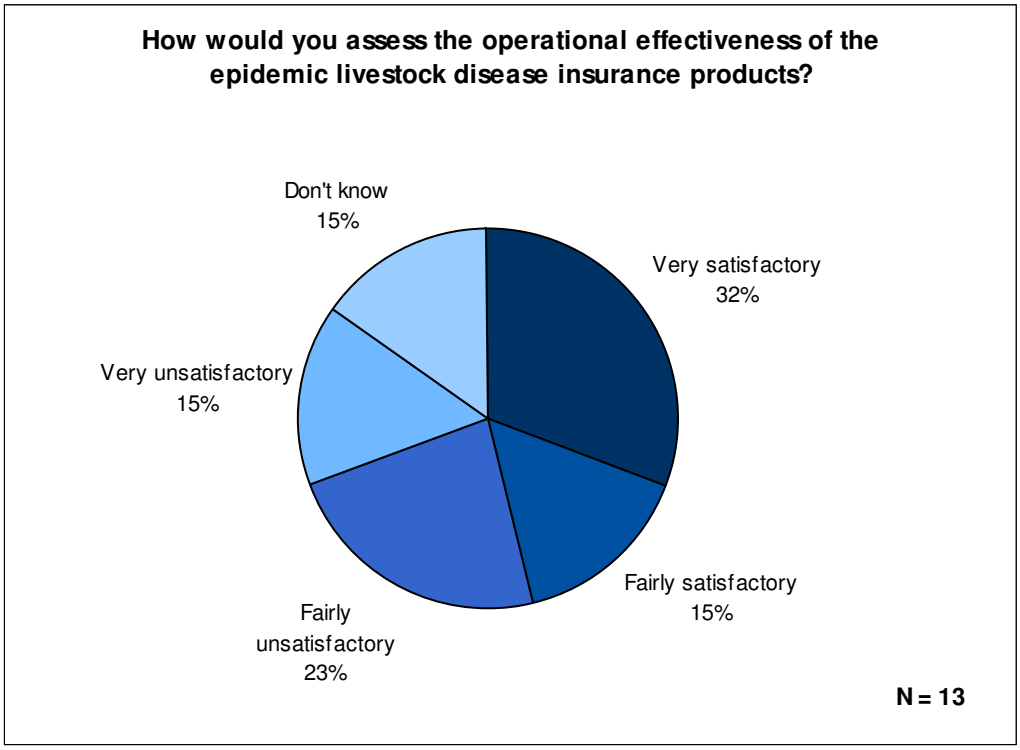


III) STRENGTHS AND WEAKNESSES OF EXISTING EPIDEMIC LIVESTOCK DISEASE INSURANCE PRODUCTS

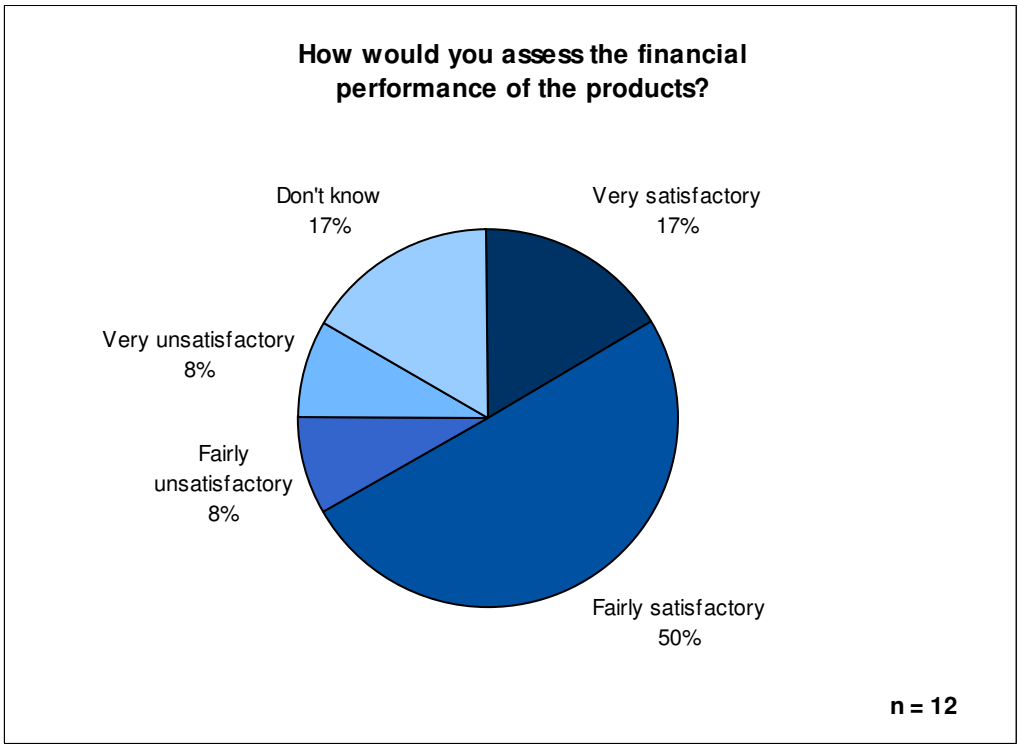
Question 22: Satisfaction of breadth of coverage of epidemic livestock disease insurance products



