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Report of the

FAO–DOF WORKSHOP ON THE OPTIONS FOR A POTENTIAL INSURANCE SCHEME FOR AQUACULTURE IN THAILAND

Bangkok, 24–25 September 2009

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
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PREPARATION OF THIS DOCUMENT

This report gives an account of the presentations and discussions during the two-day workshop on the options for a potential insurance scheme for aquaculture in Thailand, held from 24 to 25 September 2009. The workshop was a collaborative activity between the Thai Department of Fisheries and the Food and Agriculture Organization of the United Nations. The workshop was preceded by a one-day seminar on the sustainability of the shrimp farming industry organized by the Thai Department of Fisheries. The report was prepared by Philip A.D. Secretan, consultant.

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ABSTRACT

In recognition of the important role played by the shrimp farming industry to the Thai economy, the Department of Fisheries of Thailand and FAO conducted a joint workshop to provide stakeholders with a detailed overview of the benefits of, and requirements for, a successful establishment of a mutual insurance scheme that responds to the needs of the Thai shrimp farming industry and meets overall objectives of the Royal Thai Government. The Workshop recognized the need for and supported the establishment of a mutual for the Thai shrimp farming industry and identified the following risks to be part of an insurance solution, among others: natural perils damaging the stock, diseases, other perils such as theft and mechanical failure, and price fluctuations. The mutual should include small- and medium-scale shrimp farmers as well as other groups such as local feed distributors and hatchery operators. The Workshop recommended that the basis of insurance should be cost incurred. There was general consensus regarding the need for a mutual as a good insurance solution for the Thai shrimp farming industry, but an issue was raised regarding the existence of a legal framework under which a mutual can operate. In this regard, it was felt that Government assistance would be required to provide the appropriate solution.

CONTENTS

ABBREVIATIONS AND ACRONYMS

APRACA	Asia-Pacific Rural and Agricultural Credit Association
BMP	Best management practice
CoC	Code of Conduct for Responsible Shrimp Aquaculture
DOF	Department of Fisheries
FOSCOT	Federation of Shrimp Farmers Cooperative of Thailand
GAP	Good Aquacultural Practices
HACCP	Hazard Analysis and Critical Control Point
ICMIF	International Cooperative and Mutual Insurance Federation
MPCI	Multi-peril crop insurance
NACA	Network of Aquaculture Centres in Asia-Pacific

EXECUTIVE SUMMARY

Thailand is a leading exporter of shrimp in the world. The Thai shrimp farming industry is dominated by small-scale farmers and provides livelihoods to about 700 000 people. It has an annual production of about 500 000 tonnes, 90 percent of which is exported to international markets. However, shrimp farmers face many risks in hatchery, nursery and grow-out operations, such as: disease outbreak, environmental degradation, pollution, adverse weather conditions, natural disasters, and commodity price fluctuations. Losses, particularly to small-scale farmers, can be substantial and affect not only shrimp farming households, but also other actors in the value chain such as processors, marketers and financiers. The Thai Department of Fisheries (DOF) has taken a number of initiatives to improve management at the production level and ensure the competitiveness of the Thai shrimp farming industry, such as the provision of technical service programmes, setting up of certification schemes (GAP and CoC) and the establishment of a full traceability system.

The Regional workshop on the promotion of aquaculture insurance in the Asian region that FAO organized in collaboration with the Indonesian Directorate General for Aquaculture, the Network of Aquaculture Centres in Asia-Pacific (NACA), and the Asia-Pacific Rural and Agricultural Credit Association (APRACA), in Bali in May 2007, put forward "Guidelines for actions aiming at addressing insurance and other risk management needs in developing aquaculture in Asia". These guidelines include the development of a layered risk management system, called the "hybrid approach".

The hybrid approach is a combination of improved on-farm risk management strategies through best management practices; support to the creation of mutual insurance schemes among groups of fish farmers and their associations for the first level of insurable risks; participation of national and international insurance companies for the remaining layers, and well-managed government emergency disaster relief systems alongside with improved extension services.

In recognition of the important role played by the shrimp farming industry to the Thai economy, DOF and FAO conducted a joint workshop to provide stakeholders with a detailed overview of the benefits of, and requirements for, a successful establishment of a mutual insurance scheme that responds to the needs of the Thai shrimp farming industry and meets overall objectives of the Royal Thai Government. The workshop was attended by representatives from government agencies, shrimp farmer cooperatives, fish marketing organizations, the academe, the private sector and the media. Resource persons from the global insurance industry who are leaders in the fields of mutualization, reinsurance, claims and loss adjustment, and aquaculture insurance and with over 30 years of experience in their respective fields in different parts of both the developed and developing world provided their expertise. The workshop participants shared their experiences, perspectives and views during the working group session.

A mutual insurance scheme is the most suitable insurance solution for the Thai shrimp farming industry in the absence of commercial insurance companies. Mutual insurance schemes have provided a good insurance solution to agricultural insurance in many parts of the world for many years and have been established by all sorts of groups including farmers, universities, oil companies, ship owners, professionals, banks and cooperatives. A mutual insurance company is owned and controlled by its members and decision making is based on what is beneficial for the industry. As such, it is flexible and can respond to the specific needs and circumstances of its membership in terms of pricing, claims handling and cover provided. Because of its grassroots-level network, a mutual is highly preferred by reinsurance companies, which are necessary for covering catastrophe and large semi- and systemic risks.

All stakeholders from shrimp farmers and their cooperatives, government, insurers and reinsurers need to work together to establish a viable mutual insurance company for the shrimp farmers. It is in the best interest of both the public and private sectors to have an aquaculture mutual insurance scheme in order to protect the livelihoods particularly of small shrimp farmers and ensure the stability of shrimp

farming operations. The government has a critical role to play in providing an enabling environment through a policy and legal framework that would allow the establishment of a mutual insurance scheme for shrimp farmers in Thailand.

The Workshop recognized the need for and supported the establishment of a mutual for the Thai shrimp farming industry and identified the following risks to be part of an insurance solution, among others: natural perils damaging the stock, diseases, other perils such as theft and mechanical failure, and price fluctuations. The mutual should include small- and medium-scale shrimp farmers as well as other groups such as local feed distributors and hatchery operators. The Workshop recommended that the basis of insurance should be cost incurred. **There was general consensus regarding the need for a mutual as a good insurance solution for the Thai shrimp farming industry, but an issue was raised regarding the existence of a legal framework under which a mutual can operate. In this regard, it was felt that Government assistance would be required to provide the appropriate solution.** An alternative was mentioned where a shrimp cooperative would act as an agent of an insurance company by collecting premiums and as a facilitator between its members and the insurer. However, comment was also made that the insurance industry had shown extreme reluctance to provide any meaningful cover so far to the shrimp farming industry.

The Workshop recommended that:

1. A Steering Committee should be established;

2. The Steering Committee should report on the social, legal and financial feasibility of establishing a Mutual Insurance Company for the Thai shrimp farmers;

3. Seek technical assistance and advice from experts.

1. INTRODUCTION

Aquaculture is one of the steadiest growing farming activities in the Asian region. However, fish farmers face many unusual and unique uncertainties and risks in relation to their husbandry operations. Diseases, adverse weather, theft, predation, pollution, flood, fire and many other perils, can cause sickness, loss of stock or of performance, or death. Losses to farmers can be substantial, and they are rendered all the more difficult to manage by virtue of the fact that aquaculture is conducted in water. Losses can affect other entities in the aquaculture economy, namely processors and marketers, who depend for their livelihoods on a supply of livestock, livestock products, fish and other products of aquaculture operations. They can also affect financiers and other investors who are dependent on the profitability of the farming operations with which they are associated; the effect of catastrophic losses on national finances, especially when an industry is one of major national significance, can also be very serious.

The Food and Agriculture Organization of the United Nations (FAO) estimates the number of aquaculturists in Asia at nearly 11 million. The Organization believes however that less than one percent has adequate insurance coverage. In general, only large-scale aquaculture enterprises are insured, leaving small-scale entrepreneurs with very little or no access to insurance. The conditions for any farm to be considered insurable, and for a self-sustainable insurance market to appear, are particularly difficult to meet as far as small-scale farming is concerned. High administrative costs causing high premiums, mismatches between farmers' preferences and willingness to pay, inadequate legal and regulatory framework, distorted government incentives, lack of interest from the commercial insurance industry and markets, are among the main impediments.

A blend of risk coping strategies, i.e. on how to reduce the impact of losses, and risk reduction, elimination, and mitigation strategies that aim to reduce exposure to the potential occurrence of overall risk is highly recommended and can be of immense social benefit. If embedded in a holistic approach, insurance is an important risk transfer instrument, and the development of commercially viable insurance and risk management programmes, adapted to local conditions, should be pursued.

The Regional workshop on the promotion of aquaculture insurance in the Asian region that FAO organized in collaboration with the Indonesian Directorate General for Aquaculture, the Network of Aquaculture Centres in Asia-Pacific (NACA), and the Asia-Pacific Rural and Agricultural Credit Association (APRACA), in Bali in May 2007, put forward "Guidelines for actions aiming at addressing insurance and other risk management needs in developing aquaculture in Asia". These guidelines include the development of a layered risk management system, called the "hybrid approach". The hybrid approach is a combination of improved on-farm risk management strategies through best management practices; support for the creation of mutual insurance schemes among groups of fish farmers and their associations, for the first level of insurable risks; participation of national and international insurance companies for the remaining layers, and well managed government emergency disaster ("systemic") relief systems alongside well organized and directed extension services.

At a recent conference in Dubrovnik, Croatia, on 26–27 March 2009, organized by AUMS (Aquaculture Underwriting and Management Services) Ltd) and attended by key players in the global aquaculture insurance industry, a paper on "The insurance needs of shrimp farmers in Thailand" presented by a representative of the Federation of Shrimp Farmers Cooperatives of Thailand (FOSCOT), generated keen interest among delegates. It demonstrated that sectors of the shrimp farming sector of Thailand, together constitute an ideal group for the application of the hybrid approach. A further paper in the same conference session advocated mutualization as the approach that could offer the best way forward. It strongly advocated the formation of a mutual insurance company that would be owned and operated by the shrimp farmers themselves, as the best way forward.

As a result of the general interest shown at the Dubrovnik Conference on the insurance needs of the Thai shrimp industry, FAO and the Department of Fisheries (DOF) of Thailand jointly supported a workshop on the "Options for a Potential Insurance Scheme for Aquaculture in Thailand", which took place on 24–25 September 2009, in Bangkok. The two-day workshop was preceded by a one-day seminar on the sustainability of the shrimp farming industry organized by the Thai Department of Fisheries. The workshop was attended by representatives from government agencies, shrimp farmer cooperatives, fish marketing organizations, the academe, the private sector and the media. Resource persons from the global insurance industry who are leaders in the fields of mutualization, reinsurance, claims and loss adjustment, and aquaculture insurance and with over 30 years of experience in their respective fields in different parts of both the developed and developing world provided their expertise. The workshop programme is attached as **Appendix A**, the list of participants as **Appendix B**, and the presentations by the resource persons from the insurance industry are presented in **Appendix C to Appendix L**.

2. OPENING OF THE WORKSHOP

Welcome remarks

Mr Hiroyuki Konuma, FAO Deputy Regional Representative for Asia and the Pacific[1] welcomed participants to the workshop, stressing that it was a collaborative effort by FAO and the Department of Fisheries of the Royal Thai Government that was designed to address a key issue related to sustainable aquaculture development in Thailand and other countries in the region. He expressed his gratitude to the Department of Fisheries for their effort in arranging the workshop.

He emphasized that aquaculture is one of the steadiest growing farming activities in the Asian region, playing a significant role in rural livelihoods, economic development, and national food and nutrition security in many Asian countries, such as Thailand. However, he emphasized that fish farmers were regularly threatened by many unusual and unique uncertainties and risks in relation to their farming operations. Substantial economic losses, he said, often resulted from natural hazards such as flood, cyclone, tsunami and other extreme weather conditions, severe disease epidemics, as well as from human factors like pollution and poaching, which usually lead to significantly reduced production or even total loss of the cultured stock and facilities. The uncertainty and risks associated with aquaculture not only impact the livelihood of the farmers but also threaten the sustainability of the sector. Largely due to the technical complexity and other constraints, fish farmers are barely covered by any type of insurance safety net of a kind that had been offered to other agricultural sub-sector. This was despite much greater uncertainty and risks faced by fish farmers.

FAO and the Royal Thai Government timely envisaged the urgency to explore the options for a potential insurance scheme for aquaculture in Thailand, which led FAO and Thai DOF to join efforts to conduct this workshop. He reiterated the objective of the workshop and the expected outputs, thanked the staff of Department of Fisheries of the Royal Government of Thailand, FAO colleagues and invited external resource persons for their dedicated efforts and inputs in preparing the workshop, and wished the workshop a successful and fruitful outcome.

Opening address

The workshop was opened by Dr Somying Piumsombun, Director General of the Department of Fisheries, on behalf of the Royal Thai Government, who extended a very warm welcome to all experts from FAO and participants of the workshop. Dr Somying expressed sincere thanks to FAO for supporting the workshop and providing the resource persons to deliver it.

Dr Somying advised that the Thai aquaculture sector had been developing and playing an important role in Thailand for 50 years, by providing fish food supply to meet consumer demand. She

[1] Mr Konuma was appointed Assistant Director General/Regional Representative for Asia and the Pacific (RAP) and assumed this position beginning 1 March 2010.

emphasized that Thailand is one of the largest exporter of aquaculture products, especially shrimp and their products, and pointed out that consumers have long been concerned about food safety. She informed the meeting that Thailand Department of Fisheries has developed two aquaculture certification programs – Good Aquaculture Practice (GAP) for all species including marine shrimp and Code of Conduct for Responsible Shrimp Aquaculture (CoC) for marine shrimp – on the basis of international standards.

Dr Somying advised that Thai aquaculture farmers face many problems, including knowledge acquisition as well as organizing themselves to meet these standards. They also faced the usual risks found throughout the industry, such as disease outbreaks, pollution, and flood. Such risks are uncontrollable and can cause production losses that affect the economy and cause substantial losses to farmers. She further stated that aquaculture insurance could be one approach that could help Thai aquaculture farmers to reduce their losses from such risks. In this context she expressed the hope that the workshop would be able to point the way forward to developing aquaculture insurance. She advised that she looked forward to a successful outcome of the workshop, not only in engendering an approach that could be used in Thailand but also in other countries.

She thanked FAO for supporting what she said was an important workshop, and for providing the resource persons. She felt the workshop would be an interactive platform for the exchange of best practices among all stakeholders.

3. WORKSHOP BACKGROUND AND OBJECTIVES

Dr Susana V. Siar, Fishery Industry Officer of the FAO Fisheries and Aquaculture Department outlined the activities leading to the workshop, the cooperation between the Department of Fisheries of Thailand and FAO, and the workshop objectives. Dr Siar traced the history of FAO's involvement in the area, from 2006 when FAO conducted a review of the state of world aquaculture insurance.[2] One of the findings of the review was that there is a high demand for aquaculture insurance but mutual insurance schemes in aquaculture are insignificant, yet there is an increasing awareness of aquaculture insurance among aquaculture entrepreneurs.

After the study, the FAO and the Department of Fisheries, Indonesia, sponsored a regional workshop, in Bali, Indonesia, on the promotion of aquaculture insurance in the Asian region. The Bali workshop endorsed guidelines for actions aimed at addressing insurance and risk management needs for developing aquaculture in Asia, including the development of a "layered risk management system".[3] At the bottom of the layered system is improved farm management practices developed through best management practices (BMPs) by the farmers themselves. Next is the development of mutual insurance schemes among groups of farmers and their associations which forms the first level of insurable risk. The next level consists of national and international insurance and reinsurance markets. Finally, the top level will consist of well managed government agency disaster relief schemes and improved extension services. The approach was endorsed by the Bali workshop.

For this Bangkok workshop, the DoF brought together the stakeholders in the Thai shrimp industry – government representatives, shrimp farmers, their associations, their cooperatives, and those involved in insurance and finance, whereas FAO provided technical assistance by bringing together experts from the international insurance industry.

The objective of the workshop was to provide participants with a detailed overview of all aspects of mutualization as related to other open market insurance alternatives. It was designed to foster a full

[2] Review of the current state of world aquaculture insurance. FAO Fisheries Technical Paper 493. Available at http://www.fao.org/docrep/009/a0583e/a0583e00.htm

[3] Guidelines to meet insurance and other risk management needs in developing aquaculture in Asia. FAO Fisheries Technical Paper 496. Available at http://www.fao.org/docrep/010/a1455e/a1455e00.htm

understanding by all parties concerned of the benefits of, and requirements for, a successful establishment of a mutual insurance scheme for Thai aquaculturists. Of critical importance, it addressed the development of a layered risk management system that responds to the needs of the Thai shrimp farming industry and meets overall objectives of the Thai Government.

The workshop was intended primarily for key Thai shrimp farming industry managers and financial and other senior decision-makers and for key government representatives with responsibility for the industry. The number and list of participants was decided in consultation with all concerned parties. The purpose of the workshop was to outline to participants all the issues and the various options, inputs, legislative infrastructures, and supportive mechanisms involved in mutualization, with the objective of ensuring that a mutual has full support at national level. The workshop also sought to determine which issues are of most concern to the industry, and what solutions would best suit the industry's particular circumstances. A further objective was to examine and explain the optimal financial structure required, for a mutual insurance company to be successfully formed and effectively meet the needs of small to medium-sized producers. The position and role of a mutual insurance scheme in the broader context of a layered risk management system for the industry also needed to be carefully explained so that these were clearly understood by all parties concerned. Finally, the workshop addressed and analyzed potential conflicts of interest and confusion between social concerns and commercial interest arising out of mutualization.

4. PRESENTATIONS

4.1 Shrimp farming industry: risk or aquaculture insurance?

Dr Putth Songsangjinda, Aquacultural Research Division, Department of Fisheries, Trang Coastal Aquaculture Station

Thai aquaculturists have two choices, they can either carry the risks to their operations themselves, or they can work to develop some kind of compensation system. In his paper he provides a picture of the Thai shrimp industry, and goes into the risks it faces, emphasising the technical risks the industry faces. The industry covers approximately 70 000 hectares, there are around 13 000 farms, 85 percent of which are small-scale operations. The figure of 13 000 is approximate because since the survey, some of them may have elected not to grow shrimp because it is too risky for them, and others who were willing to bear the risk, suffered losses and have stopped farming. For the farmers who dropped out, the business is not sustainable.

Production is split between black tiger shrimp (1 percent) and white shrimp (99 percent). There are 300 processing plants. There may be more than this, but this is the number that is HACCP-certified. HACCP certification is a recognized guarantee of quality and food safety, so quality in the Thai shrimp industry is not a significant problem. Production is between 400 000 and 500 000 tonnes, of which 80 percent is exported. Dr Putth advised that the figure of 50 percent exports shown in his presentation needed verification, as he had heard a different figure of 80 percent mentioned. Fifty percent of production goes to the United States of America, 18 percent to Japan, 11 percent to Europe, and 21 percent to other destinations. Reports have stated that 1.5 million people are connected to the industry, others say that it employs around 70 000 people. The latter figure is approximately between 1 percent and 1.5 percent of the Thai population, so it is a very important industry to the country. Government policy is that it wants Thailand to be the shrimp centre of the world.

The major part of the Thai shrimp farming is intensive. Ponds are not large and are located in groups. Shrimp fry are stocked in ponds at between 60 and 120 fry per square metre, so the total could be 100 000 to 300 000 fry per rai (1 rai is equivalent to 1 600 square meters). The farmers have learned that the more intensively they stock, the higher the risks involved. The values are also greater. The consequences of making a mistake are that if one pond is lost it takes successful production in five

other ponds to compensate for what has been lost. Production runs at between 10 and 20 tonnes per hectare, depending on stocking rate at a size range of 50 to 100 shrimp per kilogram. Farmers can choose the size of the shrimp they produce. The industry needs good quality shrimp fry, and good quality water with high dissolved oxygen levels. Levels of metabolites and phytoplankton have to be carefully managed and kept low, so that the shrimp do not suffer stress which will impede their growth. The factors involved in water quality are many; some problems have been solved, but others still present challenges and corresponding risks. However, creating a stable environment is the key to shrimp survival and growth, and to a certain extent this also involves having the right equipment. The industry has the right conditions but it has to learn how to manage dangerous residues and ensure the health of the stock.

Productivity has doubled since the industry moved from production of tiger shrimp to white shrimp. But whether the industry produces 500 000 tonnes or 600 000 tonnes depends on the market supply situation. If more than the market demand is produced, prices will inevitably go down because agricultural products cannot be stored satisfactorily, especially over the long term, as quality declines with time. The Thai government has therefore looked at a system of balancing production with demand. However, it has not proved easy to control production, so the price risk is likely to continue. Risks start at the beginning of the cycle, in the hatchery, and the challenge is to achieve good quality larvae entering the on-growing system. If hatcheries produce poor quality fry, a higher risk is transferred to the on-grower. Risks in the grow-out phase include environmental degradation, disease, and various forms of disaster.

Disasters are usually clear. They arrive suddenly, as for example with flood and tsunami, and their effects depend on when they occur during the growing season. The environmental risk is the responsibility of the shrimp farmers. It is up to them to ensure that they use the environment responsibly and sustainably. If the environment is not treated responsibly, the risks of shrimp farming increase accordingly. Low quality source water has to be changed frequently or the shrimp eat less food, which increases the overall risk exposure, so there is a linkage between different risks. If low quality source water can be eliminated, it would have a beneficial knock-on effect, but doing so takes time. Another risk is the deterioration of the pond itself. If bad residues cannot be removed, or the ponds cannot be cleaned or disinfected, there will be an effect on every round of production, as the fry that are introduced will not grow. All the risk factors increase costs and reduce income. Bad water quality might reduce output sizes from 20 grams to 15 grams with the price dropping accordingly from Baht125 to 100 per kilogram. At the worst, the entire crop will die. Feed price is also a very important economic factor.

Then there is the risk posed by disease. This can be caused by conditions in the pond. If a pond is used for a long time and not managed properly, the risk will increase as the bad environmental water conditions created lead to higher disease risks. The disease risk can be handled in various ways, including improving water quality and employing preventive measures, but it can never be eliminated entirely. It can be severe and cause total destruction of a pond. If shrimp do survive, their quality and thus marketability may be reduced. This can affect a farmer severely, and may result in him leaving the business. Overall, there may be a loss of exports.

One area where insurance could be very helpful is in raising finance from banks. Banks view shrimp farming as high risk and are unwilling to provide finance. If a good insurance scheme is in operation, farmers would be able to show that they had protection. This would help to satisfy the banks, and it could also help to obtain credit from feed manufacturers and other suppliers. But the insurance system needs to be properly designed, and to this end it is very important that the farmers should be involved in the design process. Thailand is involved in the beginning of this, and if we get it right, other countries will learn from Thailand. Dr Putth concluded his presentation with an outline of what the Department of Fisheries has done to decrease the risks of the industry. The Department of Fisheries has implemented a certification programme which can help to decrease risk by attempting to remove bad practices from the industry and introducing good ones.

4.2 A hybrid approach to insurance

Mr Philip A.D. Secretan, Managing Director, AUMS (Aquaculture Underwriting Management Services) Ltd, England

Mr Philip A.D. Secretan started by describing the "hybrid concept" as a framework by which small to medium sized producers can gain access to insurance and all the advantages it brings. He emphasized that the concept was as applicable to agriculture as it was to aquaculture, and suggested that it might be advantageous if agriculture and aquaculture producers worked together to develop common insurance facilities and solutions.

He outlined some facts about the international insurance industry. The industry is based in the financial centres of the world. It consists of insurance companies who provide the fundamental insurance cover on a strictly profit driven basis. That they are required to make profits is an essential fact that cannot be avoided. Alongside the insurance companies are the insurance brokers who devise insurance schemes and structures, and who bring business to the insurance companies. They are also profit driven and generally operate on a commission basis, earning anything up to 30 percent of the premiums paid by insurance buyers. The third component of the market is made up of the reinsurance companies – the "insurers' insurers". Reinsurance is the process through which insurance companies protect themselves against the extremely large losses that can occur – the major hurricanes, cyclones and typhoons, and large floods fires and Tsunamis etc., and it is a vital part of the market.

Some facts about the aquaculture insurance market: it has been dominated by major international aquaculture producers, mainly of finfish, especially salmon, tuna, sea bass and sea bream, and to a lesser extent trout. All the majors have very sophisticated management, equipment and technology budgets. But in spite of sophisticated management, there have been very heavy losses in every sector of the industry. The experience of insurer, at best, is that the industry has only been marginally profitable. At worst, it has caused them considerable losses. As a result, many insurance companies have entered the market, experienced big losses, and pulled out. Storms, floods, diseases, earthquakes, Tsunamis, and many other perils, have caused significant losses in major production areas. The adverse experience has resulted in insurers choosing the business they underwrite, on a very selective basis. They require very high standards of management and operation from the farms they agree to insure. Adverse experience has also resulted in them demanding very high premiums. The way the aquaculture insurance market has thus developed has resulted in insurance being restricted to very large producers with big financial resources and highly sophisticated management and risk management capabilities. The result of this selectivity is that small to medium-sized producers have found it extremely difficult to buy insurance.

As has already been mentioned, recognizing these problems, FAO organized the Bali Workshop in 2007. It asked what action could be taken to meet the insurance and risk management needs of small and medium-sized aquaculture producers in Asia, and it proposed an answer, that all interested parties – governments, producers and suppliers, and the specialist insurance market – should work together in partnership, to implement a "hybrid" approach to managing risk. Insurance offers many benefits including, raised operating standards, compensation for disasters, assistance in recovering from third parties, access to cutting-edge risk management technology, improved credit worthiness, and a better image and reputation with customers. All combine to help in wealth creation and poverty alleviation. But the question, why the insurance industry should be interested, has to be asked. The only answer is to make a profit. This raises potential conflicts of interests, because governments' interests are altruistic, not commercial. They want to see producers insured against all risks, including those that the insurance industry cannot cover. Producers, on the other hand, want the widest possible cover at the cheapest rate. In order to make a profit, insurers cannot cover certain perils that they regard as highly likely to occur and cause catastrophic damage, for example the risk of cyclone in areas of low-lying coastal aquaculture.

These conflicts of interest can be overcome, providing governments play a role. If the insurance industry cannot, in their judgement, cover certain risks and achieve profitability, then, if governments

view it as in their national interest that their industries be protected against such risks, governments must be prepared to provide cover themselves. Such risks and the financial threat they pose, are generally referred to as the "systemic risk", a term that is extensively used elsewhere in the workshop proceedings. But governments need not view this with any trepidation! When providing cover against systemic risks, governments can benefit greatly if the non-systemic risks are covered by the insurance industry. Insurers have standard procedures for evaluating production units and establishing total values across an industry. They also have well tried procedures for handling losses, including standard frameworks for establishing values, quantifying amounts of stock lost, determining cause, maximising salvage, and generally establishing the correctness of the amounts claimed. Such a comprehensive service would be available to governments in a partnership situation, and would remove the need for governments to set up their own system risk managing systems. That would be an expensive and not necessarily effective exercise.

In an ideal "hybrid" situation, a government's commitment could be established within a written, legally binding policy framework, of a kind that the insurance industry uses all the time. Every aquaculturist could be then be provided with full documentation outlining all the terms and conditions of the government's cover. In the event of a systemic disaster, the government could rely on the insurance industry's loss adjusters, appointed under the insurance industry's standard claims handling procedures, to handle the losses. They are able to do this on a highly skilled basis and the government would have the comfort of knowing that situation would be handled with the highest efficiency and integrity, with full accountability, and on a 24-hour basis, from first reports of the event, until final settlement. In aquaculture, it is particularly important that losses are adjusted very quickly. In a country like Thailand, where high ambient temperatures are the norm, dead fish or shrimp will deteriorate and disappear very quickly. So adjusters of aquaculture claims have to respond very quickly, and they could act just as quickly to protect a government's interest. They will rapidly evaluate a situation, consider mitigating action that can be taken, authorize it, take samples, organize salvage action, and generally bring their wide experience to bear on making the situation better and less economically damaging. This could be extremely helpful to the aquaculturist, and it could also work very much to the advantage of any government committed to protecting an industry from major, systemic, losses.

It is important to recognize that one of the added bonuses of being insured is that the producer is not alone when something bad happens. His insurers have an interest in the well-being of his crop, and will do the best they can to help him overcome disasters. This is particularly relevant when external situations and circumstances affect the aquaculture production unit. An individual producer, especially a small one, will not be able to defend himself with the strength and power that his large insurer have. When it becomes known that a producer is insured, and will not therefore be an easy prey to a potential industrial polluter for example, it engenders a different attitude in the industrialist, who will pay much more attention to his safety procedures. This is good for all parties. This relationship between government, the producer, and insurers is what the hybrid concept is all about. It can be a natural partnership that delivers a lot of benefits to all the partners, but it is easiest to achieve through an industry wide insurance scheme. Unless there is a centralized insurance scheme for producers, the systemic risks that the government has to bear would have to be handled by the government on its own. That could be a very messy and expensive arrangement for the government.

There is a tremendous opportunity here for the Thai shrimp producers. It is called "mutualization". This is not a word that exists in the Thai language, so "cooperation" or a "cooperative approach" will do instead. The concept involves the creation of a "cooperative" insurance company that is owned and operated by Thai shrimp producers, who share a financial interest in it. This "mutual" insurance company would be able to collaborate with the Government, with the Government knowing that everything that it agreed with the Mutual Insurance Company, would directly benefit the shrimp producers, because they own it!

It is important to emphasize that a mutual company is not an exclusive insurance company. If there are sectors of the Thai insurance industry that want to participate in such an industry-wide insurance

arrangement, it can be arranged. So we are not talking about a cartel arrangement. Forming a producer-owned mutual insurance company may seem to be a difficult direction to take. It is not.

Mutualization is very common in many countries of the world. There are hundreds of successful mutual insurance companies operating in many industries, especially in agriculture. Significant international development funds may be available to help in the formation of individual mutuals. These could be very interesting to the Thai shrimp industry if it decides to adopt the mutualization approach. In that respect, mutualization is a very well coordinated international "movement" with its own international organization that can be very supportive of those looking to join the movement. Paul Koronka of Regis Mutual Management Ltd. is an expert in this field; he will be addressing all the issues surrounding mutualization, in four presentations he will deliver over the remainder of this workshop, and participants will be able to obtain a detailed insight into all the advantages of mutuality, and measure its advantages against the other ways that the shrimp industry might be able to spread its risks.

4.3 International aquaculture loss experience

Mr Mark Vos, Director of Client Services, Crawford & Company, The Netherlands

Mr Mark Vos discussed the following topics during his presentation: fish mortality insurance; background on risk management; relevance to Thai aquaculture; and how it would apply to Thailand. Crawford & Co. is an independent loss adjusting company with headquarters in Atlanta, Georgia, United States of America. It has 10 000 employees and is represented in 67 countries, one of which is Thailand, where Crawfords have been represented for 20 years. Crawford is extensively involved in the worldwide aquaculture industry.

The role of an adjuster is to assess losses and report to the insurers how much they need to pay, according to the terms of the insurers' policy. In doing this, they act entirely independently. If a loss is not covered under the terms of a policy, the adjuster is not responsible. It is insurers' decision. Insurance is about unexpected events. An oil tanker which pollutes the shore is an unexpected event, but there is a distinction between that, and, for example, the high usage of fertilizers in the agriculture industry that pollutes a water body, leading to lower and lower production from ponds over a number of years. While the former may be considered an insured event, the latter is not, because it occurs over a long period. This is a very important distinction! The dramatic event of an oil tanker causing pollution is something that the insurance industry can cover, but the gradual pollution of an area over a long period is a matter for government to deal with. The government must support operators in such a situation, and to seek ways of remedying the problem.

In aquaculture, the standard perils for onshore/offshore risks are the following: pollution; theft, predators; predation or physical damage caused by predators or other aquatic organisms (but not by sea lice or other ectoparasites); storm, lightning, flooding, tidal wave, collision, sudden and unforeseen structural failure of equipment, e.g. moorings; drought, fire, lightning, explosion, earthquake; freezing, super cooling, ice damage; deoxygenating due to competing biological activity or to change in the physical or chemical condition of the water, including upwelling and high water temperature; any other change in concentration of the normal chemical constituents of the water, including change in pH or salinity; disease; mechanical breakdown or accidental damage to machinery and other installations; and electrical breakdown , failure or interruption of the electricity supply, electrocution.

