

# *How to make Enterprise Risk Management effective with limited resources*

by Paola Radaelli

## *1 Executive summary*

When a company is gaining less money than expected, the first action taken by the management is cutting indirect costs, the second usually is the reduction of investments due to the higher cost of capital and then the reduction of maintenance. The first targets of the reduction of indirect costs are those services which are not, or are not understood as being, immediately necessary to make profits, such as controls, which can be either reduced or done without any interest in understanding the substance of the issues, in other words they become only superficial or formal controls. One of the first departments targeted with these treatment is the Enterprise Risk Management (ERM) department.

This article aims at explaining how to adapt an Enterprise Risk Management process to a company with limited resources and how to make it effective in helping the company find its way to the profit. It will focus primarily on energy companies, however this topic relates to each and every company.

The ERM service will start from putting in place organizational changes to reduce the total time required by the process, maximizing the collaboration with other control departments and softening the process in secondary activities. It will maximize group advantages, like, among the others, natural hedges and real options. Then the ERM service will support the management in taking risk informed decisions regarding the fulfillment of strategies. At last the ERM service will maximize the risk treatment reducing the outflow of money while optimizing the total cost of risk. All these topics will be treated in great detail.

## *2 Organizational optimization*

The organizational optimization may be related to the maximization in the cooperation among control departments, in the softening of the process in secondary activities and lastly in enhancing group integration.

### *2.1 Maximization of cooperation among control departments*

Following “COSO” (Committee of Sponsoring Organizations and Treadway Commission) best practices the “Enterprise Risk Management is a process, effected by an entity’s board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk within its risk appetite, to provide a reasonable assurance regarding the achievement of entity objectives”. This process has three levels of defense, the first level is the Risk Owner, the second level is represented by the different control departments (i.e. Budget and expenses control, Quality Safety Prevention and Protection, Enterprise Risk Management, sometimes even Trading Risk Management, Credit Risk, Compliance, Business Continuity Management ..) and lastly the third level is the Internal Auditor. All three lines of defense are focused in the analysis of risks, however sometimes in different areas.

The optimization of the cooperation between Risk Owner and Enterprise Risk Manager is based on the certainty that the Enterprise Risk Manager (ERM) will help the Risk Owner in reaching his targets thanks to the management and treatment of his risks, on the other hand the Risk Owner will provide the Risk Manager with all necessary information. The Risk Owner may have a limited knowledge of how insurances or other risk transfers are disposed, in addition the risk owner may need support in obtaining resources for other preventive measures or in settling claims. On the other hand the risk manager needs quick, clear and transparent information.

The maximization of the cooperation with the Budget and Expenses Control department is fulfilled in helping this department understand the trends of expenses and revenues in an uncertain environment and then in realizing a unified report on Key performance/risk indicators.

Tab.1: Example of integrated report

General information (*)	Period +1 (Budget)			Period			Period Y-1		
	Total			Total Diff. vs B.			Total		
Market average Base Load price	51			51			50		
Market average Peak Load price	66			66			65		
Electricity volumes purchased	2.000.000			2.000.000			1.900.000		
Electricity volumes not purchased	500.000			500.000			600.000		
Electricity volumes not sold	50.000			50.000			40.000		
Heating/cooling degree days	350			378			218		
Enterprise Information	Total			Total Diff. vs B.			Total		
Total customers	295			285			300		
Lost customers	10			10			25		
New customers	30			20			10		
Electricity	Fixed P.	Fl. P (**)	Total	Fixed P.	Fl. P (**)	Total Diff. vs B.	Fixed P.	Fl. P (**)	Total
Q. purchased for nodal area	490			483			400		
Peak	120	180	300	116	174	290	90	150	240
Off peak	80	110	190	77	116	193	60	100	160
Hedges	100	0	100	100	0	100	80	0	80
Unhedged	100	0	0	93	0	0	70	0	70
Q. sold for nodal area	490			483			400		
Peak	120	180	300	116	174	290	90	150	240
- retail	50	100		50	100		30	100	
- commercial	70	80		66	74		60	50	
Off peak	80	110	190	77	116	193	60	100	160
- retail	50	70		40	70		40	70	
- commercial	30	40		37	46		20	40	
Costs									
Peak	65	65		65	65		64	64	
Off peak	50	50		50	50		45	45	
Hedges	5			5			5		
Unbalances	10	5		10	5		8	7	
Var (10d - 95%)	30								
Var/Unhedged costs	26%								
Prices									
Peak	70	67		70	67		66	65	
Off peak	57	55		57	55		48	48	
Unbalances	10	5		10	5		11	7	
Total									
Revenues	12.970	18.115	31.085	12.519	18.043	30.562	8.831	14.557	23.388
Operational Cost	12.115	17.505	29.620	11.705	17.415	29.120	8.773	14.407	23.180
Personnel	200	200	400	200	200	400	200	200	400
Capitalized costs	4	5	9	4	5	9	4	5	9
EBITDA	659	415	1.074	618	433	1.051	- 138	- 45	- 183
Claims & Damages	Total			Total Diff. vs B.			Total		
N. Customer claims	50			50			60		
N. Customer claims opened	50			45			50		
N. Customer claims closed	50			50			60		
Damages to distribution assets	0			2			1		
Hours of interruption of service	2			3			2		