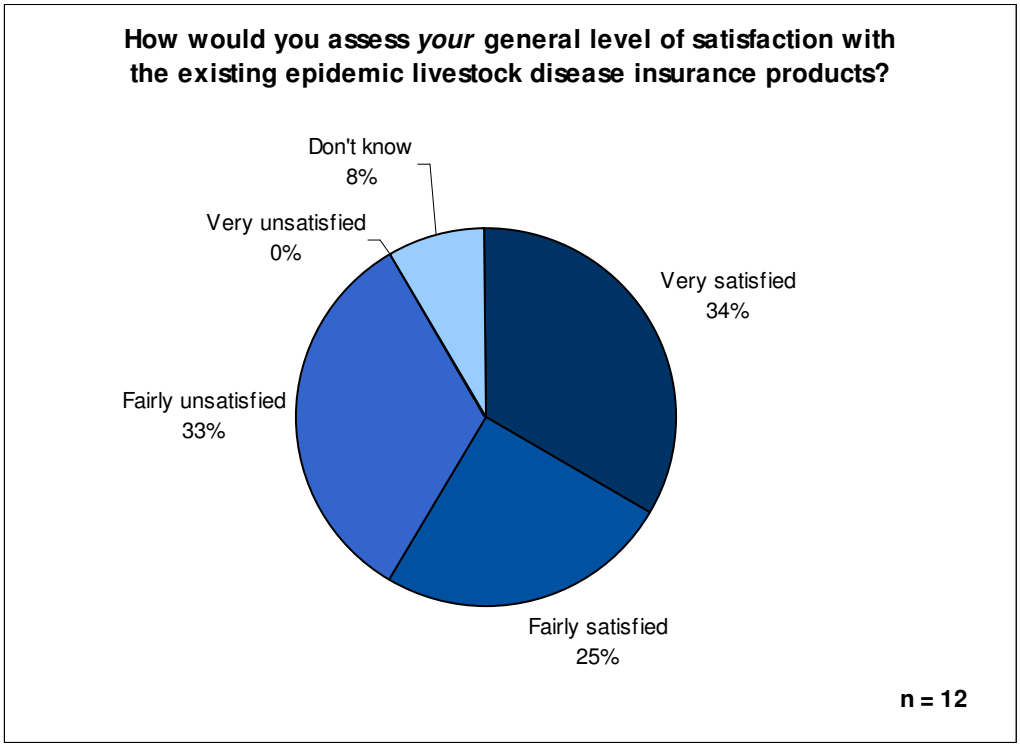
Question 23:Operational effectives of epidemic livestock disease insurance products