Aquaculture insurance encompasses a number of insurable interests. The principle one, on which the workshop focused, was mortality (or "crop") insurance. In aquaculture crop insurance, the common practice is for the policy to name the risks against which the crop is insured. These will be different for onshore and offshore operations. Onshore operations, such as shrimp on-growing in ponds, are generally insured against pollution (according to a policy definition), theft and malicious acts, storm, lightning, explosion, tidal wave, collision, sudden and unforeseen structural failure of equipment, de-oxygenation (again, is defined in policy wordings) and disease. Offshore operations may be insured

against the same perils, but the manifestation of resultant damage may be quite different to onshore. Policies can vary between different species, production systems and areas, and indeed between different farms using the same technology. Internationally, aquaculture crop policies have evolved to handle complicated issues that arise with different perils. The way each policy handles each issue determines how an adjuster interprets the circumstances of each loss, and what he/she recommends the insurer to do to settle a claim.

Theft and predation are basic problems to all onshore and offshore aquaculture operations, including those based in ponds. So also are storm, flood, tidal wave, and collision basic perils, but their effect on ponds will be very different to marine cages, for example. Onshore ponds will be exposed to drought, lightning, and explosion. Lightning is not a substantial direct risk to shrimp ponds, nor is explosion a usual risk, but both can impact on the electricity supply to pond aeration and oxygenation equipment. Reductions in oxygen levels have caused mortalities of varying levels in pond based operations in many aquaculture production areas, and while physical damage to equipment, whether by lightning or another event, is a clear event, a reduction in oxygen saturation can arise from a number of causes. It can accompany the dense growth of different species of algae; it can occur in conditions of very high ambient temperatures, or be a by-product of drought.

Disease is a peril that can exist and cause mortalities over an extended period. Throughout the course of a disease, it is vital that veterinary support and control is there to help the farmer. Most policies handle the disease risk by applying special conditions to disease. These can include deductibles for disease, i.e. amounts that must be exceeded before a claim can be made, and also time limitations on payment. Payment may only be made for those mortalities that occur during a specific period, for example, of 30 or 45 days. It is therefore important to determine, as precisely as possible, when a disease started, and to follow its progress throughout its life, recording the mortalities throughout. Diseases can also fluctuate! A disease can suddenly disappear, only to start up again later. Any insurance policy that covers disease has to deal with the nature and overall effect that disease has on each insured operation.

In any loss situation, policy conditions require the insured to “act as though uninsured” and advise the insurers. Expertise should be brought in to help mitigate the situation. Particularly when disease is involved, veterinarians should be brought in and samples of affected stock sent for analysis to a properly equipped laboratory. The international experience shows that the risks to aquaculture crop are complicated, often difficult to define, and can also be very confusing in the way they operate. Designing policy insuring terms and conditions to cover them, in a clear-cut and unambiguous way is very difficult to achieve. Ambiguities and novel situations and issues have arisen and will continue to arise in the practice of international aquaculture insurance. The job of a loss adjuster is to deal with the normalities in a routine and consistent way, but to identify the anomalies and ambiguities and report on their relevance to the loss in relation to the policy terms. Whenever there is a loss, the crop value at the date of loss and at the site where the loss occurred is the basis of the insurance adjustment and any settlement. It is the fundamental basis of insurance. The value of the crop at that moment of loss is very important, and has to be proved as a part of the process of making a claim. The farmer has to understand how the policy works, and recognize that a proper risk management process is needed at all times. An insured farm should be properly maintained. If it is not, losses are inevitable.

The mortality insurance of stock is all about biomass and bookkeeping. Internal accounting procedures are very important in proving what stock was on the site when the loss began. It may not be possible for an adjuster to reach a farm within 48 hours, so a farmer needs to contact the adjuster by phone, obtain the adjuster’s instructions, and then keep a log of events, and record all the circumstance that have occurred. With regards to proof of loss, one of the important factors in the Thai shrimp industry is the “birth to death” certification system that the Department of Fisheries is implementing. The availability of a certificate showing the amount of postlarvae delivered to a farm, would be a positive factor in establishing proof of loss in a claim situation. The way biomass value is calculated is important. A starting value for the stock has to be established, then all the costs of the business apportioned as the crop is on-grown. Thus fry comes in at a certain price to which is added, on a daily

basis, fixed costs of labour, feeds, veterinary support, write-off of equipment, medicine and extra vet visits and the daily mortality rate (which may be ½ percent or 1 percent). Applying these factors enable the biomass and its value to be established at any particular moment. If daily mortality rises significantly above the normal daily amount, alarm bells should ring, and action should be taken to identify any problem, and find a solution to it. If mortalities continue, a claim may be involved, but this can only be determined by examining the cover offered under any policy of insurance.

A key issue is what caused a loss. Was it a single insured event, or multiple events? Did the loss or damage result from an insured peril? Was it accidental? Was it sudden and unique? These are important questions to which the adjuster has to get the correct answers. It is also the case that outside factors may intervene in the handling of a claim. Local authorities, for example, may insist that the crop is destroyed or buried. If that happens, or if the stock is completely washed away, the insured farmer will have to demonstrate the amount of the loss using his records, any veterinary reports, possibly local police or civic authority reports, and the farm's feed records. The latter can be a very useful factor in establishing stock levels on a farm. Feeding regimes and conversion factors are becoming increasingly standardized in aquaculture; they can offer a very valuable way of establishing stock numbers, and a way of cross-checking claims. Another issue of significant importance in international aquaculture crop insurance is compulsory slaughter. In some jurisdictions, authorities have the power to order the slaughter of perfectly healthy stock, in order, for example, to eradicate a disease; Canada is an example. Some governments reimburse farmers with a payment (which may, or may not be sufficient to cover the loss), but in other countries, there may be no compensation. Insurance policies may or may not cover the risk, depending on the terms of the policy. What is known as "sue and labour" is a further factor. If a loss of stock is threatened, a farmer is required to do everything reasonable to avoid it or reduce it. "Sue and labour" is the term insurers use to describe activities and spending on mitigating attempting to limit or reduce a loss. This may include killing off stock and sending it to market, treating it with medication, moving it to another location, hiring special equipment, all of which, as long as it is aimed at reducing the ultimate problem, is likely to be favourably considered under a mortality policy.

The shrimp industry sells its stock by size. This is an important factor in dealing with a threatened loss, especially disease. Stock of a certain size may be marketable, though it may not be the size at which the farmer was intending to harvest. Marketability at any point in the production cycle is contingent of the availability of processing capacity. Problems have arisen in the salmon farming sector, when salvage of large amounts of stock has been prevented because of insufficient availability of processing capacity. This problem can arise when there is a large-scale loss across a major production area, with many farmers deciding, all at the same time, to harvest stock. Alternatively, the Department of Fisheries may be in control and order the harvesting to take place. A potential loss may be reduced by harvesting early, but whether any shortfall of income is covered by insurance depends, again, on how the policy is designed. Policy design is vitally important in aquaculture crop insurance. All the examples given are based on the standard policies currently in operation across the international aquaculture insurance market. However, if the shrimp farmers in Thailand develop their own mutual they may decide they want to do things in a different way.

There is an element of extra expense necessary to mitigate a loss, so upon discovery of a potential insured peril, like a disease, the farmer should take the necessary measures to try and curtail it. In the case of a mudslide it may be necessary to use excavators to protect the area of the farm. There may be a disease situation that requires extra medicine to treat it. These are the kinds of costs that will be taken into account when a loss is in excess of the deductible. However, if a Thai mutual is established, it may be decided that these extra measures will be paid regardless of any deductible. It is a point to be considered by the managers. One final factor should be mentioned in this presentation – farm design. The design of a farm and the initial investment employed in building it can be very important in its ultimate success or failure. How ponds are built, how they are positioned, where a farm is located, can all be important factors in determining how the basic structure can withstand outside forces such as storm, flood, earthquake, and other extreme perils. Design is an extremely important factor in the commercial success of a unit.

4.4 The international reinsurance market

Dr Erich Kasten, Managing Director, Agriculture Reinsurance Consultants GmbH, Switzerland

Dr Erich Kasten started by saying that the paper deals with a different topic that will be new to many in the shrimp farming industry. Reinsurance is the insurance that insurance companies take out to protect themselves against catastrophic events. The presentation is designed to give an overview of the reinsurance market and industry, and to familiarize participants with natural disasters, trends, then periods, and why reinsurance is needed. It will then cover the specialist international reinsurance market of particular interest to shrimp producers, and to agriculture producers. Finally, the objective is to give participants some food for thought.

Slide 3 Appendix E shows the trends during the last 55 years, of increasing disasters globally. The top, green part of each column displays the amount of the total economic losses that occurred. The picture shows that in one year, around 1994, there were US$170 billion losses, which was almost matched in 2005 when losses reached US$160 billion, a major part of which was insured. Such large losses cannot be borne by a single insurance company. They have to be spread globally, among many other insurance companies, and among reinsurance companies. So reinsurers are the insurers of the insurance companies! This trend is caused by the fact that more values are insured and there are higher value concentrations in given areas. Bangkok is a good example of the change in value concentrations; 50 years ago Bangkok was totally different to Bangkok today. There is a much greater value concentration in Bangkok in 2009, than 50 years ago. For that reason, if a disaster strikes the losses will be much bigger. When typhoon, hurricane, or cyclone strikes large areas, there can be huge losses all at the same time. A local insurance company cannot assume those losses. It needs to have reinsurance from well capitalized international reinsurers.

Slide 5 Appendix E shows the world hazard map. All the green areas are where typhoons, cyclones, and hurricanes can hit. In Japan, through Northern India and Pakistan, to Turkey are red areas which show the zones that are exposed to earthquakes. Intense storms and earthquakes can strike across wide areas, and that is why insurance companies need to have reinsurance, because they cannot absorb the massive losses these perils can cause.

Slide 7 Appendix E shows another area of concern which is drought. Drought particularly affects agriculture. It is a systemic risk in crop production that can cause a huge disaster. The world map, in Slide 7 Appendix E, shows the frequency of droughts over the last 36 years. All red areas, like in China and parts of Latin America, have had more than 10 disasters due to drought in the last 36 years. They have affected millions and millions of people. In the red areas there will be a major drought every 4th year. In the brownish areas, there will be one every 6-10 years, mainly in Africa, but also Australia is prone to drought, and so is the Indian subcontinent. Drought can have a huge impact on economies and the cost cannot be borne by local insurance companies. To a lesser extent, flooding can be a problem that delegates will be more familiar with. Flooding in Malaysia is relatively common and can cause a lot of damage.

Even single buildings can have huge values. The World Trade Centre in New York was destroyed by terrorist attack and was insured. The loss to the insurance industry was US$7.5 billion. No single insurance company is able to handle that size of risk. It would bankrupt the largest insurance company in Thailand, for example. A substantial insurance company would possibly have been able to handle 10 percent of the risk, perhaps less. The remaining 90 percent of the risk would have to be spread around the globe and handled by international reinsurance companies.

Slide 10 Appendix E shows a breakdown of risk categories and their severity. There are small insignificant risks, small fires for example, which make little or no impact. They are of low severity and any insurance company can handle them. Then we have large risks like large buildings or semi-"systemic" risks. These are medium size to high severity risks that their insurance companies need

reinsurance or partial reinsurance to be able to handle them. Finally, there is the catastrophic or "systemic" risk, the severity of which is very, very, high. This is an important issue when considering the shrimp industry, and will be discussed in more detail later.

The concept of "systemic" risk is very important, and Slide 11 Appendix E provides an example. The map shows the Ukraine and the example peril is drought. The Ukraine from the west to the east is about 2 000 kilometres, from north to south 1 000 kilometres. It is a huge country with huge agriculture capacity and many thousands of farms. If a drought occurs, it starts e.g. in a certain area in the middle of the country, before spreading throughout the country or through a major part of it. A local insurance company cannot spread the drought risk within its portfolio, because many, or in extreme cases, all of its clients can be affected by the same risk at the same time. That also means that local "risk pooling" (when competing companies work together to create the capacity – a "Pool" – to handle a large risk) is no solution. International risk spreading is required, and that is where reinsurance comes into play.

Relatively small risks with low severity can be retained by local companies but when it comes to large and semi-systemic risks, these have to be handled using reinsurance. Finally, in the case of catastrophe risks, these are largely systemic risks, and the international reinsurance industry is needed to cover them, and in many cases government support will also be needed because, for systemic risks, you need government support (Slide 12 Appendix E). Thus reinsurance is needed for large capacity risks, for large sums insured at one given point, also for low frequency but high severity risks.

Another systemic risk is earthquake. Severe earthquakes do not occur every year, or every 10 years, but could occur once in 100 years. An insurance company cannot make provision for that type of risk; therefore international reinsurance community is needed behind the high accumulations of value than can be subject to a single earthquake. Again, a local insurance company cannot handle the high risk accumulation, and spread the risk safely, because the high accumulation of value is located in one narrow point. Reinsurance offers the only way to spread the risk effectively.

Beyond the question of systemic risk, there is the issue of new risks. An example is shrimp farming in Thailand. Companies in the local Thai insurance market have no or very limited experience of insuring the shrimp industry, so they need to call on the expertise in the international aquaculture market, and use the aquaculture experience of reinsurance companies. These organizations know how to handle shrimp industry risks, and they have the capital base to handle the small and semi-systemic risks of shrimp farming. The capital base of the local insurers limits their potential to spread and retain the risks of an industry like shrimp farming, so the reinsurer, in practice, becomes the banker for local insurance companies, and effectively provides capital to the local insurer putting the local insurer in a position to take on larger shrimp farm risks.

The global reinsurance market involves more than 200 professional reinsurance companies. However there are also more than a thousand direct insurance companies that have some reinsurance activities and capacity. A professional reinsurer is a company that is focused on reinsurance only and has no direct insurance activities. The top 50 professional reinsurers receive more than US$200 billion a year in premium, and of that, the top 5 reinsurers receive US$100 billion. So the reinsurance industry is very concentrated.

Geographically, the largest reinsurance market is in Europe, followed by the United States, and over the last decade a market has developed in Bermuda. Bermuda is one of the larger reinsurance markets, and there are also sizeable markets in Japan and Korea. A market is developing in China, but it is more of an internal market and not an active player in the international market. All other areas, such as Latin America, Africa, Australia, and the Middle East, are just small markets that play a limited role in the international reinsurance market. Europe is historically the largest reinsurance market, where reinsurance companies have been operating for over 100 years or more.

Slide 16 Appendix E shows that the top professional reinsurance companies absorb between US$25 and US$30 billion income a year. The figure drops down for the smaller companies, but the top 50 command 80 percent of the global market.

The largest company at present is Swiss Reinsurance Company (Slide 17 Appendix E). It is the number one company in the world, but is almost matched by Munich Reinsurance in the number 2 position. Berkshire Hathaway, is No. 3, and is based in Bermuda and New York. Next, is another German company, Hanover Re, followed by Lloyd's of London, which is a conglomeration of many companies, then Reinsurance Group of America, Everest Re., a Bermuda company, SCOR based in France, Partner Re, Bermuda, France and Switzerland based, and XL Capital also Bermuda based. It is clear that the top companies, as far as capacity is concerned, are Swiss and Munich Re and the top 10 reinsurer globally have an overall market share of 45 percent.

It is important to understand the impact that the recent financial crisis has had on the security of the reinsurance market. Wall Street is important everywhere and the reinsurance companies have lost money on their investments – but not on their underwriting account. As already stated, reinsurers are bankers of insurers; therefore, security is very important. Financial stability is the name of the game, and all the reinsurance companies in the top 10, have the highest financial security rating. All are A, A+, or AA rated by international rating agencies. They have come through the financial crisis with small losses on their investments, at the same time maintaining a stable security rating. The main point to be made here is that any insurance company, whether it is a new one or an established one, must have the right security behind it, and that is what the international reinsurance market has to offer.

Aquaculture is part of the international agriculture industry (Slide 19 Appendix E). The global agriculture insurance market is estimated to currently be about US$13 billion in premium. The majority of agriculture insurance, approximately 54 percent, involves multi-period crop insurance (MPCI). This is basically an all-risk type of crop insurance policy. The rest of the market consists of 16 percent hail insurance on crops, 15 percent farm package insurance, 12 percent livestock. Aquaculture makes up only 2 percent of the market, and 1 percent of the market is accounted for by industries like forestry. Thus the predominant insurance products are crop related, and the livestock, and particularly aquaculture sectors, represent huge potential for growth.

There is a huge difference between industrialized countries that spend about 1 percent of their gross agriculture domestic product on insurance premiums, and emerging or developing countries that only spend approximately 0.1 percent, when agriculture insurance premium is expressed as a percentage of agriculture gross domestic product (Slide 20 Appendix E). The agricultural sector is much better insured and secured in the industrialized world than in emerging and developing countries.

In stark contrast, however, agriculture in emerging and developing countries is of far more economic importance to their economies than it is to the economies of the industrialized countries. In certain countries in Africa, agriculture constitutes some 20/25 percent of the national gross domestic product. At the same time, up to 60 percent of the population is involved in agriculture. In industrialized countries only 2-4 percent of the population are active in agriculture and agriculture contributes only 2 or 3 percent to their gross product. From a security point of view, these statistics should be the other way round. There should be more insurance of agriculture in the developing and emerging countries, than in the industrialized world.

The agriculture reinsurance market reflects a similar picture to the general insurance market, with the exception that the Bermuda companies and Lloyd's are not so heavily involved (Slide 21 Appendix E). The top 10 companies are headed by Munich Re with almost US$1 billion premium income from agriculture insurance a year, followed by Swiss Re then SCOR, Hannover Re and Partner Re. Lloyds and all other companies form a smaller group. Again, the most important agriculture reinsurance companies are all located in Europe.

Concluding this introductory session Dr Kasten listed some items for participants to consider before the next session on reinsurance. These are:

- Natural disasters increase globally
- Aquaculture is a high risk industry
- On-farm risk management is important
- Risks beyond control require risk transfer
- Strong, reliable reinsurance is vital
- Government support is needed for systemic risks in aquaculture insurance

4.5 Introduction to mutuals and mutualization

Mr Paul Koronka, Director and CEO, Regis Mutual Management Ltd, United Kingdom

The outline for this presentation is as follows:

- What is a mutual?
- Characteristics of a good mutual
- Why form a mutual?
- Examples of mutuals
- Why mutualize the Thai shrimp farming industry?
- The future

The shrimp industry in Thailand is perfectly positioned for mutualization. It is a very complex industry where risk management is absolutely essential and has to be embedded in everything done in the industry. Indeed with certification and government assistance, the industry has already established quite a sophisticated methodology, all of which can be tied in with a mutual approach. The alternative is to have an approach imposed upon the industry by an international insurance industry based outside Thailand. This introduction to mutuals and mutualization provides an overview of what a mutual is all about. The three subsequent presentations will go into more detail about how mutualization can work in practice.

First of all, what is a mutual? There is no word for mutual or mutuality in the Thai language, however, cooperatives are common, and a cooperative is a form of mutual, the most important thing being that it is owned by the members.

A cooperative is owned by its members; it is not owned by anybody else. Because it is owned by them, they control it. They control every aspect of its operation, and in that respect it is just like a mutual. The appropriate term to use is therefore “cooperative insurance” rather than “mutual insurance”. So where participants see the word “mutual”, they should think “cooperative”.

What does owning a mutual actually mean in practice? It means that it has no outside shareholders. The ownership remains entirely with the membership, and ownership means that it can be absolutely focused on members’ needs. A mutual has no other reason for being in existence except to serve the interests of the industry. Ownership ultimately means control and control is important in this context because in controlling it, members control many vital aspects.

If a mutual is to be set up by the Thai shrimp farmers, a key question will be: Who can be members of it? That prompts a further question: Will anybody be allowed in, or will membership be selective? This is an issue that only members can determine for themselves.

Pricing is another very important issue that will be dealt in more detail in subsequent sessions. The methodology of pricing is something that the mutual and the mutual members can have some influence over. The things that the mutual takes into account when pricing risk, are very important,

and they would have to be things that are relevant to the shrimp farmers and their industry, and not necessarily to outsiders.

Claims handling is also very important. In his paper, Mr Mark Vos discusses many issues that arise in the routine handling of claims in aquaculture. But claims handling within a mutual is different from claims handling by a commercial insurer. In a mutual, claims handling has to be sympathetic; it has to be rapid; it has to respond to the needs of the members. It is important to stress that the needs of the members in any mutual or cooperative insurance company, are absolutely paramount. So the focus is entirely on the individual member and what is in the member's interest. That interest still has to be balanced with the interests of the membership as a whole, but it is a different focus to a normal commercial insurer, where the interest of shareholders is paramount.

Members of a mutual also have control over the cover provided. Again, this will be dealt with later on in a further presentation. Cover is extremely important. The ability to influence the cover provided is one of the main member benefits to come from forming a mutual. A mutual exists, as any insurer exists, to provide cover and pay claims, but the cover that is provided is not a simple issue, particularly in aquaculture, because there are so many different coverage alternatives. What cover a mutual provides to its members has an influence over the cost and sustainability of the mutual. But the mutual is not a profit centre! There has to be a balance. But the great thing is that the members control that balance and where it lies. The balance is not controlled by outside people; it can be tailored to members' needs. So control actually does mean something very valuable, and in that respect it is just like a cooperative.

The decision making process is very different in a mutual situation. All decisions taken by members are for their benefit and nobody else's. Decisions are usually taken by a board of directors elected by the membership of the mutual. The mutual serves the interests of the members and is entirely focused on that. All decisions are made in that context.

One of the big differences between a mutual and a commercial insurer is in the area of the small decisions that are taken on a regular basis. There is usually a mutual angle in these decisions to which a commercial insurer is largely insensitive. In entirety, the decision making process in a mutual is focused on members and their interests. It amounts to a completely different product to the usual commercial insurance product. It moves with the times, it does not stand still, just as members' businesses do not stand still. It responds to their needs on a daily, monthly, and yearly basis. So decision making, and the control over decision making, is a vital concern.

So what is a mutual or cooperative? It can be described as a group coming together with a commonality of risk. The risk does not necessarily have to be completely identical but there has to be some association, some feeling that "we're all in it together, we face similar concerns, similar risks." The idea is to pull together either all of the risk, or if that's not possible, then some of the risk. A key component of handling that risk, as is discussed in Dr Kasten's presentation, is reinsurance. This will be discussed again in presentations on mutuality and reinsurance.

That link to the reinsurance market is very important. In this respect, mutuality gives the industry a direct link to that market. A mutual does not have to go through intermediaries, it can go directly to the reinsurers who can provide the capital and who ultimately can support the mutual and thus its members. That is very important.

There are mutuals of every different type operating in the world today. There is an upcoming conference in Toronto called by the International Cooperative and Mutual Insurance Federation, which will be attended by over a hundred mutuals. Mutualization is not an oddity. It is something that goes back a thousand years in its ethos.

Mutuals can be structured in many different ways and a number of features characterize what can be described as a good mutual. The first thing to emphasize is that it covers bad luck and not bad

husbandry, a point that was emphasized in Dr Kasten's first reinsurance presentation. It is a very, very important point. A mutual is not a profit centre, but equally it is not a loss centre either! In other words, it should aim to underwrite members' risks at cost price.

A mutual can be very selective, as many of them are, and they can even be compulsory. Compulsory schemes operate in various parts of the world. But compulsion can create problems. If a mutual is compulsory, it may be that not everybody would have access to all the covers that it might offer, because some may not be up to a required standard. That is an issue that has to be thought out in each situation.

Every mutual requires a critical mass. A mutual cannot exist if it is too small to sustain itself; it cannot exist if it is too small to have access to the reinsurance market, or too small to spread its costs. There has to be an adequate level of support right from the beginning. It does not have to be full support of all potential members, and most mutuals start in a small or medium-sized way, and then grow steadily. One of the impressive features of mutuals generally, is that there tends to be very little, what is called "churn". In other words, there is very little turnover in membership. Once members join, they are usually there for the long term. That is an important aspect of the ethos behind a mutual. It is a long-term vehicle designed to provide something that is sustainable and supportive.

A mutual needs a good spread of business. The shrimp industry in Thailand is almost certainly large enough to support a mutual. It has a sufficiently wide businesses spread throughout the country, and many industry participants, and a good spread of business in terms of size as well. The industry encompasses some very big producers, some medium-sized ones, and a substantial number of small ones. Thus there's a good mix, which is a good thing. As Dr Kasten mentions too, the objective is for a mutual to retain all the expected losses of the industry. However, while the predictable, "run of the mill" losses at farm level can be dealt with by the mutual, it cannot deal with catastrophic, or widespread "systemic" losses; those losses have to be transferred to the reinsurance industry, or ultimately to somewhere else, because a "systemic" risk is even too big for the reinsurers. A total loss of a major part of your industry, in one year, would be "systemic" risk and that's where the term needs to be understood. How it is dealt with it and what mechanisms are in place to handle it is where the government has to get involved. Government assistance is going to be necessary to handle the systemic risks of the industry.

A very good characteristic of a good mutual is that risk management is embedded in everything it does, and in its whole approach. A good mutual will encourage good risk management, support high standards, and encourage the raising of general standards across an industry. In doing this, it can support initiatives taken by government and industry bodies, and promote to members ways of keeping costs down, reducing exposure to risks, and limiting the extent and cost of claims.

Why are mutuals formed all round the world? Many mutuals have been formed over the last few years, in a wide range of large and small industries. Interest in mutuality is at a very high level. That is in part due to the memories of what happened in the insurance market after 9/11, when premiums rose 300 percent. At that time, even a pony club could not obtain cover for its activities. It is also due to what has happened in the recent financial crisis. People want something that is more transparent and more under their control, and they want to know that it is not gambling with their money. Thus one reason that mutuals are formed is because a group with a commonality of risk is out of step with the insurance market. That could be plus or minus! It could be that the group is a very bad risk and uninsurable or it could be the other way round – that the group concerned is a better risk than the average.

A very good reason to form a mutual is because the only way to provide a certain type of cover, for example, is for those who want it, to organize it themselves.

Another good reason could be that a group of potential members are so good at operating, that they out-perform the rest of the insurance market and find themselves cross-subsidising poorer industries. It

could also be that the perception of the risk by the insurance market is poor, but the actual risk that potential members in the business know about is not nearly as bad as the insurance market thinks. Arguably, that is the situation in much of aquaculture, and it could be a very strong reason for Thai shrimp farmers to form a mutual.

A further reason for forming a mutual, and again one that is relevant to the Thai shrimp farmers is that cover is simply not available, or is only available at a very high premium. That could be a matter of perception. It could also be a matter of cross-subsidization. The insurance market moves in very mysterious ways in the face of its loss experience – good and bad. Additionally, the market is cyclical and one of the points that will be discussed later is that a mutual aims to reduce that cyclicality and smooth out the ups and downs. It might be that premiums are unrelated to claims experience of a group of potential members, removing any incentive for risk management or loss prevention activity. It could also be that what such a group requires more than anything else is stability of premiums from one year to another. It is also possible to achieve results as a group which cannot be achieved individually, and such collectivization is important in the Thai shrimp industry which has many small and medium sized farmers. Even large producers cannot take the sort of risk that a mutual of the entire industry could take. Therefore there is an incentive for the Thai shrimp farmers to look at this very carefully.

One of the essential differences between a mutual and the insurance market is that the mutual will provide policy cover as wide as is prudent to give. Its approach is to serve the interests of the members. If members need cover, it is the mutual's job to try and find a way of dealing with the risk involved. In the insurance market, it is very different. It will provide the minimum necessary and when the market is soft, insurers will give cover cheaply. When the market is hard, they take it all back again. That is not the way a mutual works. A mutual tries to understand the needs of its members, and its prime goal is to satisfy those needs in a way that is sensible and prudent and efficient.

Cost efficiency is a key element. A mutual will focus on getting costs down to their lowest sustainable point. So we talk about getting costs as close to cost price as is possible. Structural efficiency is another very important feature where relating premiums to actual claims experience, and not to the perception of risk, is important. Again, that encompasses taking the cross-subsidization of other industries out of the equation. Equally, between members there must be no serious element of cross-subsidization. Of course, a mutual is there to cover the bad luck of individual members. But if a member has bad luck every year, then that's something that has to be tackled. So relating events and results to actual claims experience is very important. But this is under the mutual's control; it can determine how pricing is structured, via control resting with the members through their elected board of directors.

One of the great advantages that a mutual has compared with the insurance market is that it can develop extremely good underwriting data. The insurance market often has data but is always very reluctant to release this on the basis that 'Data is power'. Commercial insurance markets collect data to use for their own maximum commercial advantage, but they will not release it for commercial reasons. A mutual develops its own data which can be used for accurate rating, and to learn lessons so that the same mistakes are not repeated over and over again. Data can also put a mutual in an advantageous position in discussions with reinsurers. It can help to assure them that everything is under control. Data is a very important feature of a mutual's operation, it must have control over information, and its data resources must be fed into pro-active risk management. This has to be embedded in the whole system, to give an incentive to members to constantly raise their standards and improve their performance. The circular linking of data, through risk management and claims handling and back to premiums and cover provided, is absolutely crucial to achieving long term success for members.

Farmers' mutuals are common in the United States of America and other major farming nations. The United Kingdom has a very large farmers' mutual, one of the largest of its type. So does the

Netherlands, Germany, Scandinavia, Australia and New Zealand. Agricultural mutuals are common and among some of the first examples of mutualization.

Mutuals are to be found managing and spreading the risks of many businesses including universities, many professions, and even major oil companies have established a mutual for their large risks, which has been operating successfully for many years. Around 95 percent of the world's ocean-going ships are insured by mutuals. There is even a mutual of mutuals, the purpose of which is to help give more distance between the risks on the ground and the reinsurance market. Professionals such as lawyers, doctors, accountants, even insurance brokers have established their own mutuals. Also in the banking sector there are many examples of cooperative banks using the mutual principle. So there are many examples, and new mutuals are being created all the time.

Why mutualize the Thai shrimp industry?

There are already several successful cooperatives in Thailand and its shrimp industry, so the principles of cooperation and mutualization are familiar. Tempting reluctant insurers into this market is unlikely to provide the best solution. They will likely be very selective and will probably charge very high premiums. As Dr Kasten said, the shrimp industry is probably too young for the insurance industry. The insurance industry, which has suffered huge losses in other sectors of aquaculture, perceives it to be very risky and only capable of selective insurance at a high cost.

There is a big difference, as Dr Kasten has emphasized and needs to be emphasized again, between the insurance market and the reinsurance market. The reinsurance market will not insure down to a low value level. It is interested in the larger, infrequent, exposures. Attritional losses, the expected losses in farms across the industry, need to be handled in a primary framework such as a mutual, which can get access to the reinsurance market to obtain cover at higher levels. That is how a mutual would perform for the shrimp farming industry. The Thai industry is at that stage when it will only get the efficiency, and will only get insurance at a cost price, if it mutualizes. If the industry cannot get access to the reinsurance market, it will be forced to operate through intermediaries; insurance will then become much more expensive, much more selective, and out of the industry's and potential members' control.

However, the Thai shrimp industry has clearly made huge advances in the area of risk management. The industry is currently uninsured, so there is no alternative to that approach. But the industry has a very good story to tell, if it can marshal it all together. For the systemic risks, the industry needs government support. A mutual, and even the big reinsurers, will not be able to assist in any meaningful way if the industry has anything near a total loss. That is a possibility that has to be dealt with. A mutual, as Dr Kasten has said, provides an ideal mechanism through which a government can assist such an important industry.

It is well known that the shrimp industry is an extremely important part of the Thai economy. Establishing a shock absorbing mechanism is very important in terms of protecting the economy as a whole. If the industry can deal with the small to medium sized losses within a mutual context that will greatly improve the industry's prospects in raising finance and gaining government support to handle systemic risks.

If a mutual is established in Thailand, it will set a precedent for the region. Many sectors of aquaculture will be looking very closely at how the concept develops in Thailand. There is growing interest in mutuality worldwide. The issues are always about selectivity, standards, risk management, claims prevention, and the financial issues such as getting as close to cost price as possible, and built in efficiency. Critical mass is always important; a mutual is only as strong as the support it has from its members. So if Thailand goes down this path, the industry has to make sure it is well supported and properly established with adequate reinsurance. Gaining the confidence of the reinsurance market is very important. All these issues can be handled effectively, and a mutual can play a very important role in the prosperity of Thailand. It is an exciting and potentially rewarding challenge!

