

# **Knowledge Management for Risk Management (new title, feel free to change)**

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## **Objectives**

We should develop a compatible national, international, and EU.-level Knowledge Management System (TKM) to speak a common language and share best practices, useful experiences and new methods in Disaster Management Systems (DMS). Knowledge of risk management approaches, risk transfer mechanisms and techniques can be made available using e-Learning technologies. Steps in this process are: selection of appropriate knowledge structures, development of the right content and the acquisition of collaborating partners, institutes and experts for joint work.

This paper presents the Hungarian experience in risk management/insurance education. The training tool links the data and information available to the insurer with the information needs of local governments through a comprehensive disaster risk management system. The training tool is available on CD-ROM and will soon be on the WEB-Portal, also.

## **Introduction**

Disasters cause billions of dollars in damage each year. General impacts are clear, though it is still difficult to measure costs in terms of economic losses, human lives and injuries. While considerable effort is going to the area of research, surprisingly little consistent and reliable data are available regarding the effects of natural disasters. Appropriate data and information systems are clearly the cornerstone in designing an efficient disaster risk management framework.

All cities and towns, regardless of size, have a set of problems related to the security of the local energy and water distribution systems and other infrastructure. A comprehensive understanding of how a city works can provide the means to better evaluate vulnerabilities related to natural

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hazards, such as earthquakes, floods or more directly human-designed events such as terrorist attacks.

For cities to be safe, sustainable long-term urban planning and risk assessment tools must be used. Knowledge management must be based on an accurate assessment of the processes and links within local government responsibilities in risk management.

First of all, we should understand what we mean by risk management. What type of knowledge is needed? What are the tasks involved? What is the responsibility of local government in reducing disaster losses?

We should also find answers to the following questions:

Are risk management activities of local governments in direct competition with insurance? Is risk management the same as good insurance management? Although, we will not be able to clarify all of the issues involved, we can share with you the approach used in developing the knowledge management system in insurance education in Hungary.

A hazard event may happen in the future. Risk management recognizes these events, their possible severity, and ways to measure them. When potential impacts are assessed, it is possible to judge the actions required.

Risk identification involves the analyses and evaluation of impacts and ways of reducing the losses from a catastrophic event. Risk managers need a great deal of skill to address risk reduction issues. They need to have the appropriate knowledge and information of the processes to arrive at the engineering of optimum solution. Once a risk has been identified and measures taken to limit its impacts, decisions on the next steps should be made. At this stage there is a general tendency to rush to transferring the risk to a third party such as an insurer.

Insurance is often thought to be the answer to risk. When premiums are low, there is no incentive to think about risk in terms other than the cost of insurance premiums. However, the insurance market is changing, capacity problems are emerging and premiums are skyrocketing. There is an incentive to think about containing insurance costs.

Before transferring risk, which has cost implications, we should assess how much risk we retain and what losses cannot be covered by our own resources. This is our motivation. But what is the motivation of the insurer?

The insurer wants to realize a profit after covering the costs of claims and expenses. Therefore, the knowledge of various risk financing mechanisms is essential.

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The complex education program of risk managers in Hungary includes the following modules:

1. Classification, and estimation of risks
2. Risk identification
3. Statistical analysis of risk
4. Interpretation of information and data
5. Measurement of data and meaning of probability
6. Risk transfer and risk financing / The cost of risk / Insurance and reinsurance
7. Risk and loss control management
8. Integrated risk management (RM) system
9. Self insurance options
10. Design of Disaster Risk Management Systems(DMS)

## **Short Content Summary**

### **Important features of risk identification**

There are a number of methods or techniques of risk identification and there are a number of common features of importance. The risk identification exercise includes consultation with professionals such as geologists, technicians and flood-specialists who know the probabilities of and have knowledge of the different types of risks involved. The risks and probabilities are not constant. With time, new risks might arise, therefore risk identification should be on-going.

Risks, which have been identified should be monitored and new risks highlighted. A program of risk identification involves careful planning on the part of the risk manager.

### **Statistical analysis of risk**

There are various methods of representing data and analyzing them. Each has its relative advantages.

The first stage in statistical risk analysis is data gathering. Risk management and insurance/reinsurance companies generate large volumes of information on claims, policies and premiums. Often data are collected more as a matter of routine than by definite conscious decision. Risk managers review the available data and information and select that useful for analysis. To make

this selection it is essential to have a clear picture of what the end result is likely to be. This is often achieved by imagining the kind of statements that analysis should produce at the end of the day.

### **Interpretation of information (data)**

One of the simplest and most common methods of data interpretation is by using frequency distribution such as claim costs and number of claims. Frequency distribution gives a clearer picture of what data are telling us. It is also useful when comparing one data set with another or when comparing sub-sets within data, for example, regional variations.

In addition to relative frequency distribution, we can use other methods to make data easier to interpret. Often it is necessary to express data as percentages. We can say that a certain percentage of all claims costs €1,000 to 5,000 and another percentage costs €5,000 to 10,000 and so on.

### **Measurement of data and meaning of probability**

In addition to locating data, we may also want to say something about how data are spread out. Even with location and dispersion described, we still may want to measure the nature of dispersion.