(\*) Numbers are chosen by way of example

(\*\*) One column for each price formula

The cooperation with the Quality, Safety, Prevention and Protection department is based on a deeper shared knowledge of the company, the ERM helps gaining a wider view on risks, the other department assures the treatment of an important part of operational risks as well as the monitoring of the quality of services.

The cooperation with the Business Continuity Management and Compliance department follow the same reasoning as the one regarding the Quality, Safety, Prevention and Protection department, with the peculiarity that Business Continuity Management treats all risks which could prevent the company from doing its activity and the Compliance Department prevents the company from being fined for breaches of regulations or laws.

The Trading Risk Management usually has a specialized expertise, that needs to be shared with the entire company to represent a competitive advantage, an active cooperation with the Enterprise Risk manager is the best way forward.

The cooperation with credit risk monitoring and the treasury department in general is based on the comprehension of risks in an uncertain environment. An example is the updating of credit risk with the shifts of the forward curve and , in the same way, the anticipated monitoring of margin calls.

The last important cooperation is with the Internal Auditor, the ERM should mainly manage risks *ex ante* and the Internal Auditor should mainly control *ex post* with a greater focus on financial information, apart these differences, both work extensively on risks and coordination can enhance their effectiveness and efficacy.

## 2.2 Softening of the processes

The process should be bottom up starting from lower levels of risk owners and single business areas, aggregated progressively towards the higher level of risk owners and company, then group level. All the process should be formalized. The softening of the process is essentially based on prioritization. Prioritization is based on the targets given to the process, which usually mean understanding which issues could have a major impact on reputation, market share, margins<sup>1</sup>, financial balance and enterprise value. With all this clear in mind, the activities, the number of risk owners involved, the number of analyzed business areas and the formalization of the activities will be decided within the limits of available resources, which are defined in terms of time availability of all the people involved and costs for outsourced activities. The opportunities of reduction of the total cost of risk will be treated in section 4. When a higher level risk owner will be chosen, this risk owner will have the responsibility of informing and consulting his staff on risks during periodic briefings. When different business areas have common issues, their analysis could be unified. Some minor business areas could be overlooked until some resources will be freed. An excellent risk analysis and treatment are a must, while measurement could be prioritized, that is to say simplified as long as margins are not jeopardized. As closing remark, the formalization of the process could be limited to the final output of each activity (risk analysis, measurement and treatment for each relevant business area or company), however each company requires a single formalization, because of the direct responsibilities of each management team.

Two tables will follow, table n.2 gives an example of a light Enterprise Risk Management Process and table n.3 lists the events a multi-utility could prioritize.

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<sup>1</sup> Loss in margins is referred to an increase in costs/expenses or a reduction in revenue and related costs or write down of assets.