4.6 Mutual structure

Mr Paul Koronka, Director and CEO, Regis Mutual Management Ltd, United Kingdom

This presentation examined the corporate structures employed in mutuals. It also covered the financial structure at a very high level, and looked at some of the options and some of the issues that arise in these aspects of mutual formation. It looked at the risks that can be covered and here it is necessary to stress once again the flexibility of the mutual model. There are no two identical mutuals; they are all different; they are all structured slightly differently; they all employ the same core principles but operate in different ways to suit the industries that they serve.

The financial structure of mutuals is different from insurance companies. In a mutual they are principally related to the risks covered. The financial structure and the risks covered have a direct correlation and if the risks covered increase, it impacts on the financial structure to be deployed, and vice versa. The financial structure has to be tailored very carefully to the particular industry concerned, but it must be remembered that the members own a mutual and therefore the mutual's final financial shape is very much the creation of the members as opposed to any outsiders. It is possible to give members outside guidance, but a mutual is there to serve their interests and they know their industry better than anybody else, so they are best positioned to decide on the financial structure that suits them.

Most, but not all, mutuals are structured as associations or clubs or cooperatives. That is that they have members and not shareholders. Some mutuals issue shares but the shares have to be held by the members and there are strict rules concerning their disposal. They have to be sold, either back to the association or back to other members. This introduces an element of complication. Members have the right to attend an annual general meeting and also have the right to call an extraordinary general meeting and to vote. They can vote in the directors and vote on anything else. It is usual for one member to have one vote but it is not impossible to conceive of a different arrangement that, for example, weights the voting according to members' individual contributions into the mutual. There are various other ways it could be done, but the principles of members not shareholders, and of one member one vote as opposed to weighted voting, are most common.

A mutual will have a constitution structured according to the laws of the jurisdiction in which it is formed. The constitution will set out the objects of the mutual and probably define the industry group from which the membership is to be drawn. The industry definition can be drawn quite widely if the mutual needs future flexibility, but sometimes it is deliberately narrow to restrict the membership to a particular sector of a particular industry. The constitution will also set out the number of directors that are to be elected, the method of voting, the method of calling annual general meetings, and how the mutual is to conduct itself. It will also set out, in very broad terms, the risks that are to be covered in the mutual. A mutual is controlled by a board of directors elected by the members. Directors usually have to be drawn from the defined industry and also usually have to be members so that the whole focus is on members' needs. There can be allowance in a constitution for one or two independent directors, which is a healthy flexibility. The board of directors will probably meet three or four times a year. In the first year, the board might meet more frequently in the start up period. The board has oversight of all aspects of a mutual's operation, and will take all the major policy decisions affecting it.

Every mutual has a set of rules. This is an extremely important document. The rules are slightly more flexible than the constitution, and they are generally looked at every year by the board. The rules, which will be amended from time to time, set out the way the mutual is to be run on a day-to-day basis; the way contributions are to be called up for members; the way the board can deal with surpluses or deficits, and the way claims are to be looked at and paid.

To recap, a mutual has two major documents – the Constitution and the Rules. Both will be available to every member before they join, and a member who wishes to join will have to agree to subscribe to the constitution, and abide by the rules.

The management of mutuals is commonly outsourced to professional managers. This is not a firm rule, but in the majority of new mutuals it is very common. This is because board members do not have insurance experience, or the necessary skills to operate a mutual on a day-to-day basis. Such professional managers are not board members and do not take any of the policy decisions. They are rather like the civil servants, who can make things happen for the industry and run the mutual smoothly and efficiently, ensuring that the decisions of the board are properly carried out.

Three types of mutual are possible, but not all of them are appropriate for the Thai shrimp farming industry. First, there is the mutual insurance company, a fully authorized insurance company in its chosen domicile. Secondly, there is what is called a "discretionary" mutual, and thirdly there is a hybrid, a cross between the two.

There is no precedent in the Thai market for an insurance mutual at the moment. Thai legislation does not envisage or allow the enablement of a mutual. That is not a disaster, because, if there is a willingness to go down the mutual path, enabling legislation can be developed in a very short time. Thai cooperative legislation exists, which it may be possible to adapt, but new legislation may be necessary, particularly to deal with the issue of capitalization; the capitalization requirements of a conventional insurance company would need modification. Mutuals operate in different ways, which will be explained later, and thus do not really fit the normal. A discussion with government is the preferred option, though there are two other options. The first is to go offshore. This is not specially recommended, but there are many offshore locations where one could establish a mutual very easily with the acceptable capitalization requirements.

The second option is a discretionary mutual. Discretionary mutuals are not regulated, for the very good reason that they are not insurers. Claims may only be paid at the discretion of the board of directors, so there is no insurance contract, there is only a contract to have a member's claim considered. It may appear very unconventional to establish a discretionary mutual, but they are quite popular. This is because the discretion is exercised by the board. Members therefore have control over the operation of that discretion and if it is properly explained and properly constituted, there need be no fear that a valid claim would not be paid. Many mutuals operate on this basis, and some of them are very large.

Probably the largest is one of the university mutuals which protects (the word "insure" cannot be used in the case of a discretionary mutual) $A35 billion, in property values, and has a capacity limit of $A1.2 billion per site. It also covers all their casualty (liability) programmes. It is all done entirely on a discretionary basis. All the universities are protected and have been so for 20 years. The mutual has paid out over $A100 million in claims on that basis. A discretionary mutual can work very nicely, and, of key importance and advantage, there is no regulatory capital required at all. Most discretionary mutuals are started up on the premium income in the first year, but they rely heavily, certainly in the early years, on extensive reinsurance. There is also no official regulation. In spite of the disadvantages, discretionary mutuality is an option; it is an option that should be on the table for the Thai shrimp industry, at least, to consider.

The third variant of mutuality is known as a "hybrid" mutual. A hybrid mutual retains a portion of the risk on a discretionary basis. It is not an insurer; it is not regulated, and there is no regulation of capital. It is founded on the arrangement of an excess insurance policy that sits above the mutual's cover and insures every member of the mutual above a high excess which is the mutual's retention. So you have the mutual's retention which is discretionary, and then an insurance policy sitting above and that is very popular as well because it can produce efficient results and every member can actually say that they are insured because there is an insurance policy. There is no reason why that cannot produce the efficiencies that everyone is looking for but it may be difficult here because the insurance market is simply not available so it may not be appropriate here.

Insurance mutual is the best option for the Thai shrimp industry, providing regulatory issues can be overcome. Three contracts will need to be put in place, between members and the mutual, between the mutual and the reinsurers, and thirdly between the mutual and the managers. Once a mutual is constituted, members apply to join, and agree to subscribe according to the terms of a contract between the members and the mutual. The contract between members and the mutual is an insurance contract, so a member who has joined is insured.

The mutual will subcontract day-to-day management to managers under a management contract, and it will put into place a reinsurance contract with its reinsurers. It sounds simple and in practice it is. There will be extensive documentation between the parties, but there is much precedent to call on in developing it.

There are some challenges in forming a mutual and structuring the financial arrangements. But there are some very basic principles to apply. Put very simply, money in must exceed money out. As has already been mentioned, the cover provided and the financial well being of the mutual are directly related. The more cover the mutual gives, the more expensive it is going to be. It is an obvious fact, but it tends to be forgotten. In many jurisdictions advance capital is normally required. That can be quite a difficult problem, because the only source of capital for a mutual is the members. If a normal insurance company was being formed, money would have to be put upfront by shareholders, but in the case of a mutual, there are various ways that this requirement can be ameliorated or avoided altogether, but it has to be evaluated very carefully.

Some mutuals that have no advance capital, can call up money from members if it is needed. Some, such as ship owners' mutuals, do that all the time. The ship owners are well used to it and they realize that this is the cheapest form of covering some very large risks. Their situation is often handled by making an estimate at the beginning of the year of what they need in the full year. If the amount required for the year is estimated as a factor of 100, then they may call up 75; at the end of the year their management team will look to see what claims are paid and outstanding, and if they do not need any more money they won't call up the balance. But if they do need funds they will call up the balance, or if they need a bit more than the balance, they will call more as well.

Some mutuals that have the ability to do that, cap the additional call to a level that is within the financial capability of each member. For instance one mutual caps its additional call to 20 percent of its annual premium. So the maximum a member would pay is the premium plus 20 percent. Clearly money is not called up if it is not needed, and of course every effort is made to structure the mutual in a way that avoids any need to do so. However, the ability to call up funds is a substitute for providing regulatory capital upfront.

Many mutuals have been started with no additional call mechanism and no requirement for upfront capital. Such mutuals have to be very carefully structured, and there will be a heavy reliance on the reinsurance industry, in effect, to provide the alternative capital. This is particularly relevant in the early years when many issues are very uncertain, and overall performance is unfolding.

The key is to identify the risk gaps. A mutual will call up a certain amount of money which is simply the normal premiums that are put into the premium pot. Thereafter, analyses of worst case scenarios have to be carried out, to try and determine if there are any gaps in the structure, and if there are, where, and how they can be filled. Reinsurance is definitely one way, but government support may be the best answer in the early years of a shrimp mutual.

A mutual's income can come from a number of sources. There are the premiums paid by members. There are recoveries from the reinsurance market; premiums are paid to reinsurers and losses may be recoverable under reinsurance arrangements. There will be some investment income on the funds held in the mutual, which all comes back into the mutual for the benefit of the members, and there might be government support in a number of circumstances.

Another way that mutuals have been able to raise funds has been to persuade banks and other lenders to provide subordinated debt. Such debt has to be very heavily subordinated in order to count as capital, and it is not a likely scenario for a new shrimp industry mutual.

One further source of funds should be mentioned. The International Cooperative and Mutual Insurance Federation (ICMIF) have some funds available to support fledgling mutuals. Approximately US$300 000 is theoretically available and they have written a letter of support saying that they would certainly look at this favourably in respect of a Thai shrimp industry mutual, if one were to start. That is another possibility, and it might be possible to augment it with funds from some of the international development agencies and banks.

Mutual money goes in a number of directions; in claims, and in administration and reinsurance costs. It does not go anywhere else; those are the three things. Money in and money out is a very simple concept. The management has to make sure that the worst case scenarios are covered, then go on to the next stage; gathering the data, doing careful calculations of risk, building a financial model and testing its resilience.

In every financial structure, and especially a mutual, efficiency is absolutely paramount requirement. The issue of getting cost as close to cost price as possible has been discussed already. That is what is meant by efficiency. In a mutual, it is always a question of the balance between the risk retained by the mutual and the risk transferred. As a mutual becomes more established, that changes because as it develops, it retains surpluses over the period. The mutual can use those surpluses to take a little bit more risk and pay less away to the reinsurance market. That is where it gains in efficiency.

Most of the premium, in any mutual insurance transaction, is used to pay attritional losses. Catastrophe losses, if they are spread far and wide, can be transferred very economically in the right circumstances, which is why access to the reinsurance market is so important.

One of the features of mutuals is the way it is able to avoid leakage. The conventional insurance industry is notorious for heavy “frictional” costs. “Frictional” costs means high commissions, poor value, and practices that are sub-optimal. A mutual is very transparent, very straightforward, and attempts to avoid or minimize frictional costs wherever it can.

How can a mutual deal with systemic losses? This is a very big challenge! The system is finite; a mutual’s resources are finite!

Some mutuals that give cover against catastrophes may end up in the situation of having to tell members that the premium pot is limited, that no further reinsurance recoveries are available; that there is no government support, and therefore in a catastrophe situation what is in the pot is all that members are going to get. That can still be very useful in a situation when no other insurance or no other solution exists.

Some mutuals, as has already been referred to, will be able to call up additional money from the members, and sometimes that is limited. Alternatively, the mutual or the industry has no alternative but to go to government. In the case of the Thai shrimp farming industry, as far as systemic risk is concerned, that is something that will have to be looked at very seriously.

The essential point is that money put into the mutual by the members is never lost to the industry. It has not disappeared; it is there to protect and be used for the benefit of the industry. A mutual situation is always less price-sensitive because members develop a trust with their mutual. They can see it, they can feel it, they can touch it, they can ultimately control it, and they know that the mutual is not out to rip them off or overcharge them. It is there to help them, and if in one year there is a very low claims experience and the mutual has made a very good surplus, it is there for their benefit. This is a very, very important point. The mutual member’s situation is completely different, and vastly more favourable than the situation of a policy holder in the conventional insurance market.

Mutuals are structured on a very simple basis. Each member will bear a deductible that is a matter of negotiation between each member and the mutual. The Mutual will retain a portion of risk as shown in Slide 16 Appendix G. The mutual could retain the first Baht1 million of each loss (a figure that is only an example), and buy reinsurance for each single loss in excess of Baht1 million. That would mean that the mutual would be protected against any single large loss, because it is only going to pay out a maximum of Bah1 million t for any loss that occurs. One or two losses of many, many millions will not affect it. They will affect the reinsurers more than the mutual. However, the mutual could suffer from an aggregation of claims within the Baht 1 million layer it retains. It could suffer an unexpected aggregation beyond its modelling, and that's where some sideways cover is usually purchased. It is called "aggregate" or "stop loss" cover. It limits the potential for a claims blow out in the mutual's retained layer. However, a systemic loss issue could go through both the mutual retention and the reinsurance layer, and in such circumstances, there really is only one recourse. And that is to look to government for support.

In the early years, government support may be needed for the aggregate protection arrangements, because if aggregate protection can be pitched at a particular level it in effect becomes the regulatory capital because the mutual would be fully protected. Thus, if the question is asked as to how the government can support spread of risk in the shrimp farming industry, there are two ways; one is to cover the systemic risk (which all governments have to do anyway) and the second is to provide support on an aggregate basis in the early years. It would enable a mutual to start without any upfront capital. It is something that needs to be considered by the industry and the government. This represents a viable and sensible solution that is not financially unreasonable and conforms to the hybrid solution endorsed by the Bali workshop.

A key issue in the setting up and running of any mutual is the risk strategy. It is an area in which potential members have to get involved and make decisions. It must be remembered that everything is related and therefore the more risks a mutual covers, the more funding it is going to need. Coverage could be very broad or it could be very limited. It could be very selective. A mutual in the shrimp industry would probably need to be somewhere in between, particularly at the beginning. It could start off providing limited terms and move towards broader terms. The important issue for management and members is to try to understand exactly what risks the mutual is covering, and the financial implications of the approach. The strength in the situation is that members know more about the industry than any outsider or insurer, and therefore their input is absolutely essential.

A mutual will have to create policy wordings. These will be rather like insurance wordings, with one or two differences. A great strength of mutuals, particularly in relation to the coverage that they give, is that they can be very flexible and responsive. A mutual can start with one underwriting position, but move to a completely different one later on because the needs of the members have changed. New risks will be identified all the time, for which members will need some form of protection. A mutual will start off in the best way it can, then develop carefully, and over a period of time expand. In shrimp farming, the most important guideline must always be that the objective is to cover fortuitous losses, not normal variations, and especially not bad husbandry.

The following list is a very limited and random group of risks and insurable interests that shrimp farmers will want to cover:

- Monsoon
- Flooding
- Tsunami
- Disease
- Property
- Business interruption
- Equipment

- Fire
- Theft
- Dams/dykes
- Liability
- Death/illness

There are others. All the key exposures of shrimp farming could be given some form of coverage through a mutual. However, as has already been emphasized, a mutual will not be able to cover systemic risks. That will require government intervention.

It may be possible for a mutual to provide business interruption, but much would depend on how cover is tailored to meet members' needs and get them back into business. Losses of stock and equipment are, of course important, but the cost of getting back into business will be where members need help. The structure of cover provided by a mutual and the processes of designing it and amending it, will be a major part of the mutual managers' work.

Death, illness, and sickness insurance is a very important cover to individual members. It is a very valuable class of cover that a mutual could also provide. It is provided by one Australian mutual, which operates in the motor repair trade in Australia and New Zealand. If a member is a sole proprietor and becomes ill or has an accident, somebody has to be hired to continue the business, otherwise the business stops. It is an insurance cover that could also be very valuable to shrimp farmers.

Whatever protection a mutual provides must bear a direct relationship to cost; the finances of the mutual have to be structured around it and be related to it, and ultimately and inevitably be backed by government.

"Omnibus" means 'catch all' in Latin. Every mutual has an 'omnibus' clause which gives the mutual the ability to pay a claim even when it is actually excluded under the covering terms. Payment is entirely at the discretion of the board of directors, and can be made if they have sympathy with a particular member. If they do exercise discretion and agree to pay a claim on an "*ex gratia*" basis, there must be funds to pay it. Such gratuitous payments are not protected by reinsurance.

The mutual movement has seen some extraordinary claims paid over the years by boards of directors who have taken sympathy with members who have suffered extraordinary circumstance that could not possibly have been envisaged, but could have been experienced by any member in the same trade. The board can agree to pay and has the power to pay such claims. Obviously no claim will be paid if there has been stupidity or carelessness, but the omnibus clause provides a very useful process of dealing with risk anomalies, and making sure members do not hit hard times through no fault of their own. It has to be stressed that payments are made entirely at the board's discretion, and they can only occur when the mutual has surplus funds to use in this way.

4.7 Reinsuring mutuals: Pooling of individual risks into a larger pool can create a basket of risk attractive to reinsurers

Dr Erich Kasten, Managing Director, Agriculture Reinsurance Consultants GmbH, Switzerland

This second reinsurance presentation focused on re-insuring mutual insurance companies. It covered some issues dealt with in other papers, but this served to emphasize their importance.

Reinsurers prefer mutuals, and it needs to be understood why that is the case. A mutual insurance company normally has a very good grassroots level network through its members who are its network. The members are the mutual's ear in the market and this gives a mutual a huge advantage against any insurance company. This is particularly important with small-scale farming. Insurance companies face

difficulties reaching small farmers because of cost reasons. Mutuals are near to the grassroots level and therefore have a very competitive advantage.

From a reinsurance point of view, the quality of the primary policy holders is extremely important. In this respect, members of a mutual are not just customers; they are also owners of the business. That is a very important point for a reinsurer. If policy holders are also owners of the insurance business, they represent a different quality customer for their insurer. They will be looking after their own business. The perceived value from a reinsurance point of view is that they are better quality customers and have a joint business interest. The close link between members and the mutual is extremely important in the key areas of risk mitigation and loss prevention.

A huge advantage from a reinsurer's point of view is that a mutual provides a customized insurance solution. A group of members will use a standardized product, the operation of which will be self-controlled at grassroots level. This avoids false claim and it increases the awareness of scenarios where members have to improve their risk management. The value of this self-control mechanism cannot be overestimated. It leads to the very important point, because of the network at grassroots level and the self-control mechanism, the moral hazard risk is extremely low to the point of being negligible. The neighbour of any member, who makes a claim, knows whether it was a real claim, or whether it was or a risk management error. This leads to better risk and lower risk costs, and that endorses the financial efficiency that Paul Koronka emphasized in his last presentation. Mutuals operate much more cost efficiently than traditional insurance companies do, and this is an advantage for the entire mutual insurance entity.

These points demonstrate how a mutual approach is superior to a general insurance approach, and there will be more about this later.

Slide 5 Appendix H shows a full array of aquaculture risks. The message that comes out of this is that on-farm risk management is of utmost importance because it has a high influence on the cost of risk at the end. All risks which can be managed by on-farm risk management should not be insured, but of course some of them, like disease epidemics or market issues, are not controllable and are therefore suitable candidates for insurance. It must always be remembered that, even with best on-farm management techniques, aquaculture risks are only partially controllable. For that reason the insurance is needed not only for the uncontrollable risks, but also for the partially controllable risks.

Slide 6 Appendix H examines the risk transfer demands in aquaculture insurance. Management risk changes from one farm to another. One farm has good management, another farm has bad management. This is not a risk that can or should be transferred through reinsurance. It should be retained by a mutual.

The next category covers heavier risks such as accidents. The feed risk is shown as semi-systemic, but it has the potential to be a systemic risk. If something is wrong with the feed from one mill, it can affect a number of producers, but there will probably be an opportunity to go after the feed mill to recover any losses. In that situation, an individual farmer is at a disadvantage. A mutual, however, being financially stronger than an individual member, has a much better chance to recover from a feed producer.

Pollution and disease can be systemic risks, depending on the circumstances of an event. Market price, on the other hand, affects all members of a mutual and is the highest systemic risk. Its insurability is limited, but it may be fully hedged through an agriculture commodities exchange.

In spite of the fact that the client is supposed to be "king", most insurance companies do not listen to their clients. A mutual must listen to its members and explore their needs. If members are offered a product that is not needed, the mutual will not be successful with it. Shrimp farmers are a homogenous group of producers; however, different members will have different needs. Larger members have different risk transfer needs than smaller clients. There are many issues that have to be considered in

product design. The members of a mutual know their local risks and the needs, and can help design products to accommodate them. This is an important message. As Paul Koronka stresses, it is very important for members of a mutual to recognize that the design of products is in their own hands.

One of the problems with insurance is that there are a huge number of alternative ways of providing protection for an equally wide range of insurable risks. This is very confusing for insurance buyers.

Why do insurance companies operate like this? Are they purposely trying to confuse their clients? One reason is that the companies think they have to differentiate themselves from their competitors. According to this reasoning, their clients cannot compare what other companies are offering, and are thus easier to hold on to. But such an approach only increases transaction costs, and that is not a good way for a mutual to operate. Too many options confuse clients; they also increase expenses but add little value for the members.

Complex insurance policies are difficult to explain and it is difficult to get clients interested in them. Successful products on the other hand are clear and transparent. Clients understand what they have been offered and what they have bought. Mutuals can create their own products, clearly written, and straight forward in layout. Members should be able to understand what they have bought, and how the procedures behind it operate.

The reinsurance market for aquaculture is underwritten in the agriculture reinsurance market. Aquaculture is a technically complicated business, so there are relatively a low number of participants willing to reinsure it, and there are also a relatively limited number of expert insurance underwriters who can lead the primary insurance market and develop good insurance programmes. Non-proportional capacity is available in the Bermuda market and other reinsurance centres, but non-proportional capacity is not what is required for a start-up mutual. The proportional reinsurance market, particularly for agriculture is global, but very much dominated by North American business. More than 50 percent of all premiums come out of North America. Capacity for aquaculture reinsurance market is available, providing the underlying business is organized in a proper way. That is the most important thing and one of the advantages a mutual should have.

Reinsurance is not a market for bad business. Bad risks cannot be submitted to the reinsurance market and then forgotten about. Such short-term thinking by a mutual will result in it having no reinsurance support. Standards of risk management have to be maintained at a high level, as Paul Koronka also stresses. A mutual should be able to achieve good pricing for its products if it maintains a sound risk management strategy, and even better risk pricing than could otherwise be achieved in the general insurance market, is perfectly achievable.

Slide 10 Appendix H shows the breakdown of agricultural reinsurance market premiums across the various sectors of agriculture. Aquaculture's share of the total market premium is 2 percent but its share of the reinsurance market is 4 percent so it is over-proportionately reinsured. This shows the reliance of the whole aquaculture industry's insurance program on reinsurance. Aquaculture insurance has a huge potential because very few aquaculture operations in the developing and emerging markets are insured. Only those producers in the developed countries, particularly in salmon, seabass and seabream, and tuna on-growing, are insured.

Reinsurance costs are based on a number of determining factors. Information is the key to getting the best reinsurance capacity at low price. The first requirement is full information on the insurance product. Next, information is needed about historical losses. In the case of a mutual that has just started up, there is no insurance history, and costs will depend on a careful analysis of the industry's exposures and losses, and of course administrative costs, solvency ratio requirements, and return on equity requirements. These are very technical requirements and in the mutual set-up process, specialist advice will be needed to establish them.

One of the very important points, from a reinsurance point of view, is to have trust in the mutual, in its operation, in its know-how, and in the commitment of members. If an insurance company deals with aquaculture as a very small sideline only, there is no serious commitment from the company; there will also be limited aquaculture know-how in the organization. Again, a specialist company like a mutual, which is expert in dealing with the type of risks of its members' business, and has a thorough knowledge of their industry, is attractive to reinsurers.

Proportional reinsurance has been referred to several times in this paper. This is a very technical issue, but as an example, the principles for a 50 percent quota share arrangement are "proportional" (Slide 13 Appendix H). That means a mutual would retain 50 percent of the premium but it would also have to pay 50 percent of the claim, with the reinsurer also taking 50 percent of the premium and paying 50 percent of the claim – reinsurer and reinsured have the same proportion of premium and claims. Premiums are paid to the reinsurer by the mutual, and claims are paid from the reinsurer to the mutual.

Of course, the mutual operates the business and has to pay the costs of running it. For that reason a reinsurer will pay a commission to the insurer, which represents the reinsurer's share of the expenses of operating the business. So proportional reinsurance means, equal shares (not necessarily 50/50, they could be 20/80, or other proportions) in the business, split between the insurer and the reinsurer, with the reinsurer contributing to the reinsured's costs through a commission. Under the terms of the arrangement, which is called a "Treaty", the reinsurer commits to share in all the reinsured's business.

Another type of reinsurance arrangement is called a non-proportional reinsurance or an "aggregate excess of loss" or "stop loss". All refer to the same arrangement, which is illustrated in Slide 14 Appendix H. A premium and a liability up to a line (in red, in Slide 14 Appendix H) are retained by the insurer. The reinsurer assumes liability above the red line. There is a strict line between the insurer and the reinsurer and there is no proportionality between them. However, because the reinsurer assumes this high liability, the insurer pays a premium to the reinsurer. Losses from the ground up to this red line are paid by the mutual; losses above the red line are paid by the reinsurer.

A mutual in its start-up phase cannot assume significant risk. It needs a reinsurance partner, and as a reinsurance form it needs to have a quota share reinsurance treaty. A quota share reinsurer assumes unlimited liability (up to the sum insured), and that constitutes a major relief of exposure to the mutual. In the scenario shown in Slide 15 Appendix H, the quota share reinsurer's liability represents 80 percent of the total sum insured or all liabilities.

The mutual's liability, on the other hand, is illustrated by the small green box titled "Reinsured's retention". Even this retention can be protected with a stop loss reinsurance treaty. So the risk for the mutual at the beginning of its existence can be limited very effectively. Over time, the mutual grows and develops its capital base, and can take on more risk. It can then cut back the reinsurer' retention, but still maintain its stop loss reinsurance. As the business develops, the mutual can adjust its reinsurance protection programme until it retains all the business and is only protected by stop loss reinsurance treaty. There are a number of reinsurance arrangements to suit the mutual's situation as it evolves.

The reinsurance programme of the mutual is, in general, not assumed by one single reinsurance company. There will be a lead reinsurer, who will take a significant part of the business, maybe 20 percent, and a number of following reinsurers. The mutual's reinsurance programme is thus split, and spread over many markets.

Insurance facilitates the access to capital and modern technology. That is what enables an industry to advance. It supports economic growth by promoting more efficiency through which the industry can grow to new levels. Mutual insurance, which is already hundreds of years old, is a new concept in aquaculture, but is a preferred form of insurance for reinsurers. But a single entity alone cannot manage the comprehensive type of protection that, for example, the Thai shrimp farming industry needs, which is loaded with systemic risk. So farmers, government, mutual, and reinsurers must all

work together to generate solutions. The government needs the farmer, the mutual needs reinsurers, and reinsurers need the government, the insurer and the farmer. Ultimately, the farmer is the client. As the client, he or she has to finance the whole chain, and all the partners in the chain have to make sure that the farmer is benefiting and the whole insurance structure is viable.

4.8 The concept of creating a superior risk pool

Mr Mark Vos, Director of Client Services, Crawford & Company, The Netherlands

The focus in this paper is on creating a superior risk pool. Insurance transfers risk, in this case, of shrimp farmer members of a mutual, to the mutual itself. In taking on the risks of its members, the mutual takes on a duty to combine all its farmer members into a high quality risk group or "pool". As Erich Kasten outlined in his presentation, the combined risks of its members can only be covered by the mutual, with the backing of reinsurers. A mutual and its members have a responsibility to create a well-managed group of farmers who are good practitioners in the industry, and who, together, for very high quality pool of operators for the mutual and its reinsurers to insure.

Four subjects are important in relation to the superior risk pool concept:

- The structure and operation of fish mortality insurance
- The background of risk management in aquaculture
- Relevance of a risk management led approach to Thai aquaculture
- How a pool would apply in Thailand

Some of the risks that are insured by standard aquaculture stock insurance policies are the following:

- Pollution
- Theft
- Predation or physical damage caused by predators or other aquatic organisms
- Storm, lightning, flooding, tidal wave, collision, and sudden and unforeseen structural failure of equipment
- Drought, fire, lightning, explosion, earthquake
- Freezing, super cooling, ice damage
- Deoxygenating due to competing biological activity or to changes in the physical or chemical condition of the water, including upwelling and high water temperature
- Any other change in concentration of the normal chemical constituents of the water, including change in pH or salinity
- Disease
- Mechanical breakdown or accidental damage to machinery and other installations
- Electrical breakdown, failure or interruption or the electricity supply, electrocution

The committee leading a mutual's product development program will have to decide if these risks fit the requirements of members or whether the list needs to be changed.

The insurance protection that a mutual will be able to provide will depend on the nature, location, and growing processes of each member's farming operations. Most of the risks listed above, except freezing, super cooling and ice damage, are relevant to shrimp farming. Some other factors that are important to risk management of the whole industry include, good company management, well-organized veterinary supervision and support, good bio-research capabilities, and high quality feed supply and feed research resources. As far as all these risks and risk management components are concerned, the Thai shrimp industry is not much different to other aquaculture sectors. They are all standard industry risk and risk management issues. The only difference to other industry sectors is that shrimp and their biological needs are involved in Thailand, instead of salmon or one of the other species that are farmed in other parts of the world.

The international shrimp farming industry has had its problems. In 2001 there was a problem with white shrimp. In 2006 Vietnamese shipments of shrimp to Japan were rejected. Europe has rejected shipments of shrimp containing certain residue of toxins. So another key component of the Thai shrimp farming industry's risk management has to be quality control, and to achieve that, Thailand must implement diagnostic testing standards and laboratories of equivalent quality to those used in the United States of America and Europe. The Department of Fisheries has addressed these problems by introducing an inspection and certification service. This certification provides traceability of crop from hatchery to harvesting. This process may be seen by shrimp farmers as very bureaucratic, but obtaining insurance would be far more difficult if the shrimp industry had not been so well organized; farmers would not have been able to show proper accounting documents, or proper health hazard treatment. Therefore, the industry is in better shape as a result of the bad news of export restrictions.

However, the industry is still not insured. Production is so controlled that the industry is confident it can grow its market, which is a very good step, but a better managed industry is still 100 percent self-insured and thus has a high financial exposure. This will inevitably restrict further investment because the industry has to build reserves to absorb its losses, and it depends on subsidy in case of major loss.

On the other hand, the industry depends on the quality of its employees and how motivated they are. It also depends on feed suppliers. They also depend on the industry because when farming processes are not managed well they cannot sell feed to the industry. Processing plants and cold stores are in the same position. They rely on the industry for the raw materials, and they earn their profits by processing and storing its product. So everybody involved in shrimp farming depends heavily on each other, and all parties are looking for sustainable, professional, industry organization. This means that potential farmer members should be, or could be, highly motivated to move to the next stage of creating a mutual.

Everybody has been shaken by the banking crisis and the world financial situation, and all sectors of society are more focused on financial risk. This is making everyone, including shrimp farmers, look for balance sheet protection. Insurance offers a step towards balance sheet protection and with balance sheet protection goes easier and more cost effective bank finance. A crisis of disease and product quality has resulted in the development of a certification process; a financial crisis has moved the situation towards a stage where the environment for mutualization is very positive. Thus two crises have brought the entire trade together to move forward. It means that a mutual, as a constructive aid in the industry has become an attractive possibility.

The risks the Thai shrimp industry faces remain uncertain, but they can be managed. A mutual and its reinsurers need statistics that show how well the industry is run, so establishing a mutual must involve a cooperative sharing of information based on biological experiences of farmers in the industry, the historical information from the last five years of certification, and the risk management achievements of farmers and their cooperative organizations. The work of the Department of Fisheries, the FAO, and many others involved in raising standards, is a vital component in achieving the goal of successful mutualization.