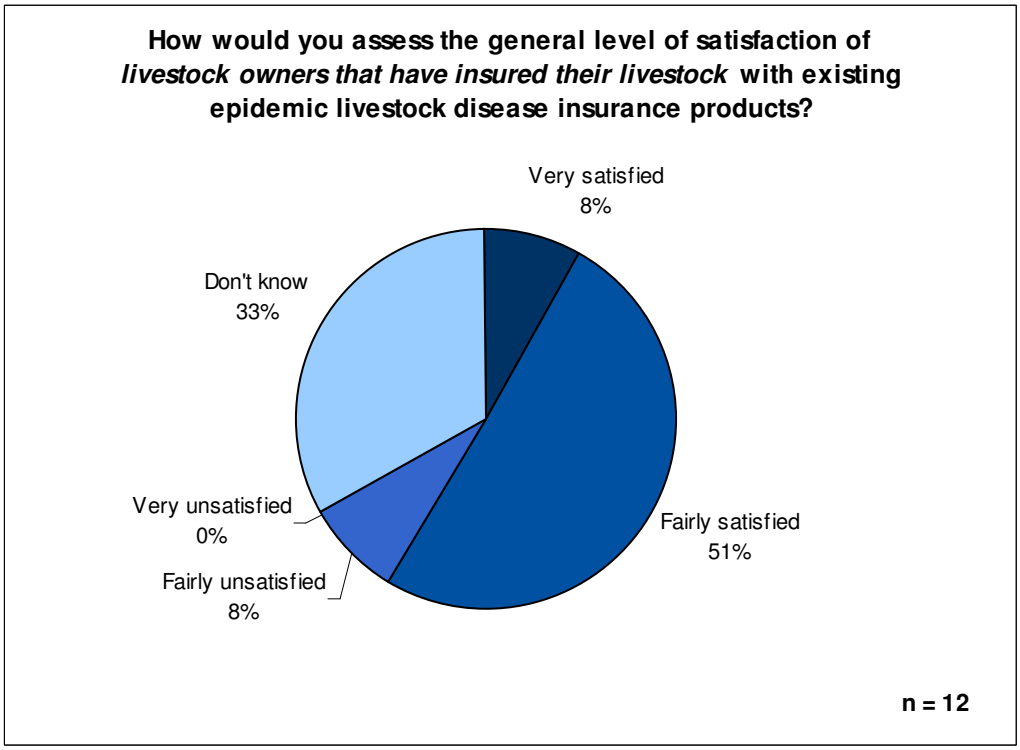
Question 24:Financial performance of epidemic livestock disease insurance products



Question 25:Insurer's level of satisfaction with epidemic livestock disease insurance products