Tab 2: Here is an example of the minimum number of risk owners to involve in a multi-utility ERM process

Business Areas or companies	Risk owners directly involved				Report
Distribution of water, electricity or natural gas (grid manag.)	Those responsible for grid management				One for company
Distribution of water, electricity or natural gas (extensions and new investments on grid)	Those responsible for the realization of investments or extensions				One for company
Metering	Those responsible for the management of metering				One for company
Commercialization of electricity or gas	Those responsible for retail sales	Those responsible for commercial sales	Those responsible for purchase/trading of natural gas	Those responsible for purchases/trading of electricity	One for company
Commercialization of water	Those responsible for retail sales	Those responsible for commercial sales			One for company
Production	Those responsible for similar production assets				One for similar asset
Collection and final disposal of waste	Those responsible for the collection of waste	Those responsible for similar assets to dispose waste			One for collection and one for similar asset

Tab. 3 : Examples of prioritized events in a multi-utility and their possible impacts

Event	Reputation	Revenue	Risks for Margins	Financial Balance
<b>Interruption of distribution of power or natural gas</b>	Sicknesses or deaths . Customer Interruption of production.			
<b>Interruption of supply of power or natural gas</b>	Sicknesses or deaths . Customer Interruption of production.			
<b>Metering</b>	Responsibilities for undue charges	Loss of revenue		
<b>Extension of grid or other works on the grid</b>	Damages to surrounding buildings, railways, incidents to passing vehicles			
<b>Natural gas uncontrolled dispersion</b>	Explosions	Loss of revenue		
<b>Water contamination</b>	Sicknesses or deaths			
<b>Interruption of supply of water</b>	Interruption of production.			
<b>Uncontrolled dispersion of drinking water</b>	Damages to surrounding constructions	Loss of revenue		
<b>Uncontrolled dispersion of waste water</b>	Pollution and damages to surrounding constructions with possible interruption of production			
<b>Stop in the production of power</b>		Loss of revenue	Loss margins, possible charges	in

Event	Risks for Reputation	Revenue	Margins	Financial Balance
Difference between reserved and actually purchased natural gas or power			Possible charges or extra costs	
Ineffective hedge of power or natural gas sales			Loss in margins	
Trading of natural gas or power			Possible loss in margins	
Uneconomic assets			Loss in margins	
Waste disposal	Pollution		Fires	
Delay in waste collection	Diseases, claims from Municipality			
Data Protection	Privacy breaches		Fines	
Events listed in D.Lgs 231/01 (limited to Italy)			Possible interruption of activities	
Damages to assets			Loss in margins	
Margin call				Possible financial unbalance
Credit Risk			Loss in margins	
Covenants in financing			Loss in margins	Possible financial unbalance
Market abuse	Damages for reputation		Loss in margins	
Loss or theft of data	Possible damages for customers		Loss in margins	
Loss of control of assets due to cyber attacks	Possible damages or diseases		Loss in margins	

## 2.3 Group integration

Group integration is a precious source of opportunities for the ERM from several points of view: Information and expertise are enhanced, from a group perspective some risks may be prioritized differently, some natural hedges may come into light, the cost of some outsourced activities may be shared between different companies and therefore become sustainable, last but not least, scale economies in the treatment of risks can deliver significant cost reductions. From this point of view the ERM can achieve more advantages from group integration, than the Internal Audit does, because the Internal Audit evaluation is bound to be focused on each single company. The examples of group integration advantages will be described in section 4.

### *3 Support to the management in taking risk informed decisions*

In an environment that is changing at an ever increasing pace, creating uncertainty, the ERM can play an important role in helping the management take risk informed decisions. In no circumstances other than the decline of profits or an increase in losses it is important to have a clear view of risk appetite ("The acceptable amount of risk" COSO), risk tolerance ("acceptable variation of performance" COSO) and risk capacity ("the maximum amount of risk an entity is able to absorb" COSO). The company should not be drifted towards uncontrolled higher risks in exchange for apparently stable returns, on the contrary the company should have quite clear in mind which higher risks to take and which to drop before its resources are completely exhausted.

We can take as example the deep change in the business model taking place in the multi-utility sector. The major scope of multi-utilities was to provide the stable availability of power and/or natural gas to all economically reachable customers. The inception, however, of locally distributed production of electricity through renewable resources (such as wind or solar plants) has jeopardized multi-utilities' scope. The definition of a new business model requires the analysis of several options such as:

- The multi-utility supports its customers' locally distributed production of electricity offering services and expertise instead of investing in big conventional centralized assets ;
- The multi-utility still invests in big centralized assets which complement the distributed production;
- The multi-utility will put in place no changes before technology has stabilized.

The following tables explain main risks and exemplify the 10 year EBITDA distribution of each of the above described options.