The objective of mutualization is "tomorrow we can do better than today". If potential members do not believe that, they should think about becoming members of a mutual. Everybody who is involved will raise the question, 'What is in it for me?' The farmer will raise the question, also storage owners, feed manufacturers, transporters, and banks. They can all benefit from mutualization because when the farmer is financially more stable and feels the security of insurance, he will put more effort in running his business, and running it better. As soon as it becomes known in the world that the Thai shrimp industry is insured, the message will spread, and that will benefit the industry and everyone supplying it.

A multinational company is able to manage its risks on a different basis compared to a smaller company. It can accept much larger self-insurance levels because its financial strength is much greater.

Its business may, however, consist of many small operational units, which are unable to take a large self-insurance level. In such circumstances it may be advantageous to form an in-house insurance company for all its subsidiaries. Such a company is called a "Captive", because the company only handles the multinationals business.

A mutual is an in-house insurance company for a group of traders, which is owned by them. It is a standard type of organization, and that should give the industry confidence. This workshop is promoting something which is very old and could be highly beneficial for the industry, especially in the light of all the risk management work the industry has done. As has already been pointed out by Paul Koronka and Erich Kasten in their presentations, mutuals need reinsurance, but they are an attractive proposition to reinsurers. In the past, farmers have been forced to depend on governmental subsidy in the event of a loss, and it is almost certain that the industry will need government help to create a mutual.

There are a number of things that are needed to support a mutual. Veterinary support is very important and in Thailand that is being provided by the Department of Fisheries. The system of certificates being operated in Thailand is also important, as are the regular visits Thai farms undergo as a part of the process of certification. These things show that the industry is getting organized, and though things can always be improved, the industry is well positioned for mutualization.

An important issue in how an industry stock insurance programme can be structured, is how the sum insured is established? It is possible to insure on a per kilo price, but quantum is a critical matter – how many post larvae (PLs) were stocked in a pond, or how many kilos were harvested? All these elements have a bearing on how an insurance arrangement should be constructed. There are a number of price models for biomass valuation, and a mutual will have to decide what the best model is for the industry, or maybe for a certain group. Large operations require a different valuation model than small parties.

The level and quality of veterinary support and account management, as well as accounting procedures, may differ from operation to operation. Not everyone will want, or get, the same insurance arrangement. The self-insurance "deductibles" will differ between different farming operations, or the premiums will vary. Operations with low standards of farm management may need to accept, for example, a 30 percent deductible, which may be reduced if they improve their operational procedures.

Lessons learned in other sectors of aquaculture are transferable to Thai aquaculture, and are very important. Risk management is a top-down process. The enthusiasm of employees is very important, but their involvement is not something that should be taken for granted. The individual farmer must be committed to risk management of all aspects of his/her operation, and equally all the important and substantial farmers must be committed to making a mutual a success. The shrimp farming industry may be a trade organization, and with different sections, but it must reach a collective decision to go ahead and examine in detail whether a mutual would be beneficial to the industry. If it decides to go ahead, however, it will be in the hands of individual farmers as to whether the mutual is successful. Only with the commitment of the producers who make the industry what it is, can a mutual be successful.

To introduce insurance, farm management has to be good. The farm should have invested in quality equipment, and secured the power supply. The administration should be in order and proper records should be kept, because if there is a loss, data is needed to prove it. If a farmer cannot show data it becomes more difficult to deal with the claims. Data is needed on feed, water temperatures, feed conversion results, growth rates, harvest times, what has been harvested, what mortalities have occurred? Members of a mutual will have to help generate information for the mutual; individual farmer members will have to provide information to the mutual, and this information will be shared, through the mutual, with other members, via the mutual's risk management programmes. This should benefit everyone who is a member of the mutual.

There is one final issue that needs to be mentioned, and that is "mandatory slaughter". In some aquaculture production areas, regional authorities, or the departments of fisheries, are able to intervene and force farmers to slaughter. This may be because a certain disease is in an area, for example. A decision is made, under the law, to deal with the disease outbreak by forcing farmers to slaughter their stock in order to prevent the disease spreading or becoming endemic. If this is possible in Thailand, either now or in the future, it will be of considerable importance to everyone in the industry, and particularly to a mutual. This aspect of the industry needs to be looked at very carefully, from the point of view of all who are interested, especially the government.

4.9 Mutual company start-up and operational procedures, Part One

Mr Paul Koronka, Director and CEO, Regis Mutual Management Ltd., United Kingdom

This presentation deals with the process that has to be gone through in order to go from here to a point where a mutual would actually commence operations. It deals with the issues on two levels, one is the general level, in which the general approach to the issues is examined, and secondly, a more specific look at the case for a shrimp industry mutual.

Critical mass is the most important start-up issue, as has been emphasized before. There is no point in attempting to start a mutual with just a handful of members. It is very important to make sure that a mutual is fully supported by the key people in an industry. The best approach is to find champions in the industry among those people who are considered innovators in their field, and whose lead people look to and follow. These people have to be found very early on and then the ethos of mutuality, the spirit of mutuality has to be understood and adopted. It is such a good concept that it generally sells itself, but the issues have to be explained in detail. Once the key innovators and leaders in an industry understand all the issues and the advantages of mutuality, they become the true ambassadors of the concept, and they can talk to their contacts and the people they know. They know the politics of the industry, and they need to gather support if mutualization is to go forward. The key leaders and decision makers are usually identified fairly quickly. They are usually prepared to form and serve on a steering committee. These are the prime ingredients that are needed at the beginning of any mutualization process.

The formation of a steering committee drawn from the industry and from other directly interested is a crucial step in the overall process. Steering committee members must be direct participants in the industry. Their knowledge and experience is needed to customize the concept to special needs of, in this case, shrimp farming. The work of the steering committee will be examined in more detail in due course.

Another key issue that has to be dealt with early on is membership. It is usually one of the first issues to be taken on by the steering committee who are going to be the members themselves. Again, this will be expanded on later.

The scope of cover is the next issue to consider, but it has to be considered alongside the financial implications. It has to go through an iterative process in order to arrive at the conclusions. In particular one has to look at funding very carefully.

Reinsurance is of prime importance in the formation of a mutual, as has already been discussed in Dr Kasten's presentations. It is vital to get reinsurance arrangements sorted out, and a key factor that reinsurers are looking for is acceptance and support for the mutual from the industry itself. Industry acceptance has to be secured first, and then discussions entered into with reinsurers. Experience indicates that reinsurers look carefully at how much real support a mutual has at grassroots level. If there is good support reinsurers will generally back the project.

Identifying the potential membership, enthusing them, finding the champions in the industry group are the first step, but it leads to some critical questions: Is a critical mass going to be reached? Is the pool going to be big enough to sustain itself? Will it be able to carry itself a sufficient amount of risk to tempt in the reinsurers and to spread the administrative costs?

In the case of the Thai shrimp industry, there are something like 13 000 farmers, and a total production of between 400 000 and 500 000 tonnes. Those are numbers that would indicate that a critical mass could be obtainable without too much difficulty. A reasonable percentage of the business is all that needs to be interested for the mutual to be viable. So in the case of the Thai shrimp industry, the potential appears to be there, and it important to point out that mass is not counted in numbers of members, it is premium volume that is important. A mutual can be viable with only ten members if these members' business produces enough premium to meet the objectives already outlined. In this industry there should be many more, and they should be able to generate sufficient premium to spread costs and take risk.

Another key question is whether members are prepared to share risk together. It is another fundamental question, and it is clearly of paramount relevance in the formation of a mutual. It is usually possible to interest the potential membership, by making them aware that the mutual will be run on an equitable basis, and that it will be under their control, and that the whole process is transparent. If these issues are understood, potential members will usually be willing to support the venture, even in circumstances where, on the commercial side, they are competing against each other. Members all face the same risks and bad luck could happen to any one of them, hence there is no reason in principle why they would not be prepared to share risk. But answers have to be ready, when potential members ask: Why should we share risk?

Potential members will also want to see that an equitable rating system is proposed; one that is fair, and one that they can see makes sense in the context of their businesses, and that they have some control over. These are all things that give confidence to the members that they can come in, and that they are sharing risk with people who are like-minded in terms of their risk management and attention to detail.

Data gathering and analysis is extremely important, especially as far as an industry like shrimp farming is concerned. It is vitally important to have as good data as can possibly be obtained. A considerable amount of superficial data appears to be available on the industry in Thailand, which is very encouraging. Claims data is unlikely to be available because farmers have not been making claims. However, data will have to be developed on incidents that have occurred on the farms of potential members. Data on the cost of recovery and re-establishment following a loss will also have to be developed. Individual farmers and members should have management data on those issues, and it is going to be very important to analyse it in detail. The data that is generated has to be accurate and representative of what is going on in the industry, at farm level. It will form the basis on which cover is designed and premiums determined, so it has to be reliable.

Much of this work will be consolidated into a feasibility study. In the middle of the mutualization process, a document has to be produced which is rather like a prospectus. It sets out how a mutual is going to be constituted, how it is going to be financed, what risks it is going to cover, and who the members are going to be. It will contain some financial modelling, and the financial modelling will include some stress testing to illustrate some difficult scenarios, to see how the structure will cope with them. This stage is quite a long way through the overall process, but when it is reached, some decisions can be made as to whether to go forward or not. The mutualization process cannot go forward blindly, with potential members not knowing what they are getting. Members cannot be expected to agree to join up, until that stage is reached.

The feasibility stage and the development of a prospectus, depends on data, and that is usually the most difficult thing to gather. However, in the case of the Thai shrimp industry, other issues are probably going to take time to resolve satisfactorily. Discussions with the government over the legal

framework and the capitalization need to be tackled early, and then, once the feasibility study is complete, the concept has to be launched on the prospective membership. Members then have to sign up to the concept, and when that stage is completed, the critical question has to be asked again: Is critical mass achievable? There was a lot of support initially, it appeared to be a good idea, but when the potential members see it in black and white, and see the pricing, are they prepared to back a mutual? At that it is essential that the critical mass situation is resolved.

Mutuals always start in a much smaller way than expected. This is particularly so when membership is not compulsory. Many potential members will sit on the fence until they see how the project is going. Of course, if everybody sits on the fence a project will not go anywhere. So overall, the process is a chicken and egg situation, and that is where the support of the champions referred to earlier becomes very important. It is they who will really drive the project, bring their own organizations in, and encourage their own network of potential members to join. At a certain point it will become clear that the premium volume already referred to is adequate to carry risk and cover costs, and at that point a plan for implementation must be ready to put into action.

There is a lot to do to set up a mutual insurance company, particularly if potentially it may have thousands of members. A big infrastructure is needed, and systems that can handle it, so the whole project has to be planned with military precision. Mutuals start on a particular day, and on that day, everything has to be ready at a particular time. A comprehensive plan is needed to bring this off successfully.

One important part of the whole project is the formulation of a migration strategy. In Thailand, where there is no existing insurance, this is not a big issue. Because there is no insurance, going from no insurance to some insurance, is not difficult. It is only relevant where people are insured already and have to be moved from their current insurance arrangements to the mutual. In such situations there are often forces that will try to prevent the mutual from getting off the ground. Insurers carrying the members' insurances, whose interests are their own interests and not the interests of the members, often devote a great deal of effort trying to persuade prospective members that a mutual is an awful idea. The more such efforts are made, the more members can believe what a good idea it actually is.

One of the decisions that has to be made is whether members are all going to renew on the same day or whether membership renewals will be staggered. Some mutuals have what is called a co-terminus policy, under which every member renews at the beginning of the year and their policies finish at the end of the year. There are others who take members on throughout the year, giving them annual policies, which are underwritten on what is known in the insurance industry as a "risks attaching" basis. With so many potential members, the "risks attaching" basis is probably the best way to operate. Handling many thousands of members all renewing on the same day, would be an administrative nightmare. Again, this is a technicality, but it is an example of the sort of things that the steering committee and board members have to think about when planning to start a mutual.

Overcoming critical mass issues, finding who is interested in joining, engaging with the champions, persuading them to talk to their networks, all this will almost certainly require running a series of seminars around the country. The purpose of such seminars is to pull together groups of farmers and their cooperative organizations, to explain the details of mutuality and the mutual, and how it is going to operate.

Everything will have to be thought about at the beginning of the project. It will be prudent to start off in a moderate way, and aim to grow slowly and steadily. It is a chicken and egg situation that is quite normal in the start-up of a mutual; some people sit on the fence and wait to see how it goes, and some will be persuaded by their colleagues who have already decided to join. However, the more upfront support there is, the easier it will be to talk to government and the easier it will be to talk to reinsurers and everybody else involved. Mutuals are 100 percent reliant on the support they have from the members. If there is no member support then a mutual is not viable. It is as simple as that.

Mutualization is not a third party exercise, with somebody coming in and saying what can they do for the industry? If it is going to be a success it is only the members who can make it so.

A certain amount has already been said about the steering committee. The steering committee is a very important component of any mutual. As has been said, the members own the mutual, so the steering committee must customize the project to meet the industry's requirements, and that requires much thought.

The steering committee needs to be drawn from the potential membership, who should make up the majority of committee members. However, there are other supporters whom it may be necessary to bring on to the committee. The government, reinsurance advisers, potential managers, should all be on it. At the same time it is recommended that members number no more than 12. It is often said that 12 is the magic number and that once it is exceeded it becomes almost uncontrollable.

Steering committee members drawn from the industry are likely to be the first board of directors. It does not always follow, but the first board of directors should be drawn from the industry, and the directors should be drawn from those who have been involved in that start-up process, and who understand precisely what the mutual is about.

The steering committee has to resolve a number of issues, the first of which is who will be allowed to become members of the organization. In a Thai shrimp industry mutual, shrimp farmers are obviously prime candidates to become members, but there are a number of other possibilities, processors, hatcheries, equipment suppliers, can all be allowed to join. It would be quite reasonable to restrict membership to farmers only, but it might be advantageous to extend it, or at least allow for the possibility of extending it at some time in the future. Whatever is decided has got to be enshrined in the constitution.

Depending on how the industry is structured, there may be different levels of membership. If the industry is made up of various associations and regional levels, it could be that those associations might have either affiliated status, or even membership status. Again, it is something that has to be decided by the steering committee and built into the constitution.

The legal format has to be determined at the same time, and the fact that the word "mutual" is not known in the Thai language means that a new situation will have to be established in law. This need not be a problem, or take long to resolve. There are numerous examples of legislative acts around the world establishing mutuals of this type. Examples would not be difficult to provide to parliamentary draughtsman, if there is the will there to frame new legislation for Thailand. This situation is critical. At some stage a committee will have to engage with the government, and the more support it has from the industry, the easier it will be to gain government support. The form of that support will need to be worked out.

The next issue for the steering committee to tackle is the issue of coverage.

It has already been mentioned that cover is integrally linked with the finances of the mutual, but it must also be linked with current risk management processes. It is not necessary for a mutual to offer full cover on everything, particularly when it is in a start-up situation. It is important for the steering committee and first members to stick to what they know. They have to identify what the farmers need to sustain themselves. As far as crop protection is concerned, which is likely to be the most prominent cover sought by producers, is it just total loss cover? Is it more than that? Is it the cost of re-establishing themselves after an incident, which is possibly the most important thing? The answers to these questions are not known, but cover will need to be tailored very carefully. Crop insurance is the most difficult area for the Thai shrimp industry, and the absence of cost effective cover in the international aquaculture insurance market is one of the compelling reasons to form a mutual. However, there is no need for a mutual to tackle that issue immediately at start-up. There are other valuable coverages like the accident and health insurance, which has been raised several times outside

the formal workshop proceedings. This may be a type of insurance, particularly to small farmers, that a mutual could very easily provide. There is ample precedence and information available to establish the necessary guidelines, but the form of crop cover will need to be worked out very carefully.

The committee has to constantly monitor data that is coming through. This has to be processed and put into models, financial models which can be stress tested to see how a mutual would react in particular circumstances. Data gathering and stress testing has to be linked with the structuring of reinsurance protection and government support. It is a process that will go on throughout the life of the steering committee until the point is reached where it can produce its feasibility study, its prospectus and its financing proposals. Financing a mutual, as has already been said, is high on the agenda. How can the steering committee ensure that it is fully funded? What is a total loss situation for the mutual and how could it cope with that? With care, all this can be worked out, and there is no reason why a mutual in the Thai shrimp industry could not be an extremely robust vehicle, so long as the balance between the risk assumed by the mutual and the funding available is carefully balanced and unforeseen risks are allowed for.

The initial start-up costs need to be identified. Unfortunately it is not possible to get something for nothing in this world, and therefore inevitably, when starting up what is going to be quite a major insurance undertaking, there will be some costs. For example, as soon as a lawyer is asked to draw up a document, or give an opinion on something, costs are incurred. It is important to identify early on, just what such basic costs are likely to be, and work out how they can be funded. There may be some funding available internationally to support the start-up of a Thai shrimp industry mutual; it is not guaranteed that there will be, but it is something that it is well worth looking into, and funds will need to be identified if such help is not available.

The steering committee will need to establish a constitution. This will require legal work and, in Thailand, work with the government will be needed to establish an Act to enable the creation of a mutual. It would be excellent if a Thai shrimp industry mutual could be constituted under its own legislative act. There are many examples of this and many cooperatives have been established under Cooperative Acts around the world. It would be good if a precedent for the shrimp industry was set here.

Once it is decided what risks will be covered, cover wordings will have to be drawn up. Each individual member will have to be rated separately, and each one will require a certificate giving all the details of the particular coverage that they have bought. Cover wordings and certificates of entry giving covers that members have bought, and the pricing etc., as well as any special terms, will all have to be created for a new mutual. There is thus a great deal of documentation to prepare and approve. However, much of it is standard documentation, and there are plenty of precedents around to draw on. There is no need to “reinvent the wheel” in this area. It is a matter of customising things and making sure that they are appropriate.

Pricing the different types of cover, especially the crop cover, will be a very interesting exercise. It will be necessary to use some actuaries to help the industry to do that. Again, there are many sources of help available, that can assist in looking at the potential losses and claims scenarios, all of which will have a direct bearing on the price to be charged for cover, and of course for the reinsurance and administrative costs that have to be taken into account as well. The reinsurance costs will depend on exactly how the reinsurance contracts are structured.

The financial models will have to be extensive. Models are generally fully interactive, enabling extensive “what if” exercises to be conducted, and many different scenarios to be entered to test the sensitivity of the structure that has been devised. Regis Mutual Management is doing this type of work all the time and can work with the steering committee, in detail, so that the committee can be satisfied that the final financial model is robust and can deal with all expected and a lot of unexpected situations it may have to confront.

As already mentioned, a mutual will need ultimately authorization from the government. Mutuals usually enjoy dispensation from normal capitalization requirements because they are in a special category. If a Thai shrimp industry mutual can get government support on the aggregate losses, and reinsurance support as well, and a way to deal with systemic losses that will probably have to involve the government too, then there is no reason why government authorization for the setting up of a mutual cannot be obtained.

The reinsurance contracts need to be negotiated and if reinsurers can be involved at a fairly early stage, establishing reinsurance arrangements can be quite an easy process. As has already been mentioned, reinsurers will be looking to see what support is coming from the industry, and that level of support is going to be very important. Reinsurers should be introduced to the steering committee, after it has met once or twice and established itself. The steering committee should be looking for a long term partnership with reinsurers. Setting up a mutual is not a short-term exercise; it is a partnership that has to go forward and plan for the future, planning for it over many years.

Finally, the committee has to address the question of a management contract for the day-to-day management of the mutual. Management issues will be dealt with in part two of this presentation.

It is very important for everyone connected with the formation of a mutual to understand that a number of vested interests will try and stop mutualization. Usually it is the insurance market doing it, not the reinsurance market – the insurance market that has not been terribly successful in meeting the needs of the area in which the mutual is being formed.

Whenever the word mutual is raised in a market, everybody takes note. Suddenly it is recognized that if a sector of industry is going to the length of setting up its own insurance facility, it must be good business, and they suddenly start to get involved in the market. This may be perceived to be a good thing, and it is quite flattering, but if it disrupts a thoroughly valuable process, it is not a good thing! The industry's interest is paramount; it is not a short term interest, the objective is for a mutual to still be operating in 20 or 30 years time. Potential members of a mutual must beware of people who have interests that are not the same as their interests. They must question why an alternative to mutualization is being proposed. The Thai shrimp industry has the perfect set-up to create and operate a mutual for its own benefit, and if there's any good time to do that, it is now. There appear to be no critical issues that cannot be overcome. In other words there is nothing that can stop the process of mutualization, if that is what the industry wants.

4.10 Summing-up of Day 1

Mr Ake Olofsson, Rural Finance Officer, FAO Rural Infrastructure and Agro-Industries Division

Insurance is about spreading risk. It is not about eliminating risk. It is either spread over time by a local insurance company, or it is spread geographically through the international reinsurance market. It must be remembered that insurance is a business, whoever provides it. Both sides of the process have to benefit from it. The providers of insurance have to see a return on their involvement, and the insured also has to perceive a benefit in buying insurance cover.

We learned that there are many actors involved in insurance. There is the insured and the insurance company, and the reinsurance market. Reinsurance is important in spreading risks that cannot be handled locally.

Finally, there is the Government which is involved in the whole area of regulating the market for insurance. When we come to mutualization we don't know if suitable legislation is in place, or as Paul Koronka said, may need to be passed to facilitate the formation of a mutual. This should not be a problem.

All these actors have to work together if we want to see an insurance programme in place in Thailand to support small- and medium-sized farmers.

We have learned that the insurance companies are not currently interested in the shrimp industry, except for the big commercial farmers, because it is too costly, or they may not understand the business. They may not perceive any potential in it, or they may already do enough business elsewhere. However, like banks offering finance to farmers, if insurance companies sense a profit they will not have to be persuaded to get involved. Therefore the lack of interest on the part of the commercial insurers suggests that a mutual insurance company can be established. Paul Koronka has outlined the basics of what a mutual insurance company is and how it operates. Now we have to establish how one can be set up; what does it take to do it.

The main message to remember is that a mutual is run by its members for themselves. It does not have to respond to any shareholders and offer dividends to them. Of course it cannot make losses over time, and it has to produce a surplus, but it is not like a general insurance company that has to offer dividends to its shareholders.

We have also learned that mutuals are preferred clients of reinsurance companies, providing each one are backed up by the industry it serves. All this further strengthens my belief in the possibilities of establishing a mutual for shrimp farmers. Mark Vos pointed out that the shrimp farming industry is already well positioned to create a mutual insurance company, not only because the farmers are already organized into cooperatives, but because there is already a very good base of data on shrimp farming, including certification and controls, and data on losses. Information and transparency is extremely important in any type of insurance that is to be established. Information on the industry is vital; what figures are involved – what numbers. From good statistics, the real and possible alternatives for establishing a mutual insurance company can be determined.

4.11 Mutual company start-up and operational procedures, Part Two

Mr Paul Koronka, Director and CEO, Regis Mutual Management Ltd, United Kingdom

This is the second part of the mutual start-up procedures and focuses on management, how it is organized, and what managers have to do. It will talk again about the finance structure and give some further examples of what a mutual might look like. It will also cover marketing and communications, and finally, timelines.

A mutual is a small insurance company and has to have all the functionality that would be found in an insurance company. It has to provide same levels of service. In fact, it has to provide a superior service because it is focused on and dedicated to the needs of its members. Its first task is to underwrite the individual risks that are presented to it by members, and it also has to underwrite the book of all the members' business as a whole, and make sure the underwriting makes sense and is within the parameters originally laid down. Underwriting is an extremely important function, and as was said in part one of this presentation. The way prices are calculated is a matter of discussion by the steering committee initially, and then by the board of directors, who must approve the methodology used by the managers.

After underwriting, the next most important function is handling and paying claims. The mutual is obviously there to pay claims, and to pay them in a sympathetic but fair and equitable way. Claims management is another very important part of the management process. A mutual will use professional adjusters in the field to attend losses and gather information, but when the adjusters' reports come in they have to be approved and then paid. Where there are liability claims, they have to be investigated and defended as effectively as possible. Recoveries from third parties also have to be identified and managed. The claims function is a very important function, and apart from when a member enters the mutual and pays the premium, it is through claims that members gain full exposure to what a mutual is

all about. It is when a member has a claim and is in trouble and needs some assistance that the true value of a mutual is brought home to him.

Compliance and governance are very important these days. Good governance is essential and the board will want to ensure that all the procedures are properly followed, that everything is properly documented, and that the mutual is run in a professional way.

Accounting is vital. It is particularly important when there are thousands of transactions going on all the time. It is essential to ensure that management information flows in real time, and that the board and managers know exactly what the financial system is at any point. Reinsurers will require regular reports and will want to know what business has been underwritten, and especially what the claims position is, something the board will also want to know.

A mutual will start with a body of members but will hopefully expand, and even though it is dedicated to an industry group, marketing sales is still a very important function. The best sales people will be the existing members, and word of mouth is a very powerful sales tool in a close knit industry. In the Thai shrimp industry, with thousands of potential members, getting the message across such a wide body of people will be a challenge, so marketing and sales are very important functions.

A mutual will have to be registered, and in Thailand it will probably be founded under a new act and will have to comply with the Companies Acts and laws, so the company secretarial role is another role that the managers must perform on behalf of the board. The managers will prepare all the papers for board meetings, and will attend board meetings, not as directors, but as managers, to give advice and to record all decisions that are taken.

Managers will also be responsible for liaising with the reinsurers. Reinsurers are such a vital part of the structure that the more they can see that the mutual is well managed, the more confidence they will have and the longer view they will take of the project. Reinsurers have to be properly informed, even when things may not be going as well as had been hoped. Liaison with them is another key task of managers.

Much mention has been made of risk management and the fact that it must be embedded in a sound mutual structure. Risk management advice and support to members has to be organized by the managers and can be at different levels. The service has significant cost implications and it has to fit in with the industry. A risk management programme also has to shape the way members and the industry need to operate in the future, so it is something that the managers will always have to practice and promote. The managers have access to all the mutual's data and the dissemination of that data, in a format that can be used for risk management purposes, is a very important way forward for a mutual.

A mutual will depend on its IT systems. One with only five or six members can be run quite simply; if it has thousands of members it has to have good IT systems. This is something that has to be thought through very carefully. Off-the-shelf systems exist which can be modified and adapted, but that has to be done before the start-up, and the system then has to be properly maintained and developed to keep it up-to-date with the advance of IT systems generally. The IT infrastructure of a Thai shrimp industry mutual is absolutely vital to its success.

Managing a mutual is a professional business that calls for a great deal of experience which cannot be conjured out of the air. For this reason, potential members and candidates drawn, for example, from the insurance industry, are not suitable to fill a management function that is normally outsourced to professional managers. That does not mean that control is given away, quite the reverse! Professional managers' interests will be aligned with the mutual by nature of their professionalism. That is the whole point of bringing in professional mutual managers. Professional managers understand that there can be no conflicts of interest between the interests of the managers and the interests of the mutual and there has to develop a bond of trust between the two. Professional managers have to be given incentives, and there are, for instance, a number of different ways of calculating fees.

First of all there must be no hidden commissions; commissions are absolutely rife in the insurance business and this would be totally the wrong way for the managers to be remunerated. Managers normally negotiate an annual fee with the board of directors following an open and transparent dialogue about the costs of running the mutual. Some managers are paid bonuses based on profitability, but it can be counter-productive to pay a percentage of surpluses; it can create a conflict of interest, and lead to possible overcharging of members in order to build up surpluses. Balance is needed, and an open dialogue is absolutely essential.

Professional management is usually contracted on a five-year rolling contract basis, but with an escape clause. Such clauses can be fairly swift and draconian as continuation of the contract is a matter of trust. If there is trust then the contract should continue, and if there is not, then it should end. The whole purpose of having a five-year term is so that the managers can plan for the long term. It is not attractive for professional managers to manage a mutual for a year, because there is no future in that either for the mutual or the managers, and it does not foster continuity and long term development. It is an important element to think about and get right.

Above all the managers are the guardians of the mutual ethos. The concept of mutuality and what it means is discussed in part one where it was emphasized how important it was that all decisions, big and small, must be taken with the mutual's interests at heart and in a mutual way. It is the sum of all decisions taken from day-to-day, that make a mutual what it should be, an organization devoted to the interests of its members. Where managers only have an insurance company view then they are likely just to produce a product that looks like an insurance product; that is not the objective. The objective is for a mutual to operate for the benefit of its members. So the mutual ethos must guide the entire set-up and operation of the venture and be embedded in everything it does.

Many of the financial aspects of setting up and running a mutual have been covered in previous presentations. However, it is worth re-visiting the modelling process and what it means. Two examples are used to show that by developing financial models the structure can be stress-tested. The structure can be measured against a range of scenarios that can be devised to test it almost to destruction and see how resilient it is. That is an important function that managers have to go through with the steering committee.

Stress testing can facilitate the better setting of critical parameters such as a mutual's vertical and horizontal retention levels (Slide 16 Appendix G). The members' deductibles are shown at the bottom; they can be quite low and are negotiable with each member. Next is the mutual's retention, which vertically means the mutual will take a proportion of each claim, which could be a percentage or a certain amount of each claim.

In an example of a claim of Baht10 million and a retention of Baht5 million, the mutual will take the first Baht5 million of that Baht10 million claim, and will claim back Baht5 million from reinsurers. That is what is meant by vertical retention. There could, however, be many claims within a Baht5 million level, which is why an aggregate retention should be set as well. This is the "sideways" retention shown in Slide 16 Appendix G. Beyond a mutual's retention on each loss, some aggregate protection should be arranged, either in the form of reinsurance, or possibly with government support in the early years. Such figures have to be set at a level that is affordable by the mutual, and that will depend on the level of support it has, i.e. the number of members it has, and what they are paying into the mutual. It will also depend on the level of cover and claims as well. Stress testing can enable protection to be at an optimum level for the mutual's circumstances.

Some example figures are shown in Table 1 which gives an idea of a very simple profit and loss account for a mutual. Figures are shown in US dollars. In terms of premium levels the Thai shrimp industry could easily generate premium levels of around US$3 million, which is approximately Baht90 million, going up to US$10 million over five years. It is possible premium income could be double that size, given the numbers of on-growing farmers, hatcheries, and processors in the Thai industry.

Size would depend on the level of take up by members, and on the amount of cover they require. The figures are made up but are possibly not too far out of line.

Table 1. Simple profit and loss account.

THAI Shrimp Mutual (all figures made up, in US$)					
Income	Year 1	Year 2	Year 3	Year 4	Year 5
Premiums	3 000 000	5 000 000	6 600 000	8 000 000	10 000 000
Investment income	25 000	40 000	150 000	170 000	200 000
Reinsurance recoveries	333 000			1 000 000	
Costs					
Net claims	1 300 000	2 000 000	2 000 000	5 000 000	2 600 000
Admin/Management	500 000	750 000	800 000	1 000 000	1 200 000
Reinsurance Premiums	1 000 000	1 000 000	1 000 000	1 000 000	1 000 000
Surplus	558 000	1 290 000	2 950 000	2 170 000	5 400 000
Surplus c/f	558 000	1 848 000	4 798 000	6 968 000	12 368 000

Another source of income that has to be taken into account is investment income. Initially a mutual will not be able to generate a great deal of investment income because its fund build-up will be very small. But as funds do build up, investment income will rise and go back into the pot to help the mutual. There are also reinsurance recoveries. These are claims that are received back from the reinsurers and come back in on the income side. In terms of costs, there are claims against the mutual; the net claims are shown in Table 1. The administration and management effort rises as the size of the mutual increases and the volume of work increases. Reinsurance premiums will rise as the volume of business grows; the figures in Table 1 are arbitrary representations of these, and must not be taken as other than approximate indications to give an idea. The reinsurance proportion of expenses should be higher in the early years than later on, when the mutual's income has built up. The 'rates' will go down, or should go down over a period of time. It is likely to start at quite a high level and then moderate as a percentage, depending on the claims experience. The objective is to try to smooth out the results so that reinsurers are happy. If reinsurers are not happy then the mutual is going to face difficulties if reinsurers put up the rates dramatically, or even pull out. They have got to get a sensible deal over a period of time.