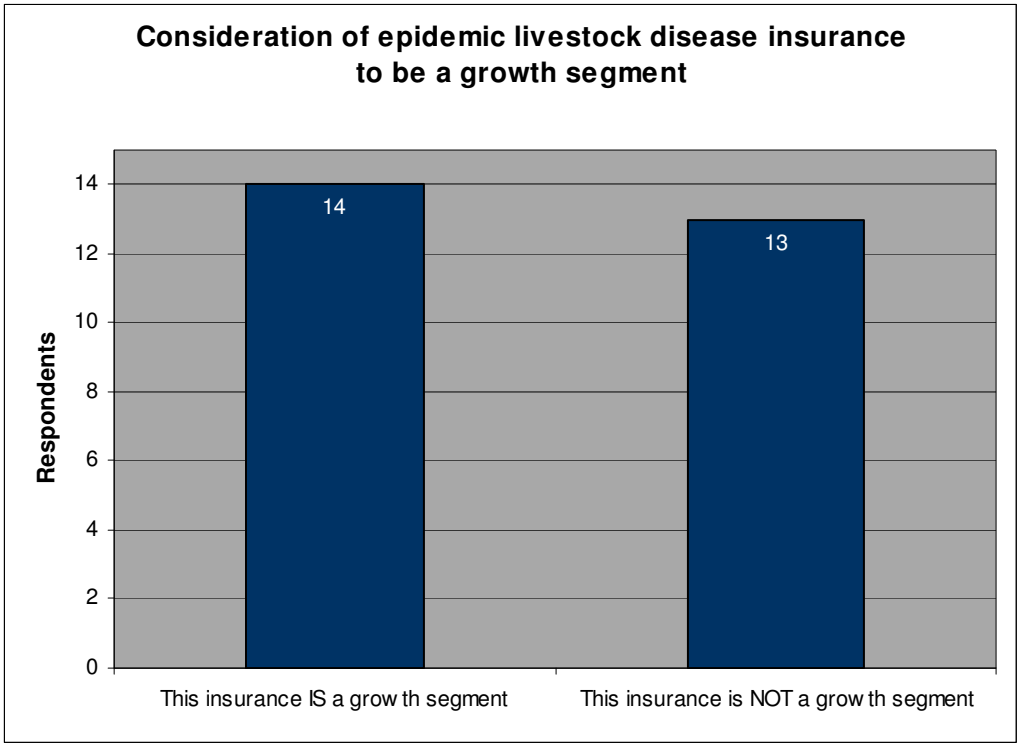


Question 26:Livestock owner's level of satisfaction of epidemic livestock disease insurance products



IV) PROSPECTS FOR EPIDEMIC LIVESTOCK DISEASE INSURANCE

Question 27:Do you consider epidemic livestock disease insurance to be a growth segment in terms of future development for insurance companies?



Questions 27-29: Prospects for development of epidemic livestock disease insurance

Country	Potential for development of these products? Yes/No	Why?	What are the main barriers for the development of these products?	What public measures/role of government could encourage the development of this market segment?	What should be the focus of a global programme of support for the development of epidemic livestock disease insurance products?
DE-Munich Re		There is not growth segment if there are not outbreaks...in Germany within 2 years if there is no outbreak, farmers will not renew their insurance agreement. It is possible to develop insurance companies, but the government would have to be involved in subsidizing farmer premiums. What absolutely must happen first is for the government to stop ad-hoc payments in order to establish long-term insurance products. The farmers have to be aware of the risks and they have to know that they have to take care of their own risks and that the government will stop paying for them. To get the government involved: It must subsidize the premiums (if the risk is adequate) and, if there are no other opportunities, be involved in some kind of reinsurance.			This is potentially quite problematic. There will always be countries with a lower and a higher exposure. In a global system, the countries with lower exposure will not want to support the ones with higher exposure, which tend to be poor and highly competitive. Even if such a programme were to function more as a global facilitator, who will handle the risk? How will the money be distributed in the case of a loss? Throughout the world there is very little infrastructure set up for risk control, risk handling, or methods to distribute finances. Livestock insurance is also not very well diversified in the world. Another problem with developing these products is that farmers are not being asked what they are prepared to pay for or if they have an interest. No farmer is willing to pay 5-10 dollars per head to insurance in countries that are not afflicted with diseases. Also it is hard to keep premiums for such products cheap without many farmers involved in an

					insurance scheme to keep the costs down. It is hard to get that kind of momentum (high numbers of participating farmers). If governments could be allowed to vaccinate, most governments would take this option because no economy in the world can afford these losses. At a global level, they need first to develop preventive veterinary measures and train the farmers with adequate husbandry techniques. Their records do not show that disease is spreading more or any faster now than before.
CH-Swiss Hail Insurance	No	Existing state-aided solution	Statutory compensation scheme	(At the National level) New legal basis without statutory compensation scheme	
GR-Association of Insurance Companies	Yes and No	On the condition that the extent of state intervention will allow market development and there will be available satisfactory reinsurance Farmers ask today for such insurance products because they believe that the state compensation is not always satisfactory	State ad hoc compensation, lack of satisfactory reinsurance, high premium rates unbearable by farmers	(At the European Level) European Reinsurance scheme, premium subsidies (At the National Level) Premium subsidy, less state intervention, state reinsurance cover	
NL- Verbond Van Verzekeraars	No	It will never be a profitable product	The government is responsible for the (health) safety of the population. That is why they always want to have influence in how to suppress an	(At the European and National Levels) Influence in the measures that have to be taken when an epidemic disease occurs. Give cover when the loss will exceed a	Acceptance of vaccination and introduction of vaccination programmes should be developed. Epidemic livestock diseases are on a private basis uninsurable! Insurance programmes can only be developed with a very strong