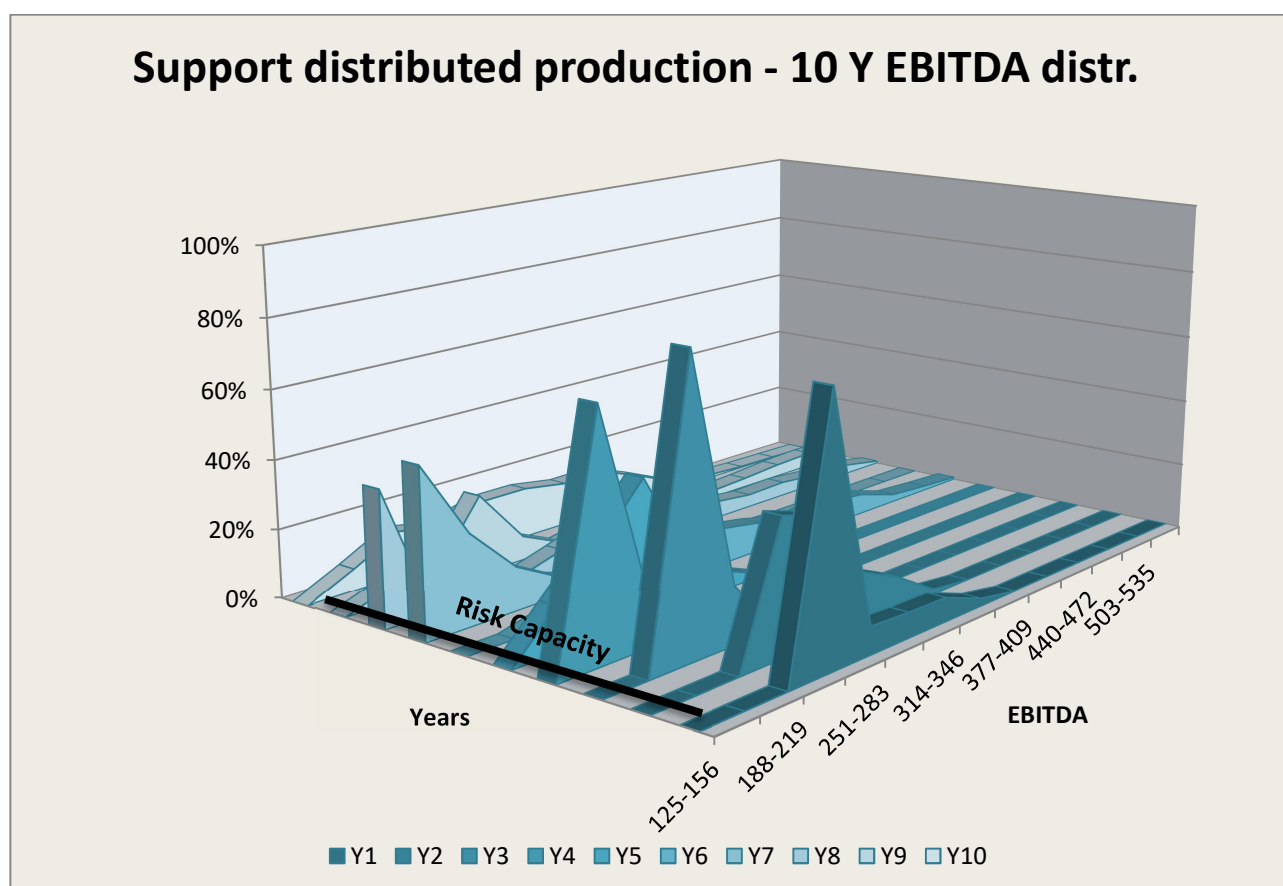
Tab. 4: Risks related to different strategies

Risks	Support distributed production	Invest in complementary assets	No changes
Market risk	√	√	
Write-down of conventional plants	√		
Risk in the remuneration of ancillary services		√	
Impact of reduced incentives	√		
Competitors from other sectors			√

Risks	Support distributed production	Invest in complementary assets	No changes
Storage technology	✓	✓	✓
Cost of natural gas	✓	✓	✓
Cost of coal	✓	✓	✓
Nuclear power plants decommissioning	✓	✓	
Availability of natural gas		✓	✓
Lower entrance barrier	✓		

The following charts show how the different options and related risks could impact a multi-utility EBITDA. The results show general trends, because there is not sufficient information to test the chosen hypothesis.

Figure 1 : A multi-utility supports distributed production