There is another aspect of statistical risk analysis that should be considered and that is probability. Measurement of the likelihood of loss is an important aspect of risk analysis and risk managers should be familiar with it. Probability theory sets a numerical value to our measurement of the possibility of an event occurring.

### **Risk transfer and risk financing - The cost of risk**

Financing relates to revenues and costs. Risk financing techniques have been developed to meet the costs of losses. The main risk financing options are:

- Transfer the risk or financing responsibility to a third party
- Retain financial responsibility
- Combination of insurance transfer and retention.

The role of risk financing:

- Evaluation of the total value at risk
- Estimation of the total cost of loss
- Identification of appropriate sources of financing
- Appraisal of the financial feasibility of the replacement of assets subject to loss

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- Arrangement for securing of these funds in case of loss
- Direction and control of the use of the funds upon the occurrence of the loss.

The cost of risk to an organization is usually defined in total annual expenditure:

- Retained losses
- Insurance premiums
- Control and handling costs
- Risk management (RM) and disaster management (DM) administration and expenses.

### **Risk and loss control management**

The prevention and minimization of losses are the most effective means of reducing the cost of risk apart from eliminating or reducing the risk itself. Risk and loss reduction is an area that should be of vital concern to:

- Designing a proactive framework for RM / DM systems
- Education and sharing (knowledge, experiences, methods)
- Transferring mechanisms (insurance/reinsurance)
- Mitigation (global and local responsibility of government/local government).

The objective of loss control management is to limit the total cost of losses to the lowest possible level by implementing measures which:

- Prevent losses from occurring
- Protect people and/or property from loss
- Detect and limit the extent of any loss that may occur
- Maximize recovery from any loss that has occurred.

To be fully effective we must take a comprehensive approach so that measures implemented are fully integrated with each other, as well as with local government action.

### **Integrated risk management systems**

- Risk analysis and evaluation subsystem
- Risk transfer and financing subsystem
- Traditional and Alternative Risk Transfer (ART), Captive Solutions.

### **Self insurance options**

Retained losses can be fully self-funded or shared with an insurer in a number of ways such as:

- Excess or deductible
- First loss cover
- Co-insurance (pool)
- Retrospective Plan.

The principal financing methods are:

- Non-replacement
- Current expense
- Contingency reserve
- Internal/external risk fund
- Captive insurance company.

### **Design of disaster management system (DMS)**

Includes two major components:

- Disaster simulation, planning and mitigation
- Improved community awareness and redlines for disaster.

The overall purpose of the DMS is to support decision makers. The DMS will require information infrastructure, networking and communication systems.

### **The process**

- Extensive community outreach programs are required to improve cultural attitudes towards disasters
- Considerable ultra-reliable communication infrastructure for emergency personnel is necessary
- Extensive additional sensor networks for infrastructure in a given region is needed for an improved disaster response
- Enhanced capabilities for disaster response personnel and planners can be achieved through the development of comprehensive disaster simulation capability.

The disaster management system is developed taking into account

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- Decision makers, appropriate parties needing the information specified
- Value of the information for decision makers
- Existing data sources, currently available sources for data required
- Additional data needs that are necessary and currently unavailable
- Methodologies that must be developed to analyze the data in order to meet the information need – IT support
- Additional infrastructure necessary to obtain data specified by the information need.

### **Information needs**

#### Information needs for planning:

- Impending disaster likelihood and effects
- Analysis of proactive mitigation measures
- Mitigation implementation.

#### Information needs for infrastructure:

- Infrastructure asset information and functionality
- Human resources for infrastructure operation
- Actions and scenarios after disaster.

#### Information needs for incentives:

- Available funding
- Target groups and opportunities for incentives
- Benefit of the actions promoted by incentive
- Compliance (insurance services).

#### Information needs for community education and family values:

- Emphasis augmentation
- Awareness and readiness
- Improved motivation
- Disaster education and training (competency for disasters).

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Information needs for coordination and media :

- Agency to public communication
- Intra/inter-agency communication
- Near-term asset loss minimization.

The most important infrastructure is: telecommunications, electric power systems, gas/oil storage and transportation, banking and finance, transportation, water supply system, emergency services and continuity of government/local government operation.

## **Policy Portfolio for DM Systems**

**Regulations and actions :**

- Employ additional inspectors, contractors
- Implement a disaster information hotline
- Adopt consistent and stricter flood control standards
- Utilize an emergency response system
- Install seismic shutoff valves for gas service
- Utilize electronic highway signs for warnings
- Require emergency medical care facilities to have backup generators
- Install warning sirens in industrial/commercial parks
- Retrofit educational facilities and other public buildings as part of mitigation measures.

**Inter/intra governmental perspectives and impacts**

- Educate and disseminate knowledge and information
- Establish regional/local DM strategy
- Improve communication between law enforcement and regulatory agencies.

**Fiscal incentives**

- Establish a DM policy and program
- Implement tax credits for DM (mitigation)
- Introduce Insurance Premium Reduction Plan
- Encourage low interest loans

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- Initiate technology development and deployment.

The Hungarian financial/insurance knowledge management CD-ROM and portal that is being developed will include information and data from the Hungarian flood, earthquake statistics and claims. It will be open to international cooperation and experience sharing with other countries.