			outbreak. On the other hand, farmers underestimate the risk of epidemic diseases and are not really willing to pay premium. The conviction is that the government will always give financial support.	certain amount. Make preventive actions possible e.g marker vaccines.	(financial) support of governments. Compulsory funds, rules by the government are a much better solution then insurance (and cost less!).
ES-MAPFRE	Yes	To comply with livestock owners concerns.	Lack of common and homogeneous sanitary control guarantees at all levels: owners, country and international.	- Diseases sanitary control. - Design of common products to be sold by the market. - Subsidized premiums. In response to: "What measures at the national level could encourage the development of this market segment"	
CH- Partner RE	Yes	If there would be a clear political will that farmers have to look after themselves with the risk management tools available. Affordability could be enhanced with premium subsidy	Affordability, clear political message, acceptance from farmers that each program has a limit.		
20-CH-PartnerRE-interview.doc	Yes		Some of the volatile demand is based on behaviour of politicians not wanting to tell farmers they are responsible for their own losses. Some farmers know that government will bail them out -as long as there is this perception that	Raising awareness 2) when there is a miss match between the cost and the price farmers want to pay -this is when premium subsidy can bridge that gap -problem with insurance is they cannot wait for everything to start because they don't have the capital	Trouble is: almost every market it unique, hard to think of general recommendations that could apply anywhere 1) developed world: step up bio-security, make statistics reliable, 2) western world: raising awareness of farmers and banks, helping to crunch numbers, premium subsidies.

			the government will help them, then why should they pay for policy -also not a good understanding of farmers of what the losses are -and it is a rare event, so they don't think they NEED this extra coverage in order to be successful -banks ask for any insurance policy, don't care about what kind--they don't insist that the farms are covered by epidemics -how to raise the education?!?!	-they need to spread their costs over time	
Korea-Komill Broker Service Co., Ltd.	Yes	In our market, there is no Mad-cow risk, and SARS, but there were cases of pig cholera and bird flu (AI) recently. Therefore the demand from farmers always exists.	No support in reinsurance market, and the high premium required	Government subsidy on the premium for the individual farmers, and reinsurance protection over the loss cap of insurance company	International Reinsurance Pool scheme would help individual insurance player to write livestock epidemic exposure
Uganda-Lion Assurance-rev-after Interview.doc			The main barrier is funding There is a need for governments and NGOs to provide the funding for two main elements: 1. First finance helping farmers set up minimum bio-security		A global program would best involve the Ministry and encourage them to contribute to the insurance costs and measures to involve as many farmers as possible in order to create a larger pool, thereby making it more insurable A reinsurance pool would be one of the best ways to set up such a

			measures as these measures will make it easier to insure them 2. Subsidise premiums once insurance products are set up		pool
GB-Heath Lambert Group		Existing compensation is over-generous. Demand is only really stimulated during an outbreak.	A Loss of Revenue based policy would be more suitable for producers but the cost would be prohibitive to most farmers without some premium contribution from the Government.	A funded scheme, or risk pool, would need to be formed which could be supplemented by insurance premiums to ensure that there are sufficient 'funds' to meet losses in the early days of such a programme. Furthermore, this central fund could be protected by reinsurance.	To begin with, in my opinion, it should focus on western countries like Europe, North America and then be expanded to the developing countries. For example, some Latin American Countries would not have the infrastructure, like a State Veterinary Service, to quickly eradicate or control a widespread disease outbreak. Lastly, to attract the interest of World Insurers, these 'carriers' prefer to see a proven track record and so would want to see the performance record of such a programme before they would consider increasing their risk to the more exposed territories.
FR -Groupama SA, Chinese branch	No	First, we consider that epidemic livestock is a disaster, a calamity and not a "simple claim". Then the answer above is negative, it is because the fallowing reasons are not respected: § To insure a risk compensation: this principle of homogenous risks minds a strong risks selection. Nevertheless the claim must not to be to the same time for all insured people: these calamity situation and the damages resulted will be so apply	See left.	a pool of insurance companies (like Agroseguros in Spain) or a public réinsurance system manages by the State itself(like in USA)	See left.