The objective for the mutual is to create surpluses which can accumulate over the years. The sample figures in Table 1 show quite a healthy surplus building up, with some claims, particularly in Year 4 in which it can be seen that not only have the net claims reached US$5 million out of a total income of US$8 million but also there has been a reinsurance recovery of US$1 million indicating an overshoot there too. So the total claim is US$6 million out of a premium of US$8 million which the mutual can stand because it has built up surpluses over some early years. That is a scenario that can be expected from time to time. The model in Table 1 has to be stress-tested in a much more rigorous way in the process of finalising all the aspects.

***NOTE**: At this point, Mr Koronka displayed some real figures abstracted from a model of a newly developed mutual based in Europe. The figures shown were confidential and were not issued to workshop participants. They are not therefore included in this report. However, where appropriate, some of the comments Mr Koronka made about them are reported.*

The figures related to a mutual that has few, very large, members. The members have very large portfolios and occasionally have some very large claims. Mr Koronka advised that the first exercise

was to build a model that allowed the input of various parameters that were divided into two sections, first of all general expenses, and secondly claims.

The scenario started with five members, growing to 25 members after five years. The average contributions of members were high, ranging between £4.5 million and £3 million for the slightly smaller members. The mutual was viable with only five members growing to 25 members, because they were very large entities.

The mutual's retention on an each and every loss basis, which is a vertical retention, started off at £3 million for each loss, and grew to £8 million after five years, i.e. the mutual's retention grew as the size of the mutual increased. The aggregate also grew, and it grew quite dramatically because there was a very large fund buildup. The mutual's aggregate started off at US$8 million and grew to £55 million after five years. *Though the actual figures are not available, it is the principles that Mr Koronka wanted to illustrate.*

Reinsurance costs were expressed in the model as a percentage that started off at a very high level, driven by the retention levels. They started off at 50 percent, so in its first year the mutual paid 50 percent of its income away in reinsurance. But the retention levels increase towards Year 5, quite dramatically, so the percentage paid away to reinsurers dropped from 50 percent to 20 percent over five years. That can only be done because the retention levels went up dramatically, and the premium levels went up dramatically too. The particular model showed such good profitability for the reinsurers that it was appropriate to negotiate a profit share with them. In the event that reinsurers make more than an 80 percent profit, the mutual would be due a small profit share of 10 percent. If the claims exceed 20 percent loss ratio for the reinsurers then no profit share would be due.

The model showed that some tax would have to be paid, and the management fee. The management fee in the model was expressed as a percentage of income and was quite low. It was only low because the numbers were very large. A normal management fee range would be between 10 percent and 20 percent, depending on the size of the mutual. In the model it starts at 8 percent and drops to 5 percent because of the large figures.

Legal and professional fees were shown in the model as being quite heavy in the early years, dropping back to a moderate level. Director's fees were also included in the model. In the particular mutual illustrated in the model, the directors are able to draw fees; that is not usually the case. Other expenses in the model included bank charges, marketing costs, and miscellaneous expenses. The model was structured in a way that allowed claims to be manipulated, to facilitate stress testing of various claim scenarios, firstly with losses below £1million, followed by large losses which were entered separately as they were affected by where the retention levels were set. In Year 1 £ 4 million "noise" was entered representing the average normal claims and one claim of £5 million. In Year 2 the "noise" was increased to £7 million, to reflect that the mutual had increased in size, prompting an average increase in claims. This picture was manipulated with the insertion of two large claims, one of £9 million and one of £2 million and the same was done in each subsequent year. With the mutual growing, in Year 5 the model was loaded with £40 million of claims. From the model the contribution income can be seen to start off at £22 million, rising to £97 million after 5 years. On that basis, the investment income is predicted to rise and produce a profit share in the last two years.

The model's total claims in the first year, of £9 million, made up of £4 million routine claims and one claim of £5 million, when increased by US$40 million of claims in the last year, ultimately demonstrates that the excess recoveries, actually diminishes in proportion.

On the expenditure side the model shows, after the application of management fees and all the other expenses, a surplus in the first year of £2.3 million, rising to a surplus of £34 million in Year 5 and the surplus balance, the accumulated surpluses rise starting off at a first year surplus of £2 million. By the end of five years £40 million of claims are predicted to have been paid, £20 or £30 million of reinsurance premiums recovered, and £100 million is in the bank. The picture looks optimistic, but it

reflects exactly what a mutual is all about, and it indicates the amount of fat in the insurance market for the particular group concerned. The figures modelled represent the levels of premium that the group are paying, the sort of claims they are getting, and it shows you why people go down the route of mutuality even in a developed market like Europe.

The process outlined gives a flavour of the principles involved, of how the modelling is done, and how they can be used to test exactly how resilient it is, and where all the levels should be set.

As has already been mentioned, members make the best sales force, and word of mouth is the most powerful way of getting the message across to potential members. The managers play a very important supporting role. They can produce brochures, give presentations and follow up leads. Brochures and explanatory pamphlets are needed, and a website. In the case of the Thai shrimp industry, there will need to be some sort of call centre, telephone centre, because members will ring in and with potentially thousands of members, communications will be very active. People will ring for advice; “Is this covered?”, “Can I do this?” “Will you please extend my cover?” “Help, I've had a claim!” Such calls are to be expected and will have to be handled by a system built into the structure. An industry mutual has to be responsive. Members should be encouraged to communicate with it whenever they have doubts or where they have problems. A lot of the marketing will probably be done by holding seminars around the country, for individual groups of farmers and for cooperatives. There will be industry events and shows that can be used to get the message across.

The following is a list of the main timelines:

- Steering group
- Funding requirements
- Discussions with Government
- Discussions with reinsurers
- Feasibility study/Prospectus
- Decision to proceed or not
- Mutual legislation
- Establishment of mutual
- Management contract
- State date established

Detailed timings are not shown and the only point that can be made about them is that the quicker a steering committee is established, the faster things will move. Once a committee is in place, it can look at the funding requirements for the start-up, and work out how funding is going to be arranged. The committee will be able to hold discussions with the government and begin the discussions with the reinsurers. Work can be started on a feasibility as soon as the committee is in place, and once it has been completed, a final decision on whether to proceed or not can be made. If the decision is to go ahead, a mutual legislation would have to be put in place, then the mutual can be established, the management contract negotiated and a start date set.

Many of the processes outlined in the workshop presentations can be worked on at the same time, and they are all interdependent in one way or another. So the important thing is the steering group; get that going, start to work up a proposition that people can look at, and the project is on its way.

4.12 Aquaculture claims

Mr Mark Vos, Director of Client Services, Crawford & Company, The Netherlands

Risk management has already been established as a key tool of a mutual. However, a mutual has to practice equality among the members and therefore, within the members or the potential members of the mutual, risk management is a tool to ensure that individual members expose the mutual reasonably

equally. Hatcheries are completely different to on- growers, and each operation has its own risk elements, and a mutual has to decide how to approach the risks of each operation while observing the principle of equality among members. In other words, a mutual must try to avoid insuring a member whose operation has a much higher risk, on the same terms as other members who have much better operations. Risk management is a tool for helping all members to achieve the best and safest operating procedures.

Hatcheries have to be treated separately from on-growers because their risks and operational structures are different. Risk management practice cannot dictate equality between different types of operation, but it can work towards equality of standards within each sector, recognizing at the same time that there are bound to be differences between operators within each sector.

Each sector has to be handled by differential premium rating. Golf gives a good, if converse example, of what is meant here. The basic rules of the game are the same for everyone, but there are different levels of handicap for each player. Some players are very good and have low handicaps, others are not so good and have high handicaps, and there are some in between. But they are all golfers and they all want to get better over time. In a mutual, not every member is as good as the other, but the objective is to work towards the highest standards for all members and, in the case of shrimp farming, there need to be uniform standards for reliable water testing, crop management, and all the elements that go into growing shrimp.

Information on which to base premium rating structures will come from farmers themselves, from the cooperative which have their own opinions and also from guidelines from the Department of Fisheries. The Department of Fisheries has provided consultancy to farmers and knows a great deal about the industry, farming processes and methods, the risks involved, and the way many of them can be avoided. For a mutual, general information that the Department of Fisheries has can become vital in helping the mutual to look after members' interests. With the development of a mutual, there is a role change with the Department of Fisheries whose support the mutual will depend on.

The mutual will also need the support of veterinarians. Everyone connected with the industry is concerned about the vital issue of "residues". Rejection is a big issue in Europe, and in future maybe in other areas as well. At the border of Europe, very sophisticated equipment is used and laboratories in Thailand need to have similar kinds of testing equipment. If testing results in Thailand are not of a similar standard to those in Europe, there are likely to be problems when exported shrimp enter in Europe. If a mutual is to cover farmers' risk of rejection of their exported product, it will have to get crops tested with procedures that are harmonized with European health authorities. This means that suddenly the mutual is not only providing insurance, but is interested in supporting the farmers and pushing the Department of Fisheries to see that proper testing equipment and procedures are used throughout the industry. The Department of Fisheries' position changes with the formation of a mutual. It has been giving advice, and suddenly it becomes a consultant for the mutual. It is a big change.

The same kind of consideration applies to other risks to a shrimp farm's production. Pollution, salinity changes and oil spillages, power supply and back-up can all be tackled on behalf of members by a mutual. For example, if there are a lot of failures in a region, the mutual can intervene with the Ministry of Energy to secure better power supplies to the region. The mutual can also pursue polluters much more effectively than individual members. So suddenly the mutual has a big influence in supporting members. This is a bonus.

Returning to rejection insurance which people have indicated is of particular interest to them. In a normal situation there is a contract; shrimp are sold, for example, to Europe, to a trader in Rotterdam. There will be a letter of credit and as soon as the ship carrying the shrimp arrives in Rotterdam, the farmer can obtain payment on the basis of the letter of credit. The ship, on its way, is insured for all perils, including the sinking of the vessel. However, when the cargo of shrimp lands in Rotterdam it is not actually in Europe because it is still in transition stage. The containers are opened by customs to

look for weapons and check whether the cargo is the same as on the documents. A veterinary inspector will also inspect the contents. The container is sealed again and the veterinary inspector checks all kinds of elements of the samples he has taken.

The history in the trade is that bio-toxin residues and heavy metals are clear focuses of the health authorities. If any of them are found in a cargo of shrimp, the shipment is not allowed to enter Europe. The decision is reached on the basis of the levels of polluting residue the meter read contains. This is why the mutual or the Department of Fisheries becomes important. Producers need to know what the acceptable levels are in Europe at the border. If the cargo of shrimp is not allowed to enter Europe, the trader in Rotterdam has a problem. He has paid out through the letter of credit, for example, half a million dollars, and the cargo is at the border but is not allowed to enter Europe. That is the risk for the trader and because this trader at this moment is faced with rejection of the shipment and its ban on entering Europe. The trader can buy insurance to cover this risk.

The buyer can buy a Europe rejection insurance and whenever there is a rejection claim the buyer goes to his insurer and request payment of half a million dollars, because the container is at the border and not allowed to enter the country. In these circumstances, Crawford, as loss adjusters are asked to act on behalf of the insurers. This year we have already had 25 claims of rejection – not of shrimp from Thailand, but of cheese, things like buffalo meat, which is not allowed in Europe but people still try to trick the system, and salmonella on beef. Salmonella is related to chicken; beef cannot have on it, so it is clear that the suppliers are playing games. There are all kinds of things that people try to sell or try to deliver which is not officially represented in the content listed in the documentation.

That is the story of rejection, but it is a vital element for Thai shrimp farmers that your equipment and testing and certification process are in line with Europe's quality of equipment and standards of testing. Then the chance that Thai shrimp will be barred from entering Europe is minimal. When a mutual starts to operate, it becomes a provider of assistance, a consultant to its members, discussing such issues with the Department of Fisheries and possibly with authorities, and sharing information.

The case of ISA (infectious salmon anemia) in Chilean salmon gives a clear example of how a mutual can play a role in a serious disease. ISA is a disease that had been experienced in Europe.

When it came to identifying the disease, the laboratory analysis in Chile did not respond well to the reactors from other sources outside Chile. In this case there was a different strain of the bacteria, it was a virus, and that was not detected by the laboratories. This is an example of where a mutual can put pressure on the Department of Fisheries to assist members. It can fight for better quality scientific and technical support, to bring in specialists who can assist in identifying and overcoming a problem, and whenever there are new diseases get information fast.

When there is a claim on an insurance policy, the adjuster has to check how the claim developed. It is common to have an "occurrence clause" in an aquaculture insurance policy. This determines the point at which a claim starts. This is usually when abnormal behaviour in the fish is observed, suggesting the existence of stress or a disease. Such a condition would usually be noted in the farmer log book for the site concerned. A very low mortality rate that increases by, for example doubling should prompt the producer to put insurers on alert, and to investigate what is actually on. Where does the claim start?

The existence of one or more laboratory tests that confirm the existence of an identifiable pathogen means that there is proof that something is wrong. In the case of the Chilean situation, where the laboratories could not detect the actual virus, and thus what was going on, it is very difficult for the farmer to meet the policy terms. There are a lot of questions, but fish are dying. The occurrence clause also says the situation should be reported if mortalities significantly exceed the natural or historic mortality of the particular site. So if the mortality rate is ½ percent, it moves to 1 percent mortality, and then to 1½ percent mortality, is that something to alert insurers to? The answer is yes! It may grow to 2 percent, or 3 percent, and it may grow to 20 percent or 50 percent while results of veterinary tests are awaited.

This raises the question of how a mutual will design its aquaculture policies. Members, as a group, have to define what they need, and it comes back to earlier sessions about what kind of risks do Thai shrimp producers want to insure and what needs to be insured.

The standard aquaculture insurance policy occurrence clause requires a producer to notify insurers within 72 hours of the start of a loss. Mortalities that occur more than 72 hours before insurers are advised are excluded. What does the farmer do if he still does not know exactly what the situation is himself? This is a difficult issue and it can have, as it did in the Chilean disease, enormous consequences.

Whenever there is something wrong in the stock, or part of the stock, the policy instructs the farmer to take any reasonable measures to mitigate a loss. The farmer should do whatever is necessary to save the affected stock, and to protect other stock threatened by the situation. This means treating a pond or sea cage and if no change is achieved, it may be appropriate to start culling or harvesting. In other words, if the farmer still does not know what is going on and has still not heard the results of tests, but has escalating mortalities, he can only take the position that he has to act. If he thinks that it is the best thing to do, he must then harvest his entire pond or cage.

It is a difficult decision, because after, perhaps, another week of investigations, the right medicine may be found. Nevertheless, when a decision is taken to deliberately slaughter or deliberately harvest stock, it is made because there is a rise in mortality and a risk of further mortalities, but at a time when the stock can still be sold. Once the stock is treated with medications, it may not be marketable.

Such decisions will be made in consultation with a mutual, once it is in operation. The mutual suddenly becomes a partner in business and becomes involved in these decisions. The actual value at the moment of forced harvesting may only get US$2.00 or US$2.50 for the size of the shrimp at, say, 40-day shrimp or 50-day shrimp, when the anticipated market is US$ 4.00, the level after 100 days. There is a financial gap and the farmer will want to recover it from the mutual. If a decision is needed to mitigate a possible loss by harvesting a growing unit, the mutual will have to get involved.

The lessons learned in day-to-day industry operations were discussed in earlier presentations. Risk management is a top-down process that should not rely on the enthusiasm of the employee. It is something that everybody needs to be involved in. Small farms may be significant organizations in the context of a village society event. Bigger producers, operating maybe 10 000 hectares, are different organizations, with different structures. They have managers, supervisors, and ordinary employees. All these people should be motivated to achieve the best results; they should not hide key information like increasing mortality levels, because if one of the operators hides such information, it will arrive too late at the mutual to be used in helping other members to avoid the same problem, or stop it in its tracks.

The introduction of insurance creates new standards for producers to reach. Care of stock, regular veterinary monitoring, improved farm management, investment in high quality equipment, discussions about security of supply with key suppliers, and many other things, will become normal in the industry.

Farm administration processes are extremely important. Recording data on feed, growth, and harvest are vital. If a new batch of feed coincides with high mortality, that information needs to be relayed to the feed manufacturer, and to the Department of Fisheries and the mutual. If a feed problem arises, farmers may have to harvest stock to limit the problem. A mutual may be able to contribute advice, but also assist in recovering a claim from the feed manufacturer. However, a farmer experiencing a strange mortality in a shrimp pond must be able to show that there is a problem. If Crawford or any other loss adjusting company is involved, they will depend on the farm having records to prove there is a problem. If a farm was always running with a mortality of ½ percent, that level will need to be in the farm's daily records. If a new feed is introduced and high mortalities develop, that also needs to be

recorded. The adjuster then has excellent information and can work with the mutual to recover loss from the feed supplier.

Politically before the arrival of the mutual and the availability of insurance, farmers were in a difficult political situation. If they fought the feed supplier, and the next day wanted a quick delivery of feed, the supplier might be difficult. However, if a mutual is involved, the situation is entirely different. The feed supplier will put more emphasis on quality control of new feeds, and on better testing, because they know that a mutual has real power. The development of a mutual is a win-win situation in many aspects. With the presence of a mutual, feed can become better, and quality control improved; the Department of Fisheries can be encouraged to invest in better equipment and testing procedures and attain the standards of Europe and other markets the industry supplies. Everybody will treat producers more seriously and with greater respect.

A key issue that members and the mutual will have to develop an approach to is mandatory slaughter. This is a situation in which the authorities intervene and order the compulsory slaughter of stock for the purpose of preventing the further spread of a disease. This may be a power that the Department of Fisheries has, which allows it to insist on slaughtering or harvesting, possibly over quite a big area, to prevent a disease taking hold in an area, and becoming endemic. This is a very real issue, and how to deal with it has to be considered by the mutual and its members.

To conclude, Crawford is global loss adjusting company, and active in 67 countries. The Company believes that the sea will not be able meet the demand for fish supplies from the global population, so it is inevitable that aquaculture will grow in the coming years. Crawford has invested in aquaculture services and our local office in Bangkok, Crawford Company Thailand, is here to help the Thai shrimp farmers and their mutual.

4.13 Reinsurance limits and the role of government

Dr Erich Kasten, Managing Director, Agriculture Reinsurance Consultants GmbH, Switzerland

This third presentation on reinsurance examines the role of government. It deals with general aspects first, and then examines the role of government in insurance. Agriculture is a very important international industry, which includes aquaculture, and the global trends affecting agriculture, the global agriculture insurance industry, the need for insurance, the role of government, all should provide some food for thought.

The Thai shrimp industry is part of a huge industry, a global agriculture industry, in which approximately 1.4 billion people work. The agriculture industry's turnover is approximately US$2.1 trillion annually. It is indeed the largest global industry, and about 55 percent, by value, is created the livestock side of which aquaculture is a growing part.

The population of the world is growing by about 70 million people a year and all those people have to be fed. Therefore the demand for Thai shrimp industry products will rise over time. At the same time the demand for fibre and energy, renewable energy, is also going up (Slide 4 Appendix L). Renewable energy is another demand on agriculture production. However, when the amount of arable land available for agriculture is examined it is clearly seen to be in decline. Agriculture has to produce much more in the future and that impacts on aquaculture because, if the land is in decline, more has to be produced from the waters of the marine fisheries. But the latter are already in decline. Therefore, aquaculture is a very important and fast growing industry globally. Aquaculture may be facing some pricing problems now, but in the longer run aquaculture is absolutely the right industry to be in.

Turning to insurance issues, risks in aquaculture are country specific. There are lessons to be learned from certain methodologies in certain countries, particularly on how to deal with specific risks (Slide 5 Appendix L).

The Thai industry knows about its own risks; it has its own soils, its own weather, its own infrastructure, small farms, bigger farms, and so on. These are all localized Thai industry factors, and they require local Thai industry risk management solutions.

In general, risk management cannot be copied e.g. from Florida and directly applied in Thailand. Thailand has to develop its own systems based on local Thai knowledge, and there is no doubt that this is available here. It is available in the practical industry of aquaculture and it is available in the academic world of aquaculture. The Thai Department of Fisheries is a very good source of assistance in managing the risks faced by the Thai shrimp industry.

What does risk mean to a farmer? There are many activities in traditional farming (Slide 6 Appendix L). There are different crops, different kinds of livestock, and some off-farm income. There is high diversification but, in general, low capital investment and thus low risk exposure, because if one crop fails the other crop might be alright. It is a different exposure at a different time. If one crop has a low price, another might be good, or livestock might fetch a good market price. In such an environment in traditional farming there is low insurance demand because the farmer virtually acts as his own insurer. He splits his risk over different activities, the market risk is also split over different products, and if everything goes wrong the farmer may even have off-farm income.

Shrimp farming is different. There are only two crops a year and the industry practices monoculture. There is no risk diversification, but a high capital investment (Slide 7 Appendix L). If the risk exposure from feed alone is considered, and the possibility of bad feed affecting wide sectors of the industry, the high risk transfer demand becomes clear. If one crop fails due to disease or market price, it is possible to adjust in the second part of the growing year, but only partially recover the situation, that's all. Therefore, insurance or risk transfer in aquaculture, particular in shrimp farming, should be an important part of the industry's approach to managing itself. If feed is considered a vital input, or energy a vital input, insurance should also be an essential input to keep the enterprise viable.

The role of government is to lay out a national agricultural policy and establish the legal framework for the development of the agricultural sector. This legal framework should be developed in the framework of a public-private partnership. The government cannot run agriculture; they can only assist farmers, as private entrepreneurs, to develop their own industry.

A national agricultural policy must facilitate access to capital, technology, and transfer of know-how via extension services, all of which are vital to improve the industry. In this regard the role of the Thai Department of Fisheries in aquaculture is an extremely important one, that has nothing to do with whether the industry has insurance or not. The role of the Department of Fisheries will increase, and it is important that it does so as there is little chance of developing aquaculture insurance in Thailand without the active involvement of the Department of Fisheries. The Department is needed to provide a support mechanism, a controlling mechanism, and to help the industry achieve higher standards. But insurance is the missing link in the industry and is the ingredient for sustainable development.

Government has to manage national catastrophes, but wants to avoid ad hoc payments. If a catastrophe occurs it is not budgeted for, so an insurance system helps with budget stability. But it is also a tool for rural development and income stabilization for the full-time farmer. These are important points from a government point of view.

The farmer also needs insurance to access credit on the best terms. If farmers are insured, the risk for banks is less because insurance in effect helps to guarantee the harvest. Farmers want to invest in new technology, and again insurance contributes to the stability that makes financing the new technology easier and cheaper. New technology contributes to improved productivity, which leads to higher income and efficiency. So the use of insurance as collateral is very important.

There is a big risk in agriculture and aquaculture. It needs to be handled by the farmer, the insurer, and the state. The total risk in the industry cannot be shouldered by the farmer; the insurer cannot take all

the risk on behalf of the state or the farmer; it has to be a joint venture and the state has to handle systemic risk element.

The stakeholders in an agriculture/aquaculture insurance scheme are the farmer, insurer, and banks, but most importantly, the state has to level the field to create the basis for a viable agricultural and aquaculture insurance scheme. Some examples will be given from other countries, on how the state is involved, not only on legislation but also financially. Therefore, the cooperation of all stakeholders is required.

Looking at the global picture of agriculture insurance, the market is enormous (Slide 13 Appendix L). It generated about US$13 billion in premium income in 2008. The largest amount of the business comes from North America, followed by Europe. China is developing fast. In 2009, Chinese agriculture insurance premium will exceed US$2 billion. Premium in the rest of the world may be a little more than that. There is some in Latin America, but in areas like Africa, India and so on, there is very little agriculture/aquaculture insurance developed yet.

Agriculture insurance has developed so much in North America because of the involvement of governments. Governments are supporting the business, and with premium subsidies. Slide 14 Appendix L shows the split of premiums across different classes of agriculture insurance; up to now aquaculture contributes only with 2 percent, and there is still a big gap because only a limited amount of aquaculture is insured, and the rest is in other crop insurance business.

When the insurance market penetration of agriculture is examined (Slide 15 Appendix L), it is clear that there are a huge number of farmers who are not insured at all, and this is also the situation in Thailand. There are a huge number of uninsured or under-insured farms, and only a small number of farms are fully insured. These are almost all in the western world, in the United States of America and partly in Europe. Even in those markets many are still under-insured. In developing countries and emerging markets, most are either highly under-insured or insurance is not offered at all. To a certain extent the problem of under or no insurance lies with the insurance industry which does not consider agriculture a class worth developing. Self-help developments are therefore required in these areas, and a mutual insurance company is an ideal way to overcome a lack of insurance.

The next matter to consider is which risks are insurable (Slide 16 Appendix L). Individual risks are attractive to insure, and also large risks and semi-systemic risks, they are attractive to insure but not as attractive as the independent risks. Then there are the catastrophic and systemic risks. Their insurability is very low and this is the area where government support is required, as has been mentioned before. Then there is the risk profile to consider. Of course, the farmer has to take care of the small, high frequency, risk. As far as the medium and large exposure is concerned, that is the area where the private insurance and reinsurance industries can take on the risks. But, again, to be a commercial proposition for the insurance industry, the government has to come in with reinsurance support or financial support for premiums.

The structure of the basic insurance arrangement is an important part of the overall picture. A comprehensive aquaculture insurance policy might be very attractive, but it might be also be very expensive. In order to improve the affordability for the farmer, the governments in many countries support the farmer with premium subsidy, to make the insurance affordable. If affordability increases, the take up of insurance and the market penetration will also increase.

In certain countries, the take up of agriculture and aquaculture insurance is so high because of government premium subsidy. In the United States of America the government provides a 60 percent premium subsidy; in Canada and Chile support is 50 percent, in Mexico 50 percent, and in Brazil between 50 percent and, in certain provinces, 80 percent. In Brazil, the provinces give another premium subsidy, in addition to the state subsidy. In Europe, Spain is the country with the highest premium subsidy of 60 percent, Turkey subsidizes 50 percent of premiums, and in China there is a

similar situation to Brazil; the federal state provides a 50 percent premium subsidy, but some provinces top this up, some to as high as 80 percent.

It is not recommended in Thailand that the government should subsidize premiums; however, everyone should be aware of state involvement internationally in agriculture insurance, and how in other countries the state helps the development of insurance systems, by premium subsidy.

It is not necessary that a state is involved all the time, but in the beginning it is important. There needs to be a higher incentive. In the long run it may need to be only 50 percent, or even less than 50 percent. But in the implementation phase there should be higher support.

To conclude, the role of government is vital for viable agriculture and aquaculture insurance schemes. This is particularly important in handling the systemic risk element, and to assist in making insurance more affordable. Governments in many countries support agricultural insurance with premium subsidy, and sometimes also with reinsurance cover, as is the case in the United States of America.

Aquaculture is a high risk industry and the need for risk transfer through a viable insurance solution is high. Whatever the final system of risk transfer looks like, it will be of enormous assistance to the Thai shrimp farming industry. So let all parties work together for the welfare and to sustain the future of the Thai shrimp industry.

5. WORKING GROUP SESSION

The participants were divided into two working groups and each group selected a chairperson who facilitated the discussion and a rapporteur who took notes for the plenary presentation. Each group was asked to address the following guide questions:

- Please identify the risks faced by the Thai shrimp farming industry and classify these risks according to these categories:
  –Risks that should be managed on the farm
  –Risks that should be part of an insurance solution – please rank these risks from the most important to the least important

- Mutual insurance schemes (or cooperative insurance schemes) have been considered as a good insurance solution to agricultural insurance in many countries for many years. Do you think a Mutual insurance scheme would also be good for the Thai shrimp farming industry?

- Which groups of farmers should be represented in a Thai shrimp farming industry Mutual?

- Should other groups in the Thai shrimp farming industry be part of the Mutual, e.g., processors, hatchery operators, etc?

- Should the insurance be based on cost incurred, or on prevailing market price?

- What support from the government would be reasonable to expect in the establishment of an aquaculture insurance scheme suitable to the Thai shrimp farming industry?

- Do you see an alternative to an industry-based Mutual insurance solution for the Thai shrimp farming industry? If yes, what do you think would be a good alternative?

During the plenary, each group presented the results of their discussions on the above-mentioned points. For group 1, the risks faced by the Thai shrimp farming industry are disease, natural disaster, mechanical failure and theft. Of these risks, they think that natural disaster and theft should be part of

an insurance solution. They believe that a mutual insurance scheme is a good idea; however, at this time, there is no legislation under Thai law that supports it. The insurance scheme for the shrimp farming industry should also include local feed distributors and other stakeholders. Insurance should be based on costs incurred. The government's role would be to pass a law to enable the establishment of mutual insurance schemes, provide seed money to get the insurance started, engage in capacity building for staff that would be involved, and launch a pilot programme. An alternative to the mutual insurance solution would be for the shrimp farmers to buy insurance through the Bank for Agriculture and Agricultural Cooperatives (BAAC). It is the opinion of the group that modifications would be difficult under Thai law and therefore that it would be difficult to have a law passed that would enable a cooperative which is a non-profit organization, to be engaged in the delivery of insurance services. In this regard, the proposed alternative is for the cooperative to act as an agent of the insurance company, thereby becoming a middleman between the shrimp farmer and the insurance company. This way, the cooperative will look after the interest of the shrimp farmer.

Group 2 started their presentation with the personal experience of a shrimp farmer who suffered unexpected massive losses when a combination of flooding and opening of the dam destroyed his shrimp ponds. He invested Baht5 million in 10 shrimp ponds, but he got less than Baht30 000 from the government as total compensation. He related this personal story to underscore the importance of establishing a Thai shrimp farming industry mutual and said that he will bring this matter to the attention of the members of his cooperative.

For group 2, the risks faced by the shrimp farmers include the following: price fluctuations, natural disasters, flooding, damage to shrimp stock, responsibility for damage to third party, disease or epidemic, instability of energy supply, toxin contamination (shrimp farmers do not use antibiotics so potentially may come from feeds), quality of postlarvae and changes in water quality. Among these risks, the following should be part of an insurance solution: price fluctuations, natural disasters, disease or epidemic, instability of energy supply and changes in water quality. As regards the instability in the price of shrimp, the group went on to say that the price may be high when the farming period starts, but may decline when harvest time comes. In this regard, it would be beneficial to farmers if information on price would be made available to them. The group believes that a Thai shrimp industry mutual would lead towards the sustainability of the shrimp farming industry and the government should support such a mutual until they are ready to stand on their own. Small- and medium-farmers should be represented in the shrimp industry mutual, but should also be open to hatchery operators in order to ensure good quality seed. The group underscored the importance of raising awareness about the issues so they can help themselves. Insurance should be based on costs incurred. As regards the role of government, it should guide the shrimp farming industry in the establishment of the mutual, provide capital to set it up and cover the systemic risks. This action would potentially benefit six million fish farmers including their families.

6. WORKSHOP CONCLUSIONS

Recognizing:

- The importance of the shrimp industry and hence the importance of maintaining and increasing the current global leading position;

- The importance of public sector support (Department of Fisheries) to the industry;

- The need for insurance as an additional risk management tool, in particular for the small and medium sized farmers and other actors in the shrimp value chain, in particular to offer cover against:

  – natural perils damaging crop

– diseases
– other types of perils
– price

- The need to offer other types of insurance (e.g. accident, health)

- The absence of commercial insurance companies and the need therefore to establish a Mutual Insurance Company owned and managed by the industry capable of offering the specific risk cover required by the industry;

- The need for full collaboration of all concerned parties in the public and private sectors to enable a viable Mutual Insurance Company;

- That it would be in the interest of both the public and the private sectors to have a Mutual Insurance Company offering insurance to the industry.

The Workshop recommended that:

1. A Steering Committee should be established;

2. The Steering Committee should report on the social, legal and financial feasibility of establishing a Mutual Insurance Company for the Thai shrimp farmers; and

3. Seek technical assistance and advice from experts.

7. RECOMMENDATIONS FOR THE ROYAL GOVERNMENT OF THAILAND

The options for establishing an aquaculture insurance programme in Thailand are as follows:

- **Option 1**: Create a government-funded and administered programme.
- **Option 2**: Encourage the international aquaculture insurance market to provide facilities for Thai shrimp farmers.
- **Option 3**: Encourage mutualization and enable the formation of mutuals.

Option 1: Running a nationalized insurance programme is not a natural or comfortable thing for a government to do. It requires a very considerable and long-term investment, and what might be termed a capitalist approach, which tends to fit uncomfortably with government modus operandi.