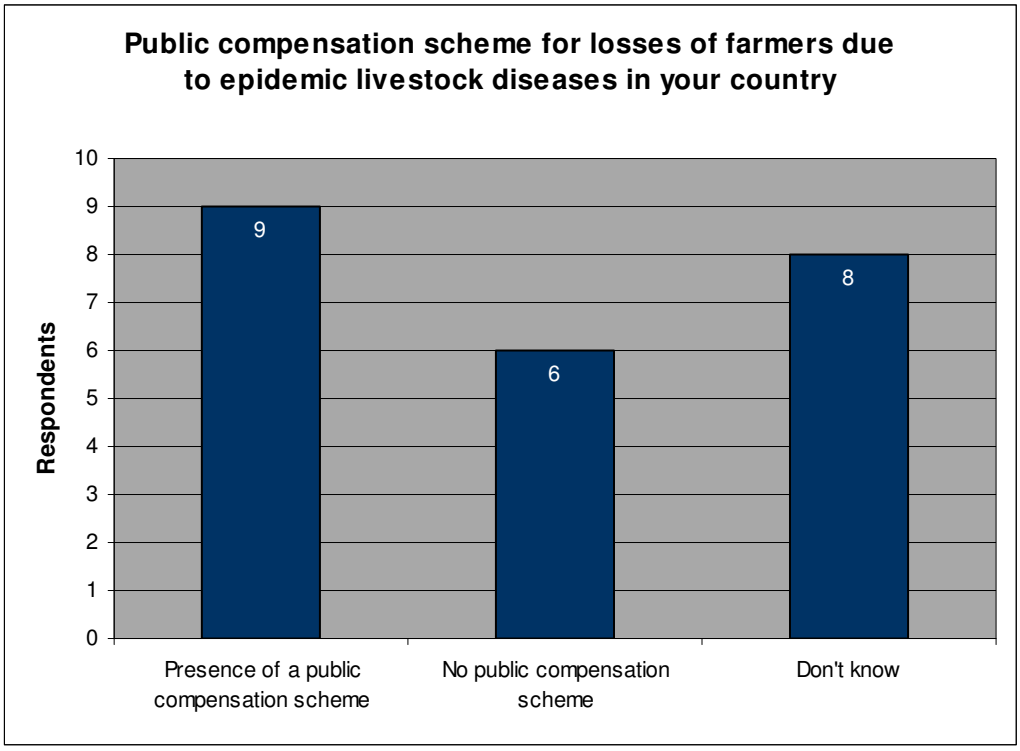
		to all the same population and it will not be able to be insured. § To have a well balanced result in case of claims, the risks must be irregular (randomised), the cash surplus from the "best years" make a capital fund			
Thailand-General Insurance Association	No	Most of the farmers in our country are not well trained to feed the livestock for business purpose and lack of risk management conscious.	The farmers cannot afford to the insurance premium.		
USA-Hartford Financial Services Group	No	Livestock producers remain concerned about effects of a disease outbreak	It will take a partnership of govt and private resources	Education of lawmakers as to the size of the exposure; to provide reinsurance	A fair, local market based compensation for destroyed livestock
USA-McMillan Warner Mutual Insurance Company	Yes	Yes due to the possibilities that an epidemic could happen	Lack of programs available, Reinsures willingness to participate	Knowledge of availability of such coverage, Reasonable Pricing,	Communication and information
USA-National Farmers Union Property and Casualty Insurance Company	Yes	Even though I am not familiar with the markets for this - I do not believe that the market is being fully served - and therefore - it would be an area for growth.	To me the main barrier would be the catastrophic nature of the loss potential and lack of reinsurers	I do not believe there is an appropriate role for government in this area. If the demand is great enough and companies believe they can get sufficient premiums - the market segment will develop.	From a global prospective - the availability of affordable reinsurance is would be the best approach.
USA-Rural Mutual Insurance Company	Yes	Too much risk involved			
UK-Crowe Livestock Underwriting Limited	No	Mainly AI	Price, level of cover and capacity	Nothing will improve until there is confidence in the government that they will handle another outbreak successfully and professionally	1) Min disease prevention procedures followed by all farmers 2) coordinated approach and clear protocol by the government 3) a proper compensation programme to encourage all affected farms to advise of a disease immediately.

USA-Marysville Mutual Insurance Co.	Yes	Too broad of coverage	Unknown loss exposure	Don't know	?
USA-Little Black Mutual Insurance Co		We don't want to cover a risk that would most likely result in catastrophic total loss.	Historical lost cost ratios do not exist, so, how would you rate it?	I feel this is solely a governmental issue, not a private sector issue.	Because of the potential quarantine of the livestock herd (and likely disposal of herd), any program should only cover risks that have taken preventive measures to limit such diseases.
USA- Farmers' Mutual Insurance Company		There is a market for it if the premium is affordable with adequate capacity/surplus to accept.	The unknown.	NK	NK
USA-Hastings Mutual Insurance Company	Yes	The US market does not have the capacity to underwrite the risk.	Lack of knowledge, desire and capacity.	The USDA picks up the limited exposure now.	From my perspective. I don't see any great support.
Ukraine- Etalon Insurance Company	No	Livestock Insurance needs government support			
Ukraine-TAS Insurance Company	No	Livestock production just started to develop and the producers start to display interest in insurance of their livestock	The market demand is not clear to insurance companies. Lack of marketing research on agricultural insurance.	Introduction of mandatory insurance program	Exchange of experience with foreign companies. Design of new insurance programs based on market research.
USA-Oklahoma Farmers Union Mutual Insurance Co	Yes	When we have our first loss due to epidemic disease the farmers will be looking for a product, the bankers will be requiring coverage on their collateral and the government will be looking to the insurance industry to provide a product.	Not much demand for it today, before the outbreak, and no rating history or development, possible lack of reinsurance market.	You will have to have a loss for the farmers to even think about needing the coverage first. The government could provide a backstop or reinsurance like they have on terrorism.	Availability at an affordable price. Universal coverage that everyone has to participate in to spread the risk and cost of the program.
USA-Cooperative Insurance Companies	Yes	A general lack of risk awareness and cost	Acceptance by the marketplace of a real need for the product and cost.	Public education and information sharing	I am not able to envision the development of such a worldwide product.
Russia-First Insurance Company LTD	No	WTO entrance, entering foreign companies to Russian market Cheap labour resources. The fear to lose business	There are no problems in products design. Russia always had talented specialists	Writing off all debts No taxes for farms during the next 5 years Access to cheap finance	Founding a State insurance company on mandatory agricultural insurance using 50% subsidies for premiums from the