Option 2: This is an option which has been available to the Thai shrimp farming industry for at least 30 years; however, the international insurance industry has shown no interest in providing its services in Thailand. In the event that the international industry did provide its services, it would likely be disadvantageous in several ways:

- The aquaculture insurance market is mainly interested in large and sophisticated producers. It would be unlikely to provide insurance to the many small farmers who would be the main beneficiaries of mutualization. Providing small farmers with risk spreading and managing facilities is where the major improvements in living standards can be achieved for most people.

- The insurance industry operates on the basis of commissions. A substantial proportion of the premiums paid by Thai shrimp farmers, anything up to 30 percent, would go out of the country. Much of the technical knowledge of risk managing in aquaculture would exist and remain outside the country.

- The insurance industry employs substantial number of people, and would do so in handling the insurance and risk management of aquaculture. However, most of the jobs would, again, be outside the country.

- Underwriting profits are generated outside the country.

- Claim settlement decisions of external insurers are based on entirely different criteria.

Option 3: By establishing mutualization in Thailand and setting up a shrimp industry mutual:

- Premiums would largely be kept in the country

- Jobs would be created

- Risk management skills and techniques would be retained in the country

- Underwriting profits and taxes would be retained nationally

- Claims settlement would be made according to much wider and more industry and individual sympathetic criteria

A mutual would be owned and operated by Thai aquaculturists, for their benefit only!

It is therefore recommended that the Department of Fisheries and the Royal Government of Thailand:

1. Encourage mutualization and enable the formation of mutuals by changing Thai insurance law to allow the formation of mutual insurance companies.

2. Encourage the shrimp industry to set up a steering committee to:

   a. Work with ICMIF (International Cooperative and Mutual Insurance Federation) to develop information on all aspects of setting up a mutual insurance company.
   b. Facilitate gathering statistics on the Thai shrimp industry that will be needed to establish a mutual.
   c. Attempt to encourage the international aquaculture reinsurance market to provide facilities for Thai shrimp farmers.

3. Create a government-funded and administered programme to support mutualization.

4. Establish a government body to examine the legal and administrative requirements of mutuality and the formation of mutual insurance companies in Thailand.

5. Support and encourage the establishment of a Steering Committee charged with the task of investigating the setting up of a mutual insurance company for the Thai shrimp farming industry, consisting of the following representatives:

   a. Leading shrimp producers
      1) On-growers
      2) Hatcheries
   b. Non-shrimp aquaculturists
   c. Leading processors
   d. Experienced insurance specialists (drawn from insurers and reinsurers)

e. An experienced mutual manager
f. Government representative from finance
g. Government representative veterinarian
h. Thai lawyer

NOTE: Observers from agriculture should be encouraged to follow the Steering Committee's deliberations.

6. The Steering Committee should report on the social, legal and financial feasibility of establishing a mutual insurance company for the Thai shrimp farmers.

7. A shrimp industry study should be implemented (possibly by the Thai Department of Fisheries or a leading Thai university) of conditions in the industry and in respect of individual farms concerning:

a. Numbers of producers
b. Size of producers
c. Farm stock control systems
d. Loss history
e. Standard mortality rates
f. On-farm stock control systems
g. Classes of insurance farms carry
h. Classes of insurance farms want

8. A risk management survey of the industry should be conducted using outside experts.

9. All parties should be charged with completing their activities within a set period.

APPENDIX A

FAO/DOF Workshop on the Options for a Potential Insurance Scheme for Aquaculture in Thailand
23 – 25 September 2009 Bangkok, Thailand

Workshop programme

Date and Time	Activities
Day 1 – 23 September 2009 (Wednesday) – DoF Seminar	
08.00 – 09.00	**Registration**
09.00- 12.00	**DOF Seminar on Shrimp Industry** **- Sustainability of Shrimp Industry** **- How to strengthen Shrimp Industry**
12.00 – 13.00	**Lunch**
13.00 – 17.00	**Breakout session (2 groups)** **- Group 1: Shrimp Economic Zoning** **- Group 2: Shrimp Funds**
17.00	**CLOSE**
Day 2 – 24 September 2009 (Thursday)	
08.00 – 09.00	Registration
09.00 – 09.30	**Opening Ceremony** *Welcome remarks* by Mr Hiroyuki Konuma, Deputy Regional Representative, FAO Regional Office for Asia and the Pacific *Opening address* by Dr Somying Piumsombun, Director-General of the Department of Fisheries, Thailand
09.30 – 10.00	**Background and Objectives of the Workshop** – Susana V. Siar, Fishery Industry Officer, FAO Fisheries and Aquaculture Department Introduction of resource persons – Ake Olofsson, Rural Finance Officer, FAO Agriculture Department Introduction of participants
10.00 – 10.30	**Presentation from the Department of Fisheries, Thailand** • Facts about the Thai shrimp farming industry • Government objectives for handling risks of shrimp industry
10.30 – 10.45	Coffee break
10.45 – 11.05	**A Hybrid Approach to Insurance –** Paddy Secretan, Managing Director, AUMS Ltd, United Kingdom • Aquaculture insurance • Key points of the Bali workshop
11.05 – 11.25	**International Aquaculture Loss Experience** – Mark Vos, Director of Client Services, Crawford & Company, The Netherlands
11.25 – 11.45	**International Reinsurance Market** – Erich Kasten, Managing Director, Agriculture Reinsurance Consultants GmbH, Switzerland
11.45 – 12.30	**Introduction to Mutual's** – Paul Koronka, Director & CEO, Regis Mutual Management Ltd., United Kingdom
12.30 – 13.00	Question and Answer – Panel Morning wrap-up session Summary of key points Moderator: Ake Olofsson
13.00 – 14.00	Lunch
14.00 – 14.45	**Mutual Structure** – Paul Koronka • Corporate structure

	• Risks to be protected • Finance structure
14.45 – 15.15	**Reinsuring Mutuals**: Pooling of individual risks into a larger pool can create a basket of risk attractive to reinsurers – Erich Kasten • Attractive risk characteristics to reinsurers • Reinsurance structure supporting a mutual • Reinsurance programme design
15.15 – 15.30	Coffee break
15.30 – 15.50	**The Concept of Creating a Superior Risk Pool** – Mark Vos • Background on risk management • Relevance to Thai aquaculture • How would it apply in Thailand
15.50 – 16.50	**Mutual Company Start Up and Operational Procedures, Part One** – Paul Koronka • Critical mass issues • Steering committee • Determine scope and protection • Membership • Determine the funding • Reinsurance
16.50 – 17.00	Wrap – up of day – Ake Olofsson
17.00 – 18.30	Meet the panel and Q & A
19.30	Dinner
Day 3 – 25 September 2009 (Friday)	
09.00 – 09.15	Moderator – Ake Olofsson • Recap • Plan for the day
09.15 – 09.45	**Mutual Company Start Up and Operational Procedures, Part Two** – Paul Koronka • Management of the mutual • Finance structure • Marketing and communications • Timelines
09.45 – 10.15	**Reinsurance Limits and the Role of Government** – Erich Kasten • Programme design and limits of protection • Risk gap – insurable risk v systematic risk • Government role in handling the risk gap
10.15 – 10.30	Aquaculture Claims – Mark Vos • Applicable case studies • Lessons learned for the Thai shrimp industry
10.30 – 10.45	**Summary of key points** – Ake Olofsson
10.45 – 11.00	Coffee break
11.00 – 13.00	**Breakout session** Working groups with panel as resource persons
13.00 – 14.00	Lunch
14.00 – 15.30	**Plenary session – Breakout groups report back** Moderator: Ake Olofsson
15.30 – 15.45	Coffee break
15.45 – 16.15	**Summary and Conclusions drawn from breakout session**
16.15 – 16.45	**Next Steps**
16.45 – 17.00	**Wrap-up**

	• Summary of key points of the day • Conclusion and next steps
17.00	CLOSE

APPENDIX B

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APPENDIX C

The hybrid concept in aquaculture insurance by Philip A. D. Secretan

Aquaculture Insurance Workshop

The

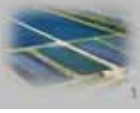
"Hybrid Concept"

in

Aquaculture Insurance.

by

Philip A.D. Secretan
Managing Director
AUMS Ltd.



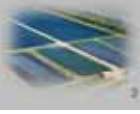
Sept 2003 Bangkok, Thailand 1

Aquaculture Insurance Workshop

The

"Hybrid Concept"

What is it.?



Sept 2003 Bangkok, Thailand 2

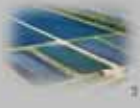
Aquaculture Insurance Workshop

The

"Hybrid Concept"

is:

a way for small and medium-sized producers to organise effective insurance coverage on aquaculture businesses.

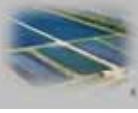


Sept 2003 Bangkok, Thailand 3

Aquaculture Insurance Workshop

Some facts about the insurance market:

1. It is based in the major financial centres of the world.
2. Insurance companies who provide the insurance protection are "profit driven"!
3. They have to be! Their shareholders demand it!



Aquaculture Insurance Workshop

Players in the insurance market:

1. National and international insurance companies.
2. National and international insurance brokers *(Typically earning commissions of 20% to 30%)* who connect insurance buyers to insurance companies.
3. Buyers of all kinds of insurance – including aquaculturists.
4. Reinsurance Companies.

Aquaculture Insurance Workshop

Some facts about the market for aquaculture insurance:

1. It has been dominated by major international aquaculture producers (mainly of fin fish, especially Salmon!).
2. These producers have sophisticated management, and extensive equipment and technology budgets.

Aquaculture Insurance Workshop

In spite of "sophisticated" management:

1. There have been heavy losses in every sector of the business that has been insured, it has only, at best (!), been marginally profitable to insurance companies.
2. Many insurance companies have entered the market, made big losses, and pulled out!

Aquaculture Insurance Workshop

Storm, Disease, Pollution, Flood, Predation, Theft, Tsunami, have all caused major losses in key production sectors.

Aquaculture Insurance Workshop

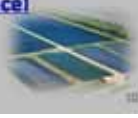
This has resulted in insurance companies:

1. being very "selective" about the aquaculture business they underwrite.
2. demanding very high standards of management and operation in the farms they agree to insure.
3. seeking high premiums!

Aquaculture Insurance Workshop

The way the aquaculture insurance market has developed has resulted in:

1. **insurance is being restricted to very large and sophisticated producers, with big financial resources and highly sophisticated management and risk management capabilities.**
2. **small and medium-sized operators finding it extremely difficult to buy suitable insurance!**

Aquaculture Insurance Workshop

Recognising these problems, the FAO organised a workshop on aquaculture insurance, in Bali, in 2007 it asked a very important question:

What action can be taken to meet the insurance and risk management needs of small and medium-sized producers in developing aquaculture in Asia?

It proposed an answer:

All interested parties need to work together and adopt a "Hybrid Approach" to managing risk.


Aquaculture Insurance Workshop

Who are the interested parties?

Governments.

Producers (and suppliers?).

The specialist aquaculture insurance market.


Aquaculture Insurance Workshop

Governments are interested in insurance because it can:

1. directly lead to raised operating standards.
2. sustain producers in the face of disasters.
3. contribute to wealth creation / poverty alleviation.
4. reduce the financial burden of their disaster relief obligations.


Aquaculture Insurance Workshop

Producers want insurance because it provides:

1. Financial protection in the face of disasters!
2. Support in recovering losses from 3rd parties.
3. Access to cutting-edge risk management processes.
4. Much improved access to sources of finance.
5. A higher reliability profile with customers.


Aquaculture Insurance Workshop

But what are the benefits to the insurance market? Why should insurance companies get involved?

"To make a profit" is the only answer!

They will only get involved in aquaculture if they can do so profitably!


Aquaculture Insurance Workshop

This is a situation which might appear to involve severe conflicts of interest:

- Government wants industries to be insured, but has an altruistic, political, approach that seeks to protect producers against all risks, including risks that insurers cannot cover.
- Producers want insurance against the widest risks and at the cheapest cost.
- Insurers can provide cover, but only on a basis that they believe will be profitable – by, for example, excluding extremely high risks (eg Cyclones in low-lying areas).


Aquaculture Insurance Workshop

Conflicts of interest can definitely be overcome, providing a role is played by Government that is clearly understood:

- If the insurance industry cannot cover a peril, but the Government judges that it is in the national interest that the aquaculture industry be protected against that peril, then it is up to the Government to provide protection*.
  - **this situation is often called the "Systemic" risk.*


Aquaculture Insurance Workshop

Providing systemic risk cover, need not be a problem for a government. If the insurance industry is covering the "non-systemic" risks:

- They are able to easily and effectively handle the Government's interest in the systemic risk, alongside their own!


Aquaculture Insurance Workshop

Insurers can:

1. Evaluate each production unit.
2. Quantify the risks to each unit, and to aggregated groups of units to establish industry MPLs and PMLs.
3. Establish a correct basis of valuation.
4. Implement and develop risk management practices on an on-going basis.
5. Establish legally binding insuring conditions, in a fully documented framework.


Aquaculture Insurance Workshop

Insurers' loss adjusters, can handle claims very efficiently and reliably, and with high integrity:

1. Organising first response and situation evaluation (on a 24/7 basis).
2. Evaluating and implementing loss mitigation action (take samples, organise salvage action, etc.).
3. Quantifying amount of loss (avoiding fraud!).
4. Protecting rights of recovery from responsible 3rd parties.
5. Agreeing ultimate payments with producers.


Aquaculture Insurance Workshop

This is how the

"Hybrid Concept"

can work!


Aquaculture Insurance Workshop

One thing is needed to implement the Hybrid Concept:

- An industry wide insurance scheme!
- Unless there is one central insurance scheme that is operating for producers, the systemic risk that insurers cannot provide, would have to be handled and administered separately by government.
- That would be an extremely "messy" and very expensive arrangement for the Government.


Aquaculture Insurance Workshop

There is a tremendous opportunity here, for the Thai shrimp producers! It is called:

Mutualisation!


Aquaculture Insurance Workshop

It involves:

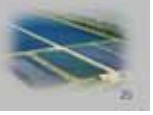
Creating an Insurance Company that is owned and operated by producers, who share a financial interest in it.

This would be a Company that the Government can cooperate with, in the knowledge that everything agreed between the Government and the Mutual, will benefit producers– because the producers own the Company!


Aquaculture Insurance Workshop

This may seem to be a very "scary" direction to take. It is not!

- Mutualisation is very common in many countries of the world!
- There are hundreds of successful mutual insurance companies operating in many industries, especially in agricultural
- There are some significant development funds available to help create mutuals.

Aquaculture Insurance Workshop

The function of this Workshop is to give delegates the opportunity to look, in detail, at the all issues that lie behind both the mutualisation option, and other insurance options available to the Thai Shrimp Industry.

Thank you for your kind attention.

Philip A.D. "Paddy" Secretan


APPENDIX D

International aquaculture loss experience by Mark Vos

Crawford

International Aquaculture Loss Experience

Mark Vos,
BSc, FCILA, FUEDI-ELAE
Global Practice Leader Aquaculture,
Client Service Director Continental Europe, Middle East & Africa

WORKING TOGETHER:
the Crawford *Difference*

Fish Mortality Insurance

Crawford

The standard perils for Onshore/Offshore risks are as follows

- Pollution
- Theft, predators
- Predation or physical damage caused by predators or other aquatic organisms (but not by sea lice or other ectoparasites).
- Storm, lightning, flooding, tidal wave, collision, sudden and unforeseen structural failure of equipment a.o. moorings
- Drought, fire, lightning, explosion, earthquake.
- Freezing, super cooling, ice damage.
- De-oxygenation due to competing biological activity or to changes in the physical or chemical condition of the water, including upwelling and high water temperature.
- Any other change in concentration of the normal chemical constituents of the water, including change in pH or salinity.
- Disease
- Mechanical breakdown or accidental damage to machinery and other installations
- Electrical breakdown, failure or interruption of the electricity supply, electrocution

Hull - Working Craft,
Support Vessels, Equipment & Cages Covers

Crawford

- Perils of the seas, rivers, lakes or other navigable waters.
- Fire, lightning, explosion.
- Theft.
- Contact with land conveyance.
- Accidents in loading / discharging.
- Negligence of repairers.
- Malicious acts.

600 m3 Ocean Spar Sea station

Mooring connection

Towing of cage


Storm or maintenance
Crawford


Design or maintenance
Crawford


Wear on shackle from 33 to 22 mm
Crawford

An insured event → loss

- What is an insured event.
  - Any loss or damage resulting from an insured peril
- How long will the event/disease last.
  - Generally 3 month maximum cover for disease
  - Intermittent events ? Wording defines
- Vet support to control an event/ disease outbreak.
- Biomass value per date of loss per site.
  - Accounting review of proper procedures

Mortality stock & Stock values

- Biomass
- Proper book keeping and accounting procedures
- Normal mortality, harvest in books recorded
- Events accounting
- Mandatory slaughter deducted when subsidy income protocol applies

Interdependence & Sue and Labour

- In view of financial exposures and investments of the entrepreneurs mini-companies (Ltd's) per group of cages or sites were founded.
  - Extra attention required for insurance wording
    - Are sites property defined in the policy
      - What is a site ; Which ponds / on shore containers
      - Which surface co-ordinates
    - A policy per site viz. Ltd or Holding with subsidiaries

Regional economic dependence & mandatory slaughter

- Regional economic dependence
  - Up-stream
    - Regional public interests/ tax income
    - Financial resources
  - Down-stream
    - more contractors → higher supply demand
    - Too high density of farms → economic instability
- Mandatory slaughter to save the local economy or trade of your colleague competitor in case of disease.
  - Authority in control
  - Insured is not in control of his assets

Biomass value & Business Interruption insurance

- Mortality based on biomass: value/kgs.
- It represents the original stock value plus a gross / variable and fixed margin allocation.
- No loss of net profit of existing stock is added.
- No indemnity for starting up new ponds is provided.
- In case of mandatory slaughter national subsidies will be deducted as partial indemnity to the insured. Generally these subsidies do not provide for an imaginary profit margin component.

Biomass value

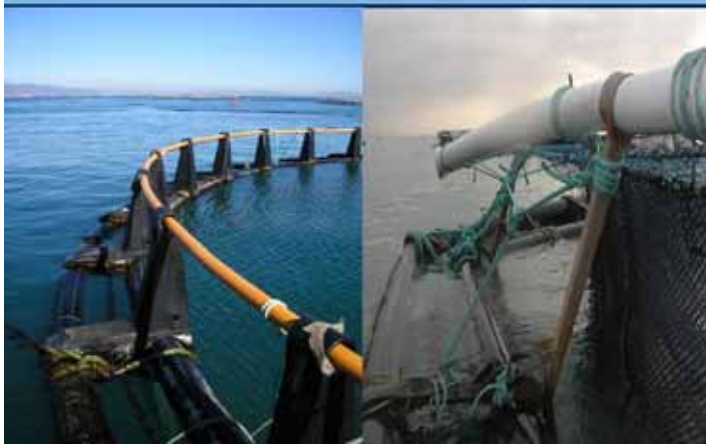
- Biomass value.
  - Starting book / asset value of acquired stock

    ADD
  - Weekly / daily allocation of
    - Fixed cost like labor, feed, normal scheduled vet support and cage/ equipment write off
    - Variable cost as feed, medicine, extra vet visits
    - Mortality
  - To arrive at biomass value
  - Value, quantum & kgs are declared on a monthly basis.

Extra expense to mitigate the loss

- Upon discovery of a potential insured peril like a disease, algae bloom, jelly fish or storm measures to reduce the impact are reviewed.
  - Insured is always expected to act as "though uninsured" I.e. do what he would do to save the crop if no insurance was involved.
  - When the loss falls within the deductible
    - Generally no cover for extra expense to reduce the potential loss
  - When the loss is over the deductible
    - Extra expense cover is provided for a.o.
      - Vet support + medicine to contain the disease
  - When to slaughter / pre-harvest to protect the remaining stock value remains a valuable questions, which needs to be considered with vet support too.

Storm or design

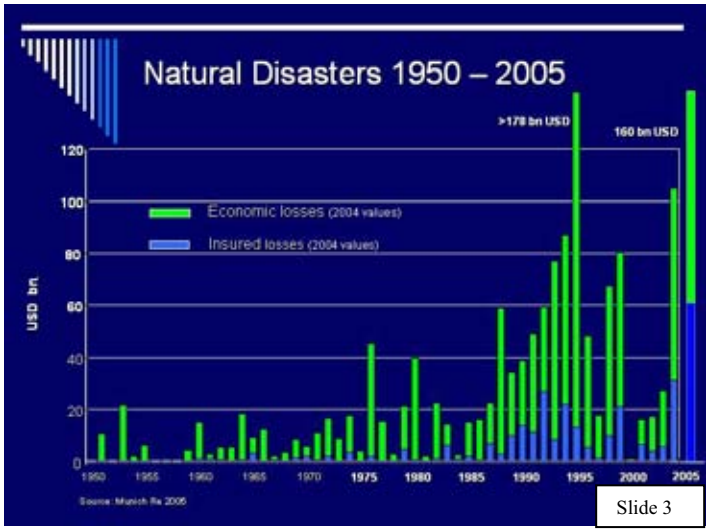


APPENDIX E

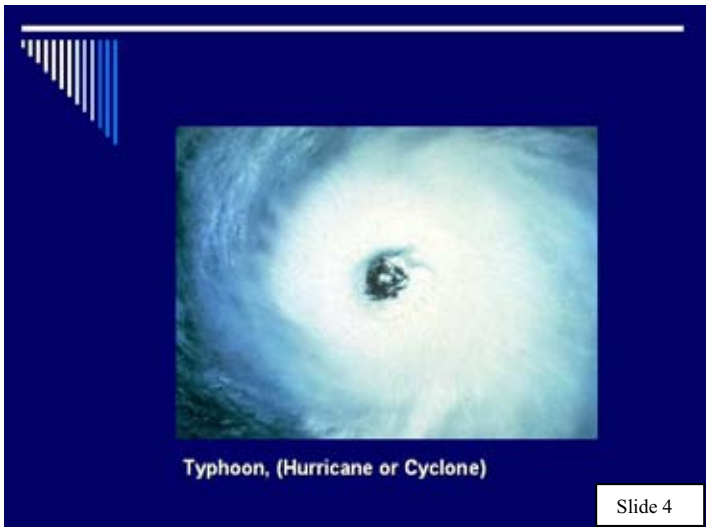
International reinsurance market by Erich Kasten

Slide 1

Slide 2

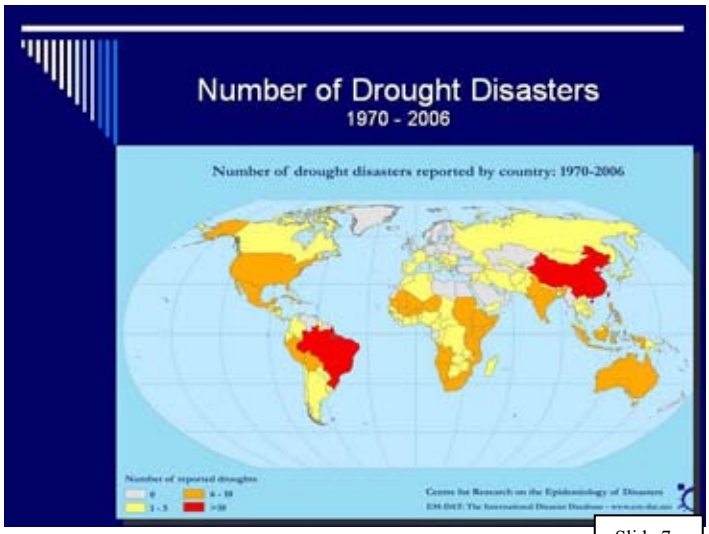


Slide 3


Typhoon, (Hurricane or Cyclone)
Slide 4


World Map Natural Hazards
Source: Munich Re
Slide 5


Drought in Maize Production
Slide 6



Slide 7

Slide 8

Slide 9


Risk Categories and Severity
Catastrophe & Systemic Risks
Very High
Large & Semi Systemic Risks
Medium to High
Independent Risks
Low
Slide 10

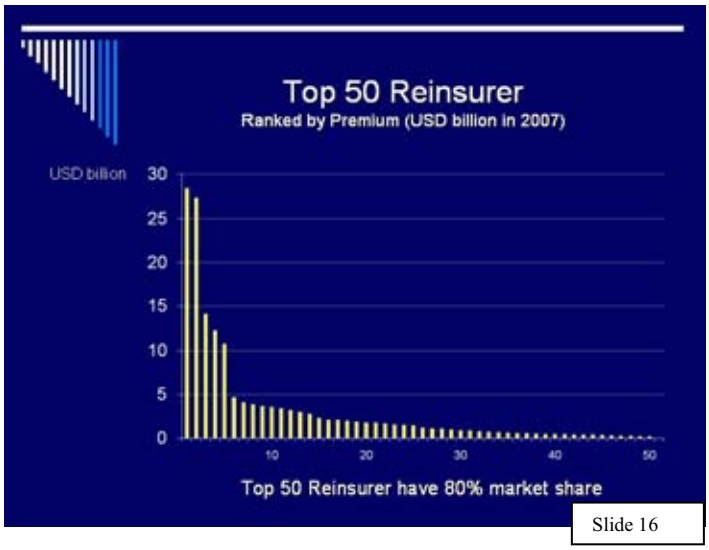

Systemic Risk (Example)
Systemic Risk
Drought
Slide 11


Risk Categories and Reinsurance
Catastrophe & Systemic Risks
International Reinsurance & Government
Large & Semi Systemic Risks
Insurance & Reinsurance
Independent Risks
Local Risk Pooling (Retention)
Slide 12


Need for Reinsurance
Capacity risks
Low frequency high severity risks
High risk accumulation
Systemic risks
New risks
Limited capital basis of insurer
Slide 13


Global Reinsurance Market
More than 200 Professional Reinsurance Companies
More than 1000 Insurance Companies with reinsurance activities
Professional Reinsurer = Reinsurer focused on reinsurance activities only
Top 50 reinsurer receive USD 200 billion
Top 5 reinsurer receive USD 100 billion
Slide 14


Global Reinsurance Market
Europe
Global Market est. at USD 250 billion in 2008
Slide 15



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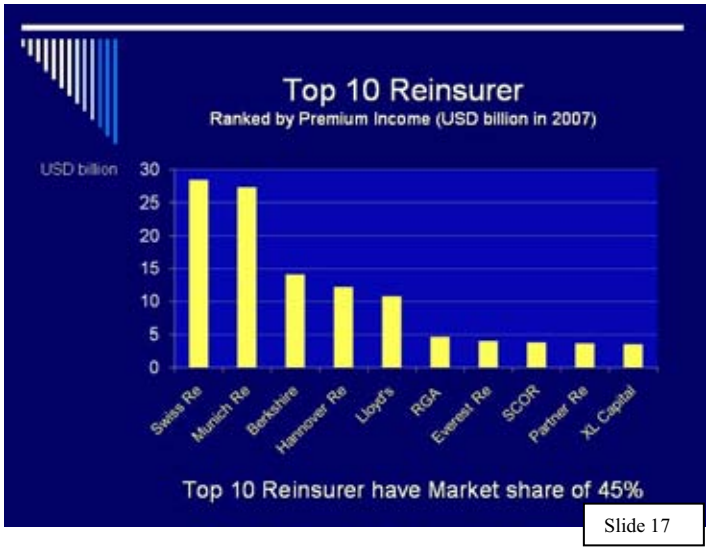

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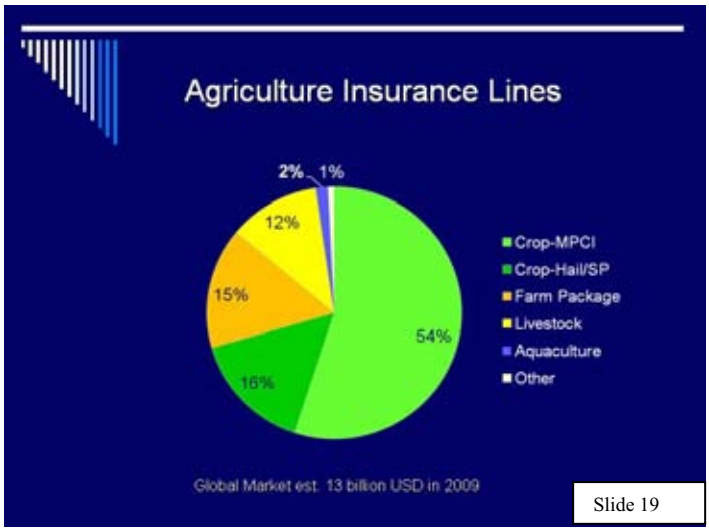
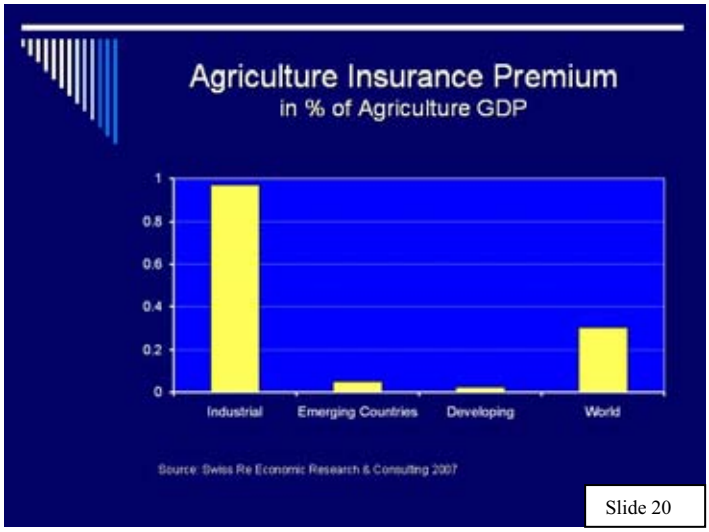
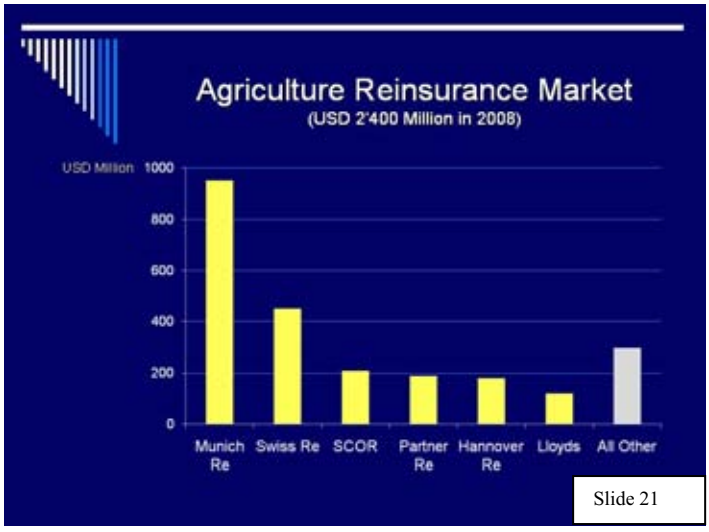
Slide 18


Agriculture Insurance Lines
2%
1%
12%
15%
54%
16%
Crop-MPCI
Crop-Hail/SP
Farm Package
Livestock
Aquaculture
Other
Global Market est. 13 billion USD in 2009
Slide 19


Agriculture Insurance Premium
in % of Agriculture GDP
1
0.8
0.6
0.4
0.2
0
Industrial
Emerging Countries
Developing
World
Source: Swiss Re Economic Research & Consulting 2007
Slide 20


Agriculture Reinsurance Market
(USD 2'400 Million in 2008)
USD Million
1000
800
600
400
200
0
Munich Re
Swiss Re
SCOR
Partner Re
Hannover Re
Lloyds
All Other
Slide 21

Food for Thought
Aquaculture Insurance

- Natural Disasters increase globally
- Aquaculture is a high risk industry
- On farm risk management is important
- Risks beyond control require risk transfer
- Strong, reliable Reinsurance is vital
- Government support is needed for systemic risks in aquaculture insurance
- Let's work together on the basis of a Public-Private-Partnership

Slide 22

Thank you for your attention

Dr. Erich Kasten
Agriculture Reinsurance Consultants GmbH
Switzerland

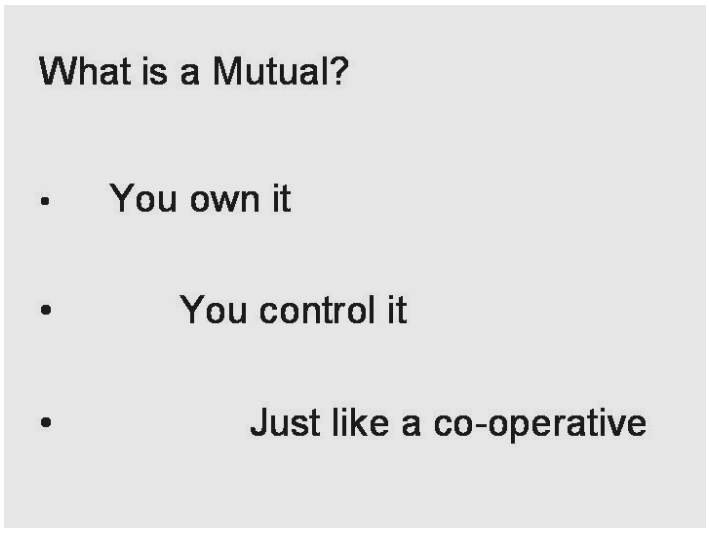
Slide 23

APPENDIX F

Introduction to mutuality by Paul Koronka


Presentation to the Thai Shrimp Industry
September 2009 .
REGIS MUTUAL MANAGEMENT LIMITED


Introduction to Mutuality
What is a Mutual?
Characteristics of a good Mutual
Why form a Mutual?
Examples of Mutuals
Why mutualise the Thai Shrimp Industry?
The future
REGIS MUTUAL MANAGEMENT LIMITED


What is a Mutual?
• You own it
• You control it
• Just like a co-operative


You own it
Ownership means no outside shareholders
Ownership means focussed on your needs
Ownership means control
REGIS
MUTUAL
MANAGEMENT
LIMITED


You control it
You control it means:
membership
pricing
claims handling
cover provided
just like a co-operative
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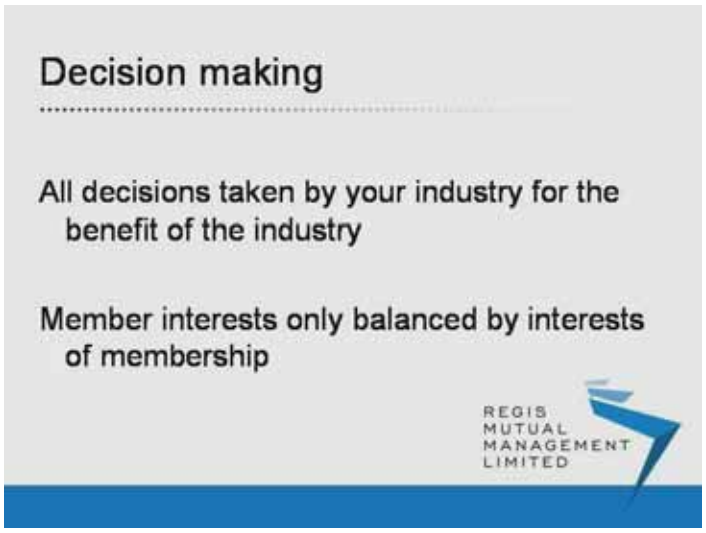
Decision making
All decisions taken by your industry for the benefit of the industry
Member interests only balanced by interests of membership
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MUTUAL
MANAGEMENT
LIMITED

What is a Mutual? (continued)

- Group with commonality of risk
- Not necessarily identical risk
- Group pools together all or some of the risk
- Provides link to reinsurance market
- Owned and controlled by the members not outside shareholders
- Entirely member focussed

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Characteristics of a 'good' Mutual

- Covers 'bad luck' not 'bad husbandry'
- Could be selective or compulsory
- Needs critical mass
- Needs good spread of business
- Mutual retains expected risk
- Ideally transfers unexpected risk
- Systemic risk understood
- Risk management embedded

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Why form a Mutual?

- Particular group out of sync with insurance market — Plus or minus
- Cover required not available — Or at high cost
- Premiums unrelated to claims experience — No incentive
- Group requires stability of premiums — Avoid cyclical market
- Achieving results as a group that not available individually — Collective

Why form a Mutual? (cont'd)

- Cover as wide as is prudent — Not minimum necessary
- Costs close to cost price as is possible — Structural efficiency
- Premiums related to actual claims experience — No cross-subsidisation
- Control rests with members — An elected board
- Superior data — And dissemination
- Proactive risk management — Incentive
- Superior claims handling and service — Membership control

Some examples

- Farmers' mutuals – US, UK, Australia & NZ, Europe etc.
- Universities
- Oil Companies
- Ship Owners
- Professionals - Lawyers, Doctors, Accountants, Insurance Brokers
- Banks
- Co-operatives

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Why Mutualise the Thai Shrimp industry?

- Already have Co-operatives in Thailand
- Need to provide cover at cost price
- Shrimp Industry too young for insurance industry
- Insurance industry too risk averse
- Need to demonstrate credentials to reinsurers
- Need to ensure that industry develops good reputation
- Mutual likely to attract Government and international support
- Need Mutual mechanism to protect economy
- Need Mutual to attract finance

Future in developing markets

- Growing interest in mutuality worldwide
- Issues are always selectivity (standards) and critical mass
- Most mutuals enjoy mutually beneficial relationship with their insurer/reinsurance partners
- - Or can develop them once confidence achieved
- Aquaculture difficult area
- Much customisation required
- Ideal for mutuality

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Any Questions?

Paul Koronka

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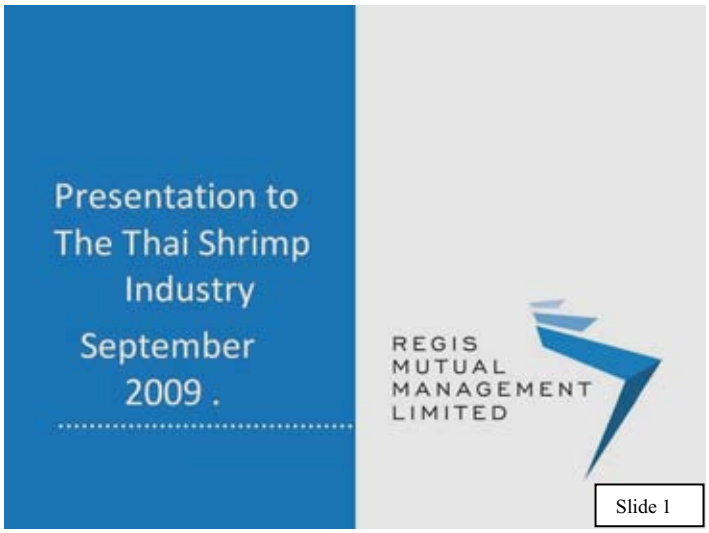
APPENDIX G

Mutual structure by Paul Koronka


Presentation to
The Thai Shrimp
Industry
September
2009 .
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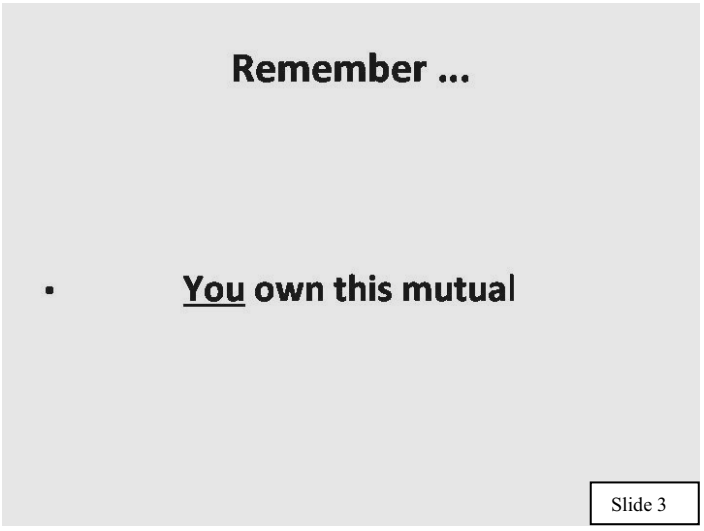
LIMITED
Slide 1


A Mutual for the Thai Shrimp Industry
• Corporate Structures used
• Financial Structure
• Risks covered
Slide 2


Remember ...
• You own this mutual
Slide 3

Corporate Structures used

- Often structured as an Association
- Members not shareholders
- Constitution – Objects, Members
- Board of Directors elected by members
- Rules – govern day to day operations
- Management outsourced

Slide 4

Structures

- Three types of Mutual possible:
  - 1) Mutual Insurance Company
  - 2) Discretionary Mutual
  - 3) Hybrid

Slide 5

Insurance Company Mutual

- No precedent in Thai market
- New legislation likely necessary
- Could explore co-operative legislation
- Capitalisation requirements of a conventional insurer need modification.
- Discussions with government required
- Preferred option
- Could go offshore but not desirable

Slide 6

Discretionary Mutual

- Discretionary Mutual not regulated
- Claims paid at discretion of Board
- No regulatory Capital
- No reporting to Regulator

Slide 7

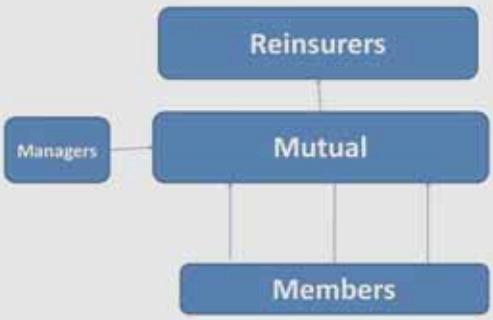
Hybrid

- Mutual retention – discretionary
- Excess insurance policy sits above
- Can produce efficient results
- Can be best of both worlds
- May be difficult here

Slide 8

So let's concentrate on an Insurance Mutual

Slide 9



Slide 10

Financial Structure

- Very simple principle:
- Not 'rocket' science:-
- 'Money in' must exceed 'money out'
- Everything is dependent and related

Slide 11

Financial Structure - Capital

- Advance capital normally required
- Difficult for mutuals
- Additional premium mechanism possible
- So Reinsurance important
- Or Government support in early years

Slide 12

Financial Structure (continued)

- Money in comes from a number of sources:
- Premiums
- Reinsurance recoveries
- Investment income
- Government support

Slide 13

Financial Structure (continued)

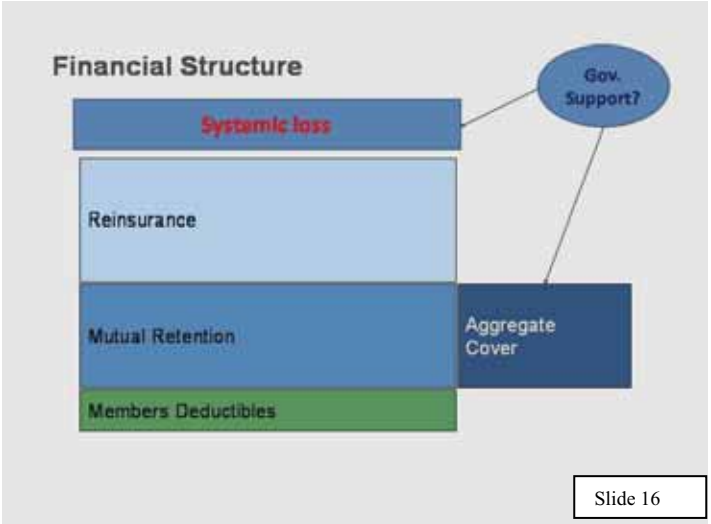
- Money out goes to:
- Claims
- Admin
- Reinsurance

Slide 14

Financial Structure (continued)

- Efficiency vital
- Balance between risk retained and risk transferred
- Mutual retains all expected losses
- Reinsurers unexpected losses
- Avoid usual 'leakage'
- Ultimately cover finite with systemic loss or charge members an additional premium; or
- Recourse to government
- 'Money in' is never lost to the industry
- Surpluses belong to membership

Slide 15



Risks covered

- **Remember:**
- **Everything is related**

Slide 17

Risks Covered

- Could be broad or selective
- Mutual Policy wordings
- Fortuitous losses - not normal variations

Slide 18

Risks Covered

- Monsoon
- Flooding
- Tsunami
- Disease
- Property
- Business Interruption
- Equipment
- Fire
- Theft
- Dams/Dykes
- Liability
- Death/Illness

Slide 19

'Omnibus' Clause

- Mutuals have ability to pay even when claims excluded by policy terms – if:-
- Board exercises it's discretion, and
- Mutual has funds to pay

Slide 20

Any Questions?

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Slide 21

APPENDIX H

Reinsuring mutual insurance companies by Erich Kasten

Reinsuring Mutual Insurance Companies

Dr. Erich Kasten

Managing Director
Agriculture Reinsurance Consultants GmbH
Switzerland

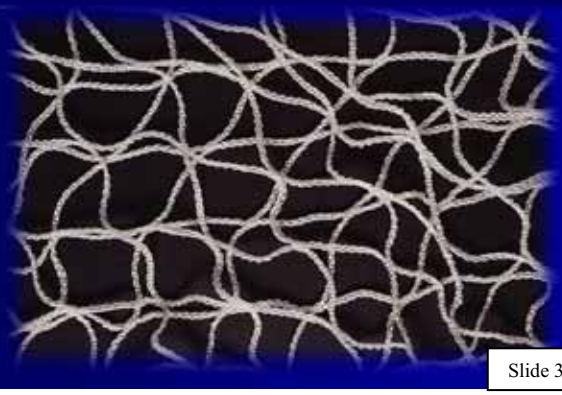
Slide 1

Content of Presentation

- Reinsurance of Mutual's
- Why reinsurer prefer Mutual's
- Risks in Aquaculture
- Systemic Risk & Reinsurance
- Agriculture Reinsurance Market
- Reinsurance Design (Forms & Structures)
- Conclusions

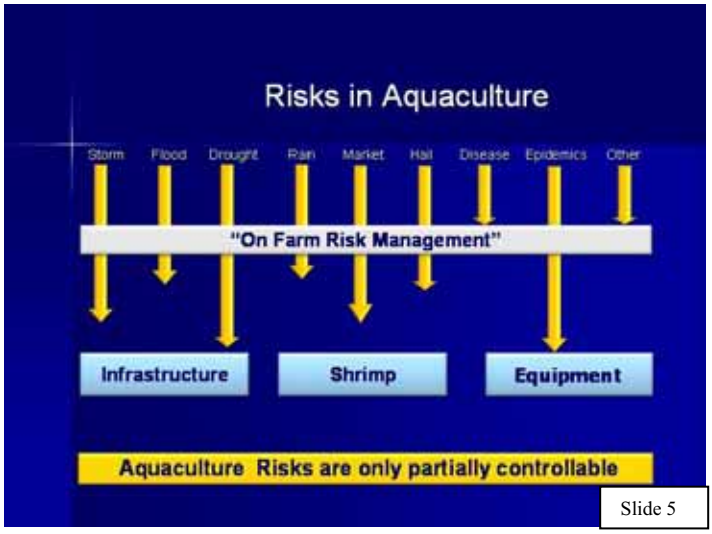
Slide 2

Mutual Insurance Companies
Grassroots level Network



Slide 3

Slide 4



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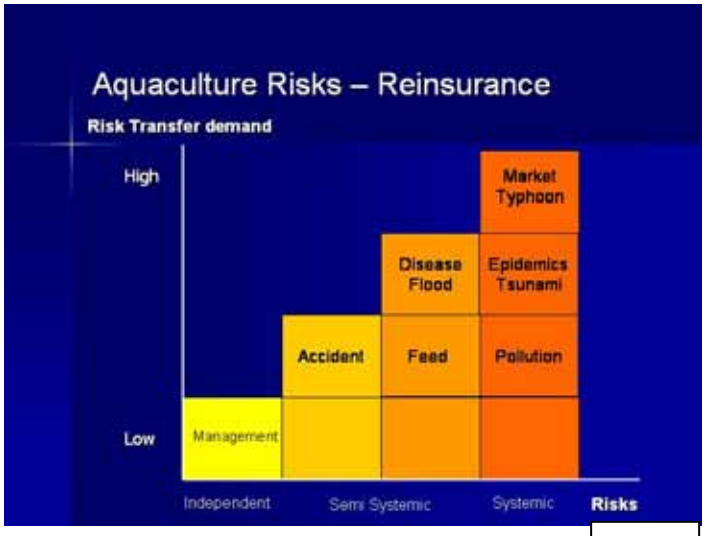


Slide 6

Product design
Food for Thought

- Listen to clients & explore clients needs
- Different clients have different needs
- **Mutual's know best local risks and needs of their members**

Slide 7

Product design
Food for Thought

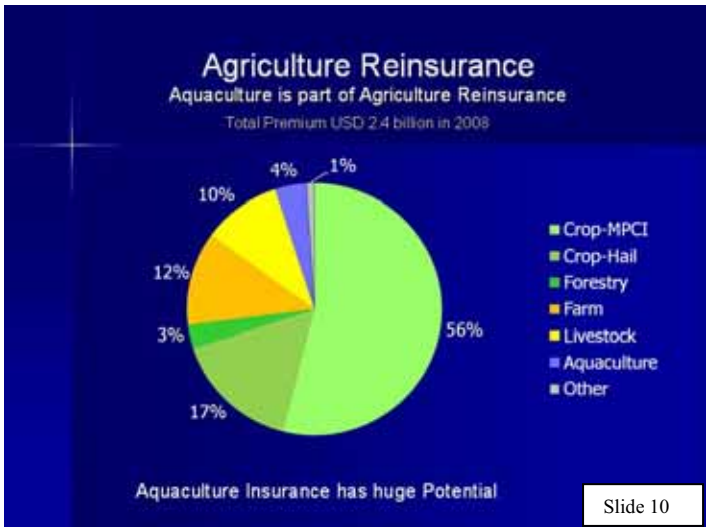
- Too many options confuse clients & are too expensive
- Too complex products are difficult to explain & to handle
- Clear and transparent products are successful
- **Mutual's can create their products themselves**

Slide 8

Reinsurance Market
Aquaculture is underwritten by Agriculture Reinsurer

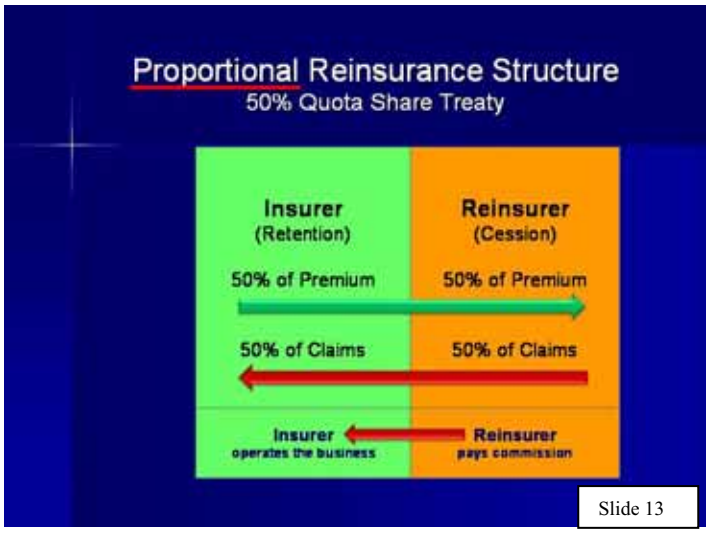
- Relative low number of participants
- Limited lead capabilities (proportional)
- Some new non-prop capacity (Bermuda)
- Despite global development, market is still dominated by North American business
- Aquaculture reinsurance market is very narrow but capacity is available

Slide 9

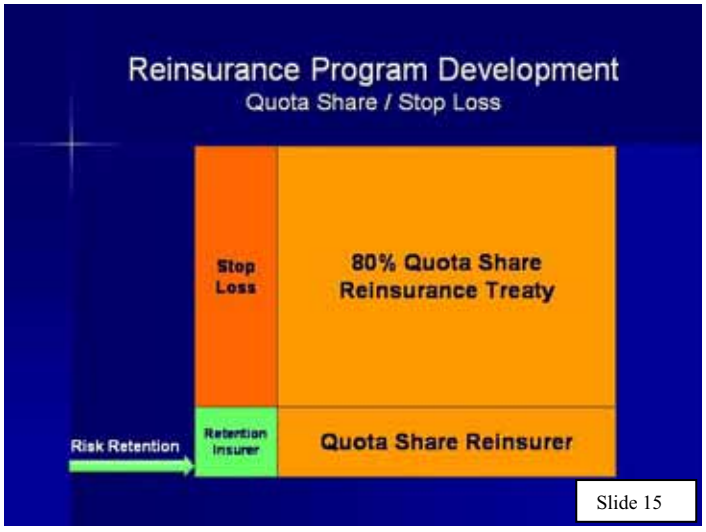

Agriculture Reinsurance
Aquaculture is part of Agriculture Reinsurance
Total Premium USD 2.4 billion in 2008
4%
1%
10%
12%
3%
56%
17%
Crop-MPCI
Crop-Hail
Forestry
Farm
Livestock
Aquaculture
Other
Aquaculture Insurance has huge Potential
Slide 10

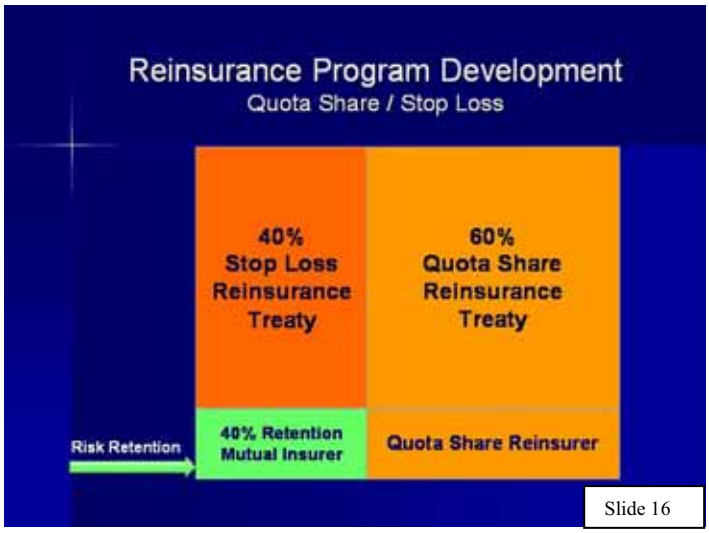

Reinsurance Premium
Reinsurance cost are a result of . .
Information (Insurance products)
Information (Historical losses)
Information (Insurance statistics)
Actuarial analysis's (Exposures & Losses)
Administrative cost
Solvency ratio & ROE requirements
Trust in Insurer (Know-how / Commitment)
Slide 11

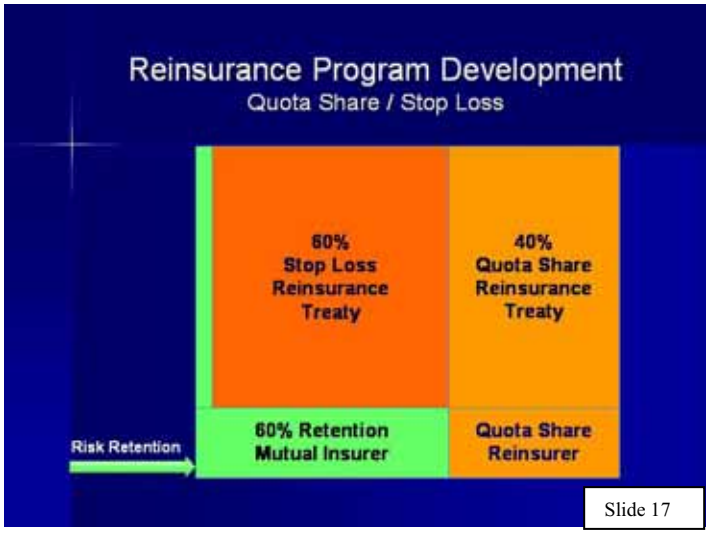

Reinsurance Program Design
Slide 12


Proportional Reinsurance Structure
50% Quota Share Treaty
Insurer
(Retention)
Reinsurer
(Cession)
50% of Premium
50% of Premium
50% of Claims
50% of Claims
Insurer
operates the business
Reinsurer
pays commission
Slide 13


Non Proportional Stop Loss Reinsurance
Losses
paid by
Reinsurer
Liability
assumed by
Reinsurer
Premium
paid to
Reinsurer
Losses
paid by
Insurer
Premium & Liability
retained by Insurer
Slide 14

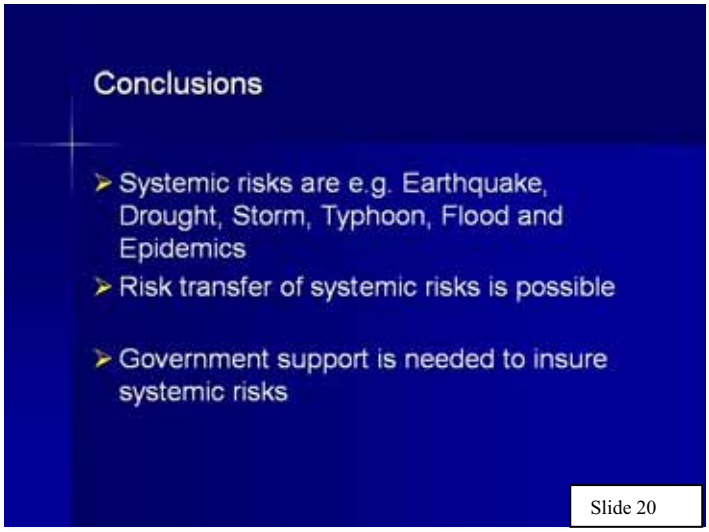

Reinsurance Program Development
Quota Share / Stop Loss
Stop
Loss
80% Quota Share
Reinsurance Treaty
Risk Retention
Retention
Insurer
Quota Share Reinsurer
Slide 15


Reinsurance Program Development
Quota Share / Stop Loss
40%
Stop Loss
Reinsurance
Treaty
60%
Quota Share
Reinsurance
Treaty
Risk Retention
40% Retention
Mutual Insurer
Quota Share Reinsurer
Slide 16


Reinsurance Program Development
Quota Share / Stop Loss
60%
Stop Loss
Reinsurance
Treaty
40%
Quota Share
Reinsurance
Treaty
Risk Retention
60% Retention
Mutual Insurer
Quota Share
Reinsurer
Slide 17


Reinsurance Program Development
Stop Loss
100%
Stop Loss
Reinsurance Treaty
Risk Retention
Thailand Aquaculture Mutual Insurance Company
Slide 18


Reinsurance Structure
Stop Loss Reinsurance Program
Following Reinsurer
Following Reinsurer
Following Reinsurer
Lead Reinsurer
Risk Retention
Thailand Aquaculture Mutual Insurance Company
Slide 19

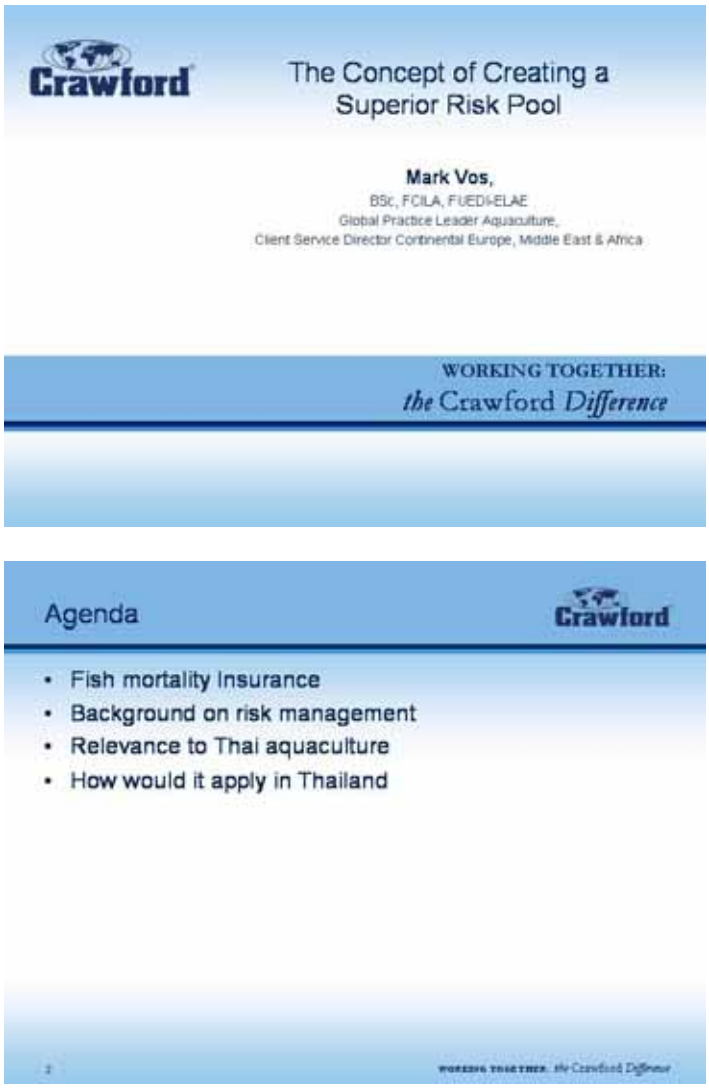

Conclusions
Systemic risks are e.g. Earthquake, Drought, Storm, Typhoon, Flood and Epidemics
Risk transfer of systemic risks is possible
Government support is needed to insure systemic risks
Slide 20


Conclusion . . .
Insurance facilitates access to capital and modern technology
Insurance supports economic growth
Mutual agriculture (aquaculture) insurance is preferred by reinsurer
All stakeholder – Farmer, Government, Insurer and Reinsurer – need to cooperate
Let's work together for joint success
Slide 21

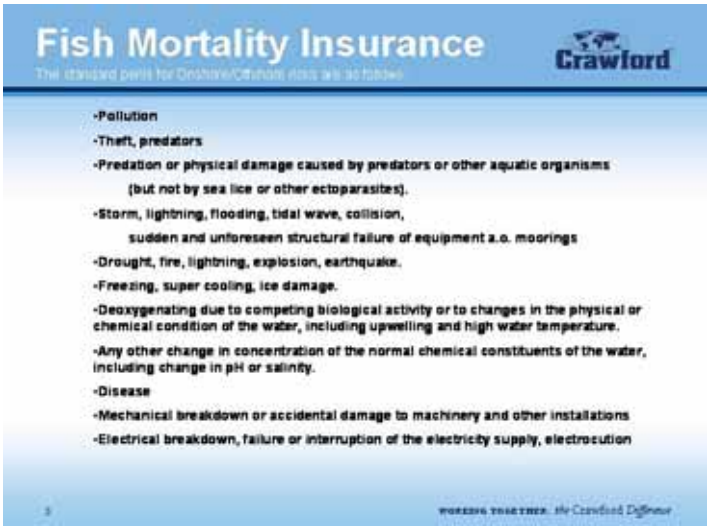

Thank you for your attention
Dr. Erich Kasten
Agriculture Reinsurance Consultants GmbH
Switzerland
Slide 22

APPENDIX I

The concept of creating a superior risk pool by Mark Vos


Crawford
The Concept of Creating a Superior Risk Pool
Mark Vos,
BSc, FCILA, FUEDI-ELAE
Global Practice Leader Aquaculture,
Client Service Director Continental Europe, Middle East & Africa
WORKING TOGETHER:
the Crawford Difference

Agenda
Crawford
• Fish mortality Insurance
• Background on risk management
• Relevance to Thai aquaculture
• How would it apply in Thailand


Fish Mortality Insurance
Crawford
•Pollution
•Theft, predators
•Predation or physical damage caused by predators or other aquatic organisms
(but not by sea lice or other ectoparasites).
•Storm, lightning, flooding, tidal wave, collision,
sudden and unforeseen structural failure of equipment a.o. moorings
•Drought, fire, lightning, explosion, earthquake.
•Freezing, super cooling, ice damage.
•Deoxygenating due to competing biological activity or to changes in the physical or chemical condition of the water, including upwelling and high water temperature.
•Any other change in concentration of the normal chemical constituents of the water, including change in pH or salinity.
•Disease
•Mechanical breakdown or accidental damage to machinery and other installations
•Electrical breakdown, failure or interruption of the electricity supply, electrocution

Asian risks do they differ?