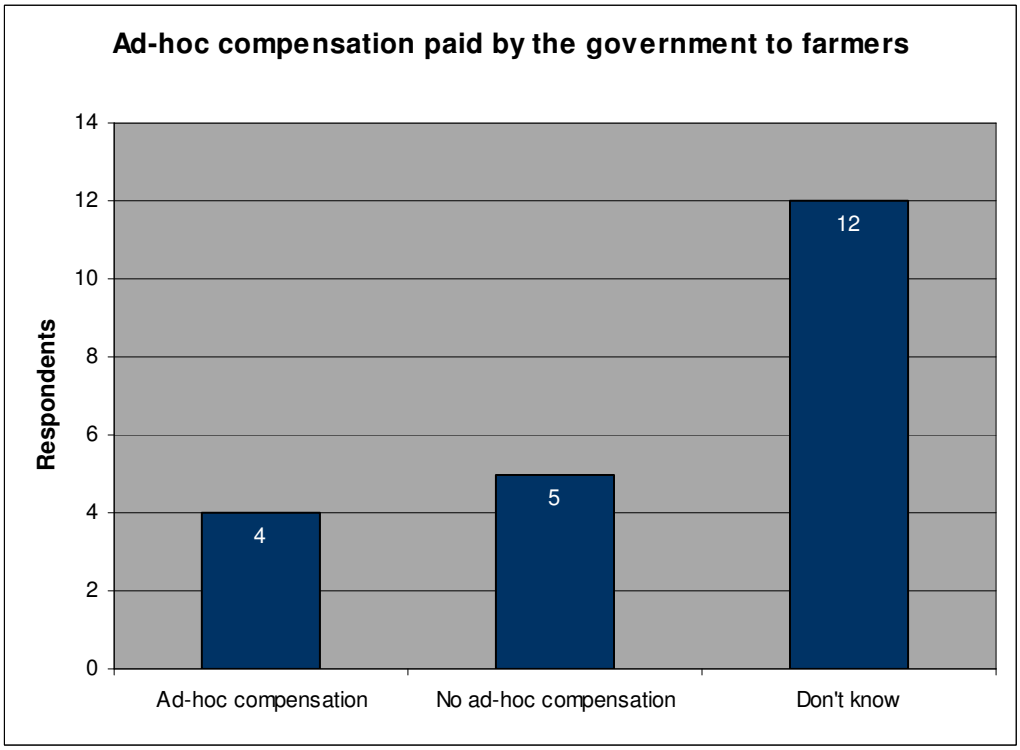
				It is a know fact that one working place in agricultural sector provides 10 working places in other industries Organization of the State insurance company n mandatory agricultural risks insurance using 50% subsidies for premiums from the federal budget, facilitating the agricultural insurance and reinsurance pools.	federal budget, facilitating the agricultural insurance and reinsurance pools.
Israel- IFNRA Insurance Fund for Natural Risk in Agriculture	Yes	All diseases and most of the farmers are covered so the place to grow is limited.			Global interaction and knowledge and informing all about epidemics and ways to fight them together
USA-COUNTRY Insurance and Financial Services Group	No	I do not feel that epidemic livestock disease insurance will be a growth segment in terms of future development for our market (Illinois) due to the steadily declining number of livestock. Livestock in our market is not the major agriculture commodity that it once was.	The main barrier would again be the decline in growth of livestock.	I feel that if a major disease epidemic should occur, the appropriate role of the government would be to provide financial (catastrophe) assistance.	Unknown
Chile-Asociacion de Aseguradores de Chile	No	El mercado potencial es muy pequeño (la agricultura en su conjunto representa el 5% del PIB), por lo cual el primaje requerido será muy alto.	No existe conciencia del seguro (nunca se ha asegurado el ganado vivo), no hay incentivos para asegurar y desarrollar programas tiene costos muy elevados.		
SE-Agria Djurförsäkring AB	No	The number of infectious diseases is increasing as a consequence of more cross-border mobility. This leads to	High risk and difficulties of finding re-insurance at a reasonable cost.	(At the European Level) Common epizootic legislation and increased control of livestock trade.	

		increasing need for insurance.	Health control programmes reduces the risk and thus lowers the barriers to develop new insurance products.	Restrictions on mobility of livestock, quarantine regulation and prevention of smuggling. (At the National Level) Increased control of livestock trade. Restrictions on mobility of livestock, quarantine regulation and prevention of smuggling. Campaigns to increase knowledge of infection. Control of imported livestock. Improved health control programmes.	

Question 30: Is there a public compensation scheme for losses of farmers due to epidemic livestock diseases in your country (without involvement of private insurers)?



Question 31: Was there ad-hoc compensation paid by the government to farmers (not related to a public compensation scheme) in case of epidemic livestock diseases in the period 2000-2005?



Insurers reported ad-hoc compensation by the government from the US, Great Britain, Greece and the Netherlands.