- Tsunami / Tidal wave
- Typhoon / Storms
- Pollution
  - open waters
  - coastal zone
- Diseases
- Neurotoxins
  - algae bloom
- Deoxygenating
  - water temperatures
- Power supply to hatcheries
- Company management
- Vet supervision & support
- Bio Research & Developments
- Financial resources and mandatory accounting
- Regional economic dependence
- Where to situate my site
  - On shore /dams/containers
  - Off shore / moorings

Positive involvement of Authorities to improve quality and sustainability of trade and to follow-up to the changes in demands of consumers

According to the Ministry of Trade, recently, the Philippines' Ministry of Agriculture has removed the ban on white shrimp import and hatchery in the country.

The ban on white shrimp hatchery was imposed in 2001, when the country attempted to protect black tiger shrimp from Taura syndrome. However, the Bureau of Fisheries and Aquatic Resources still decided to hatch white shrimp in a trial period as it realized the high demand of the world's market. The shrimp breeders were imported from the US's Florida, and the hatchery of white shrimp has shown satisfactory results.

Thailand now also is shifting to hatch white shrimp and it has become the biggest supplier of frozen white shrimp to Japan.

The change in the tastes of Japanese consumers will lead to the adjustment in the imports structure of the country. It would be wise for Vietnam, the biggest supplier of black tiger shrimp to Japan, to consider breeding and exporting white shrimp to Japan.

In 2006, the frozen shrimp imports by Japan increased by 1.1% over the previous year, reaching $2bil (Vietnam-sourced shrimp accounted for 23% of the market share). The white shrimp imports increased by 101%m while the black tiger shrimp imports decreased by 10%.
TheFishSite News Desk

Positive involvement of Authorities to improve quality and sustainability of trade

Japanese authorities have begun testing all shrimp imported from Vietnam for AOZ (3-amino-2-oxazolin) after recent tests revealed high levels of the antibiotic residue.

Japan permits an AOZ threshold of 1 ppb (parts per billion).
Since last September it has also been testing all Vietnamese shrimp for chloramphenicol and cuttlefish for antibiotics since August.
Vietnam's fisheries and trade ministries have instructed authorized agencies and seafood exporters/processors to tighten control over seafood quality to avoid problems.
But the situation is yet to improve.
Last December Vietnam's National Fisheries Quality Assurance and Veterinary Directorate sent a letter of apology to Japanese importers for antibiotic residue in shrimp to Japan, also reporting the causes of the contamination.
First, some Vietnamese enterprises failed to check raw materials for antibiotic and other prohibited chemicals before processing.
Second, the creatures were bought from farmers in remote areas where there wasn't a strong enough check on the use of the chemicals.
Finally, some workers at the processing plants had used skin cream which contained chloramphenicol.
The quality agency also assured the Japanese it was toughening analysis and supervision measures to improve quality.
In the last two months of 2006 the Vietnamese fisheries industry suffered a major fall in exports to Japan because of a recurrence of antibiotic residues.
Japan has long been one of Vietnam's major seafood customers, buying 27 percent of its fisheries exports last year, second only to the US.
Source: VNA – Compiled by Dong Ha

Relevance to Thai shrimp farmers

- Dept. of Fisheries & shrimp trade introduced inspection
- Fishing Institutes successfully support certification of ponds & traceability of crop (birth to death registration)
- Better managed farming, but still 100% self-insured
- High financial exposure remains
- Dependence on subsidy in case of a major loss

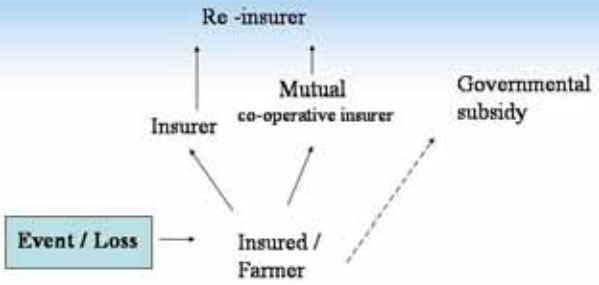
- Need for sustainable professional production
- Need for financial support & risk sharing

Message
The mutual as constructive aid in the trade

- Risks are uncertain, but can be managed
- Mutual is co-operative sharing of risk based on
  - existing biological experience of Fishing Institutes and
  - operational experience of co-operatives, larger farmers and Government, NGO's etc
- Objective: To-morrow better managed risk than To-day
- Value added proposition (What is in it for me?)
  - Farmer
  - Processor & Storage
  - Transport & ECO trade label (rejection)
  - Financing & Banks

Risk sharing is insuring

Hybrid risk sharing in Asia
yes or no



Accounting & Vet management drivers for insurance

- Accounting & vet mngt in insurance & loss adjusting.
  - Veterinarian support.
    - National Authorities
    - Regional Authorities
  - Risk + Accounting management.
    - National Financial / Credit Authorities
    - Regional Financial / Credit Authorities
    - Financial + Insurance market
  - Accounting guidelines part of insurance program.
    - Setting **sum insured** and required administrative supporting systems / site
    - Price models for biomass value calculation

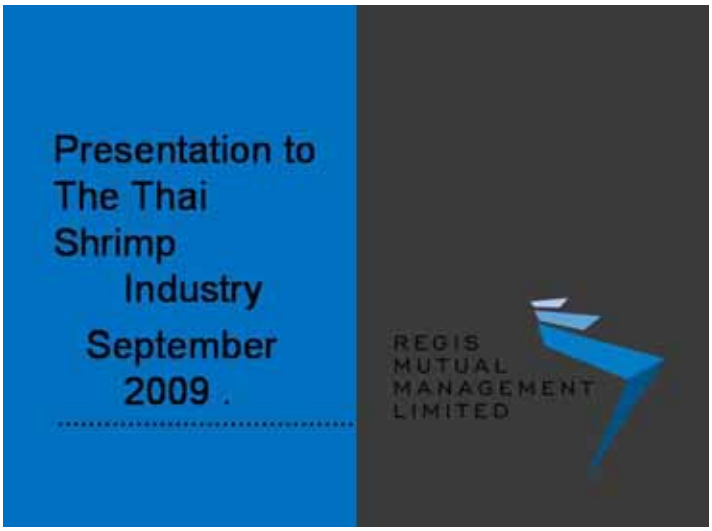
Lessons learned for the Thai Shrimp industry

- Risk management is a top down process and should not rely on the enthusiasm of the employee
- Introduction of insurance implies expected
  - Care of stock, (vet monitoring & farm management)
  - Investment, (quality of equipment)
  - Administration (data retrieval of feed, growth and harvest)
  - Information discipline (mutual is partner in business)
- Mandatory slaughter in case of diseases
  - an enforced **activity** to mitigate loss of stock,
  - but also to sustain the up-stream **economy**


Sustainable farming
Crawford

APPENDIX J

Mutual company start-up by Paul Koronka



Mutual Company start -up

- Critical Mass Issues
- Steering Committee
- Membership
- Determine scope of cover
- Funding
- Reinsurance

Mutual Process

Identify potential membership	Industry Group
Critical mass?	Premium Volume
Risk sharing?	Explicit
Data gathering and analysis	rubbish in / rubbish out
Validation	Same
Feasibility	Prospectus
Acceptance	Members
Still critical mass?	Premium Volume
Implementation	Military Precision
Migration strategy	Forces of Darkness
Start	Go

Critical Mass Issues

- So who is interested in joining?
- Chicken and egg situation
- Must be good expression of interest from sector to begin with
- More support there is the easier it will be
- Attracting reinsurers and government

Steering Committee ...

- **You will own this mutual**
- So you will need to ensure it does what you want

Steering Committee

- Drawn from potential membership
- And supporters – government / reinsurers advisors
- Guided by your future managers
- Committee of no more than 12 recommended
- Steering Committee likely to compose the first Board of Directors

Steering Committee Questions

- Who are the members going to be?
- What legal format can mutual take?
- Will government support be available?
- What cover will the Mutual offer initially?
- Gathering of data
- How will the Mutual be financed?
- How will we ensure it is fully funded?
- Are there any unforeseen risks?

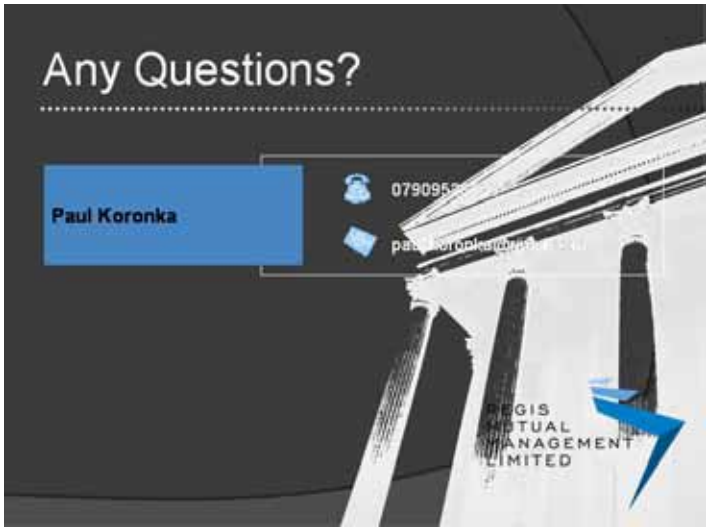
Steering Committee Answers

- Initial start up costs identified
- Enable Constitution to be finalised
- Cover wordings to be drawn up
- Pricing of cover to be determined
- Financial models produced
- Authorisation from government
- Reinsurance layers negotiated
- Management contract negotiated

Forces of Darkness?

- These are people will try to sabotage your efforts
- Whose interests are not your interests
- Why will people try to stop you?
- This is a chance in a lifetime for the industry
- None of the critical issues is insuperable


If you believe this is in your interests –
Go for it


Any Questions?
Paul Koronka
REGIS
MANAGEMENT
LIMITED

APPENDIX K

Aquaculture claims by Mark Vos

Crawford

Aquaculture Claims

Mark Vos,
BSc, FCILA, FUEDI-ELAE
Global Practice Leader Aquaculture,
Client Service Director Continental Europe, Middle East & Africa

WORKING TOGETHER:
the Crawford *Difference*

Risk management

Crawford

- Production stages
  - Hatcheries breeding shrimp
  - Nurseries growing post larvae to marine conditions
  - Grow out ponds growing juveniles to market condition
- Uniform risk management to reduce existing mortality levels or improve operational yield
  - Reliable water & testing and quality mngt (inclusive soil/farm and feed/sediment)
  - Vet & Bio toxin medication (ppb tests at EU border)
  - Pollution risk like salinity, oil etc
  - Power conditions & back-up

ISA in salmon in Chili

Crawford

- "Infectious Salmon Anemia" – commonly known as "ISA".
- ISA is a disease whose virulency, mortality, geographic extension and catastrophic potential have never been seen in the aqua cultural industry in Chili.
- The problem worsens in the case of ISA, because, although it is known that the genotypes of the virus in Chile are European-like and come from at least five different "strains". **The laboratory analyses do not respond well to the re-actives so far used to identify the disease**.

Occurrence Clause

- 1.- The detection of an abnormal behavior in the fish suggesting the existence of a disease, which will usually be noted in the respective logbooks of the site;
- 2.- The existence of one or more laboratory tests that confirm the existence of an *identifiable pathogen agent*; and,
- 3.- That the above manifests itself in mortalities that significantly exceed the natural or *historic* mortality for the particular site.
- Clause **6.2.1.** of the applicable General Conditions excludes any claims notified after 72 hours from the occurrence of the loss.

Policy and clauses

- *"take any measures, as may be reasonable, to mitigate the losses;* and to: *"do whatever is necessary to save or protect other stock not affected by the event and which might give rise to losses".*
- the policy, excludes losses arising from *"Deliberate slaughtering, whether by order of an official entity or for other reasons".*

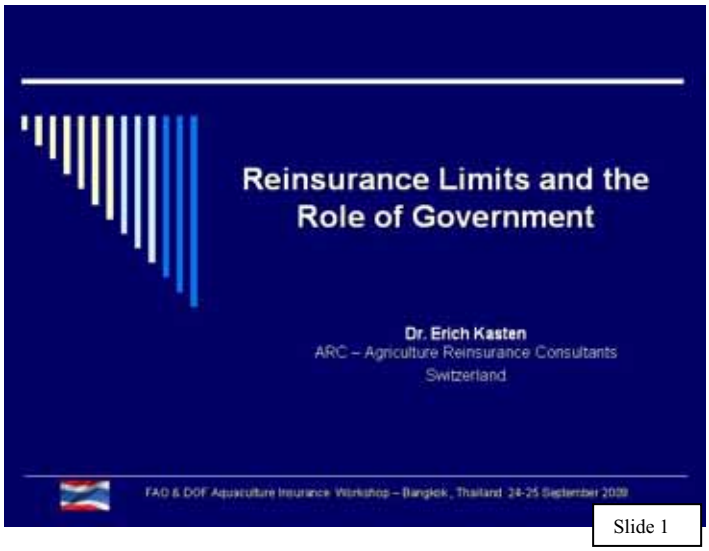
Lessons learned for the Thai Shrimp industry

- Risk management is a top down process and should not rely on the enthusiasm of the employee
- Introduction of insurance implies expected
  - Care of stock, (vet monitoring & farm management)
  - Investment, (quality of equipment)
  - Administration (data retrieval of feed, growth and harvest)
  - Information discipline (mutual is partner in business)
- Mandatory slaughter in case of diseases
  - an enforced **activity** to mitigate loss of stock,
  - but also to sustain the up-stream **economy**


Crawford & Company
Global & ASIA
Crawford
• Its focus is to provide global claims solutions.
– To maintain and grow its ability to provide
(co-ordinated) aquaculture loss adjusting services in the global regions of interest
• Is interested to assist in the loss adjusting & risk components, which are faced by the aquaculture insurance market and financial hybrid solutions in the Asian region to come .
• Crawford & Company (Thailand) Ltd, Bangkok

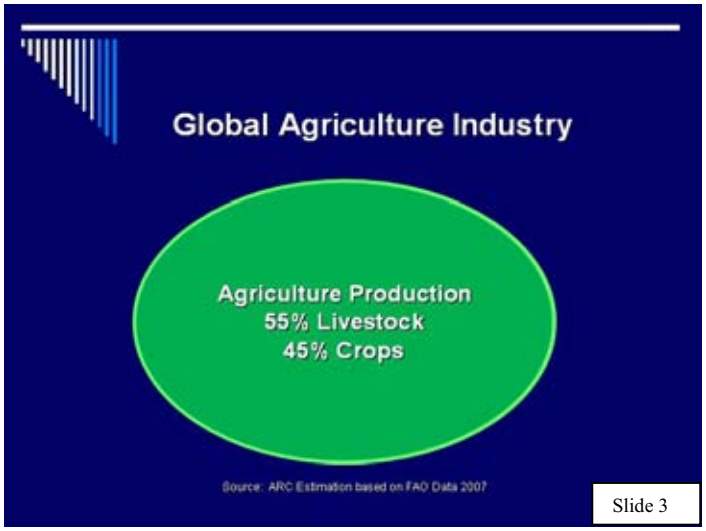
APPENDIX L

Reinsurance limits and the role of governnment by Erich Kasten



Slide 1

Slide 2



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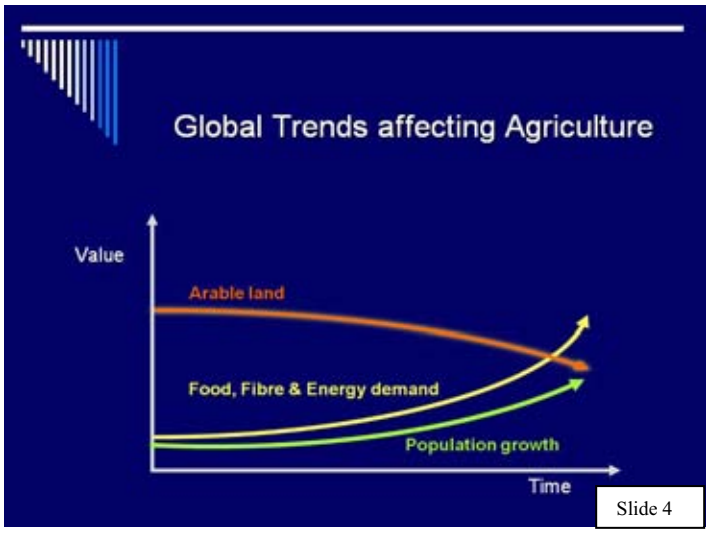

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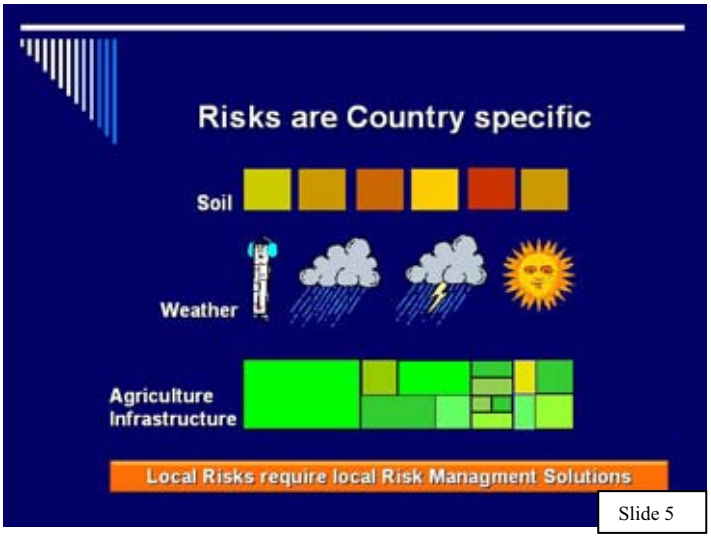

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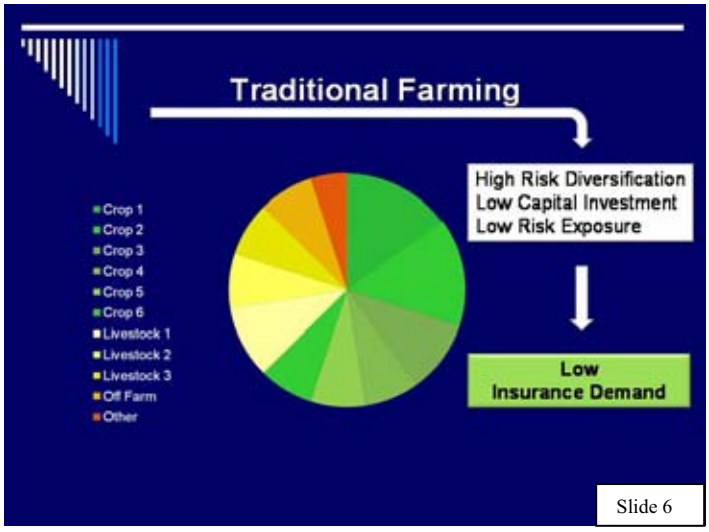

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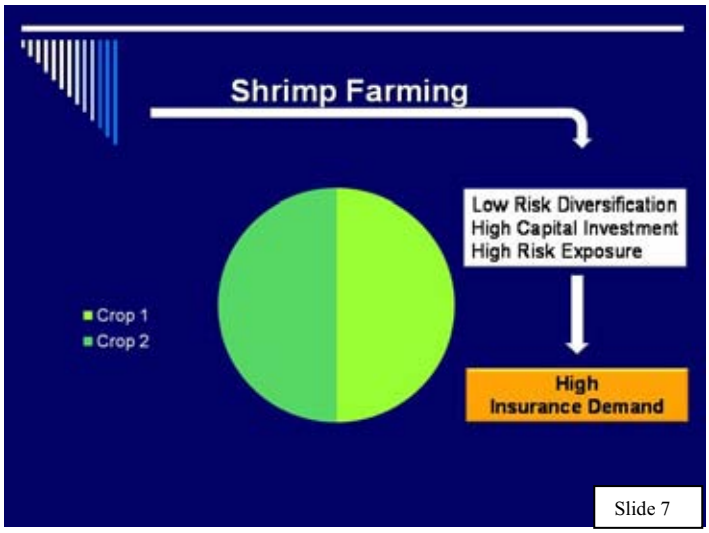
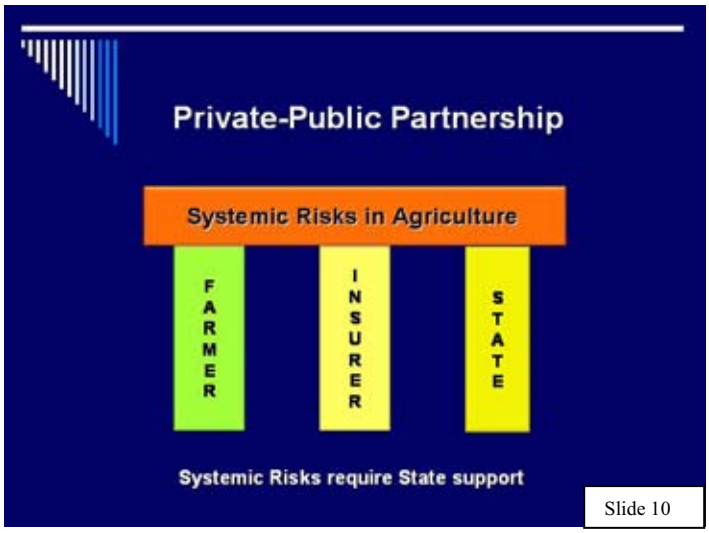
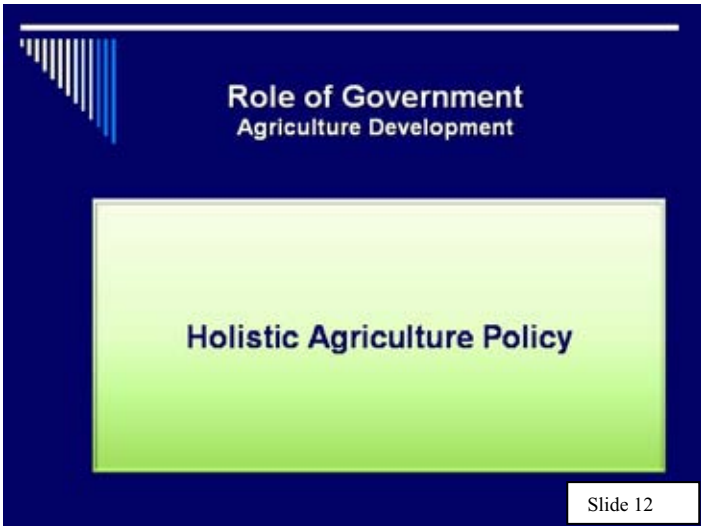

Shrimp Farming
Low Risk Diversification
High Capital Investment
High Risk Exposure
Crop 1
Crop 2
High
Insurance Demand
Slide 7

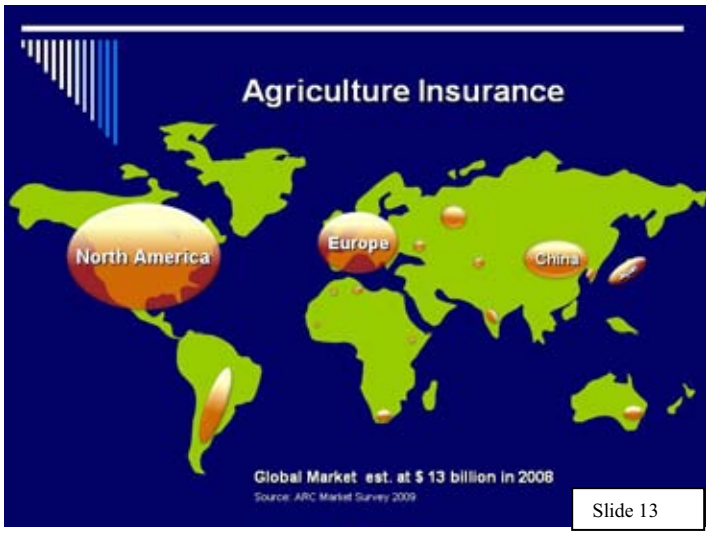

Governments need to...
GOVERNMENT
manage natural catastrophes
avoid ad hoc payments
ensure budget stability
use agriculture insurance as a tool for rural development
stabilize income for fulltime farmer
Slide 8


Farmer need insurance to...
FARMER
access credit
invest in new technology
improve productivity
use insurance as collateral
have catastrophe protection
Slide 9


Private-Public Partnership
Systemic Risks in Agriculture
FARMER
INSURER
STATE
Systemic Risks require State support
Slide 10


Stakeholder
Agriculture Insurance
Farmer
Insurer
State
Banks
Cooperation of all Stakeholder is required
Slide 11


Role of Government
Agriculture Development
Holistic Agriculture Policy
Slide 12



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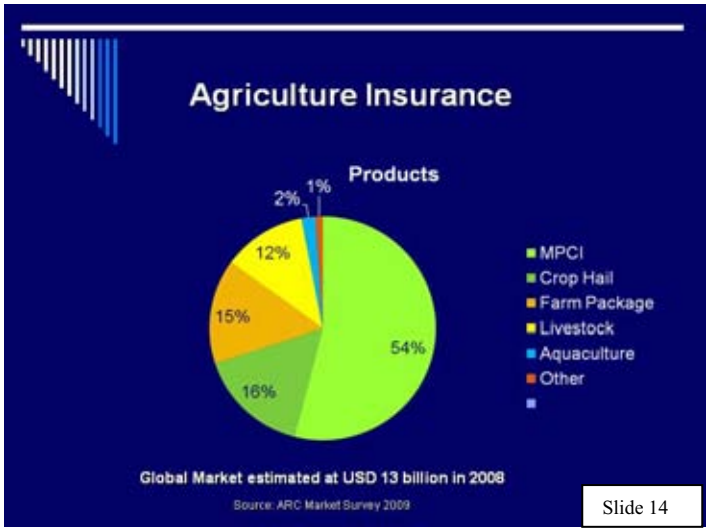

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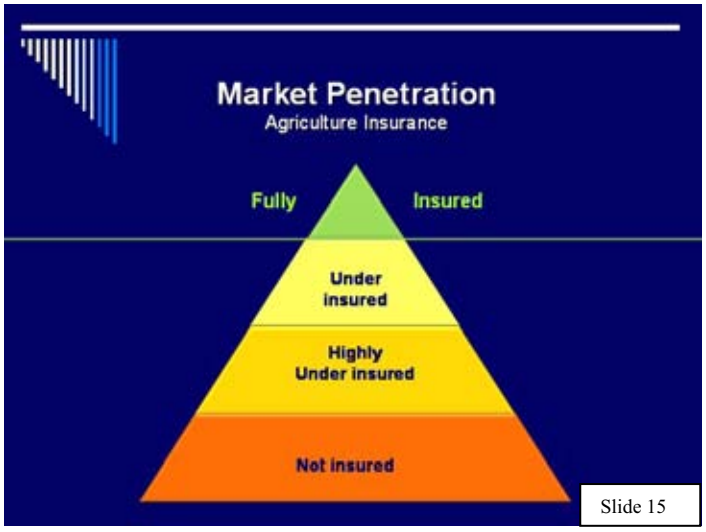
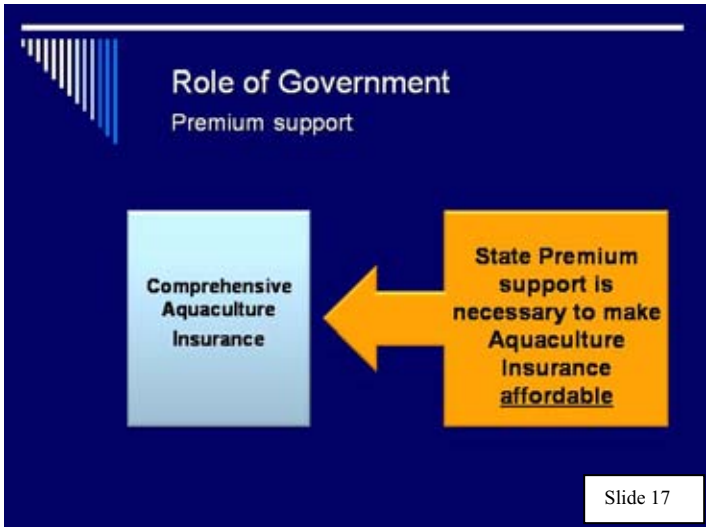
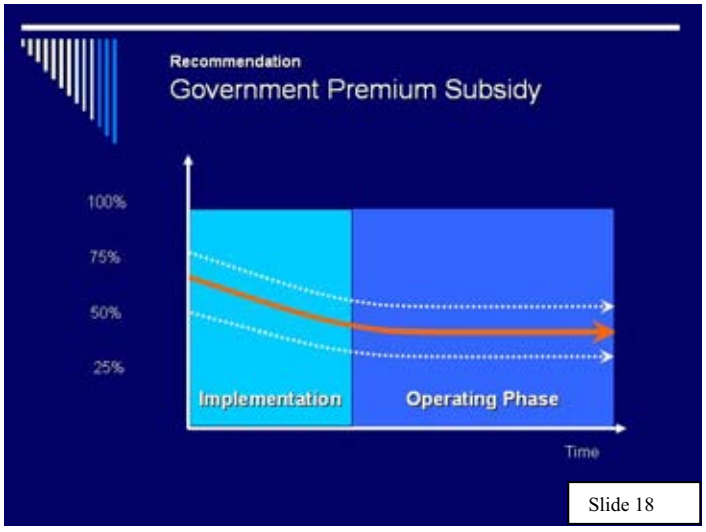
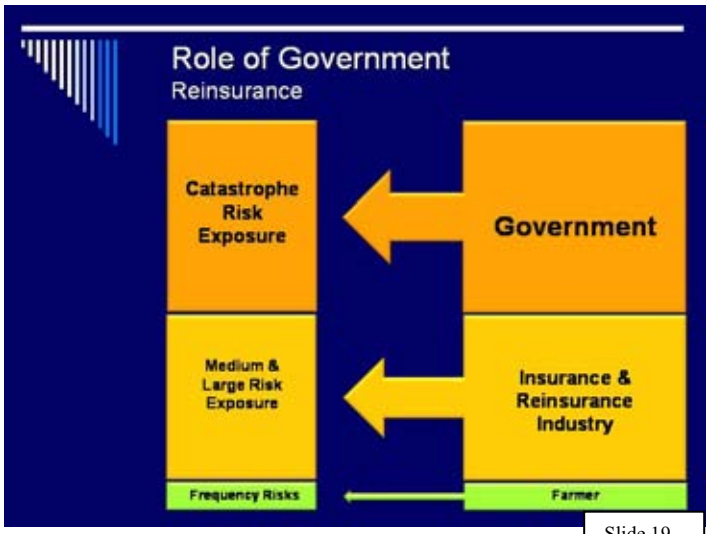


Slide 15


Risk Categories and Severity
Catastrophe & Systemic Risks
Very High
Large & Semi Systemic Risks
Medium to High
Independent Risks
Low
Slide 16


Role of Government
Premium support
Comprehensive Aquaculture Insurance
State Premium support is necessary to make Aquaculture Insurance affordable
Slide 17


Recommendation
Government Premium Subsidy
100%
75%
50%
25%
Implementation
Operating Phase
Time
Slide 18



Slide 19

Slide 20

Slide 21

Conclusion

- The Role of Government is vital for viable agriculture or aquaculture insurance schemes
- Many countries support agriculture insurance with premium subsidy and reinsurance
- Aquaculture is a high risk industry and needs risk transfer via insurance solutions
- Lets work together for the welfare and a sustainable future of the Thai Shrimp Industry

Slide 22

Thank you for your attention

Dr. Erich Kasten
Agriculture Reinsurance Consultants
Switzerland

Slide 23

This report gives an account of the presentations and discussions during the two-day FAO–DOF Workshop on the Options for a Potential Insurance Scheme for Aquaculture in Thailand, held from 24 to 25 September 2009 in Bangkok. The workshop was a collaborative activity between the Department of Fisheries of the Royal Government of Thailand and the Food and Agriculture Organization of the United Nations. Resource persons from the global insurance industry who are leaders in the field of mutualization, reinsurance, claims and loss adjustment, and aquaculture insurance and with over 30 years of experience in their respective fields in different parts of both the developed and the developing world provided their expertise.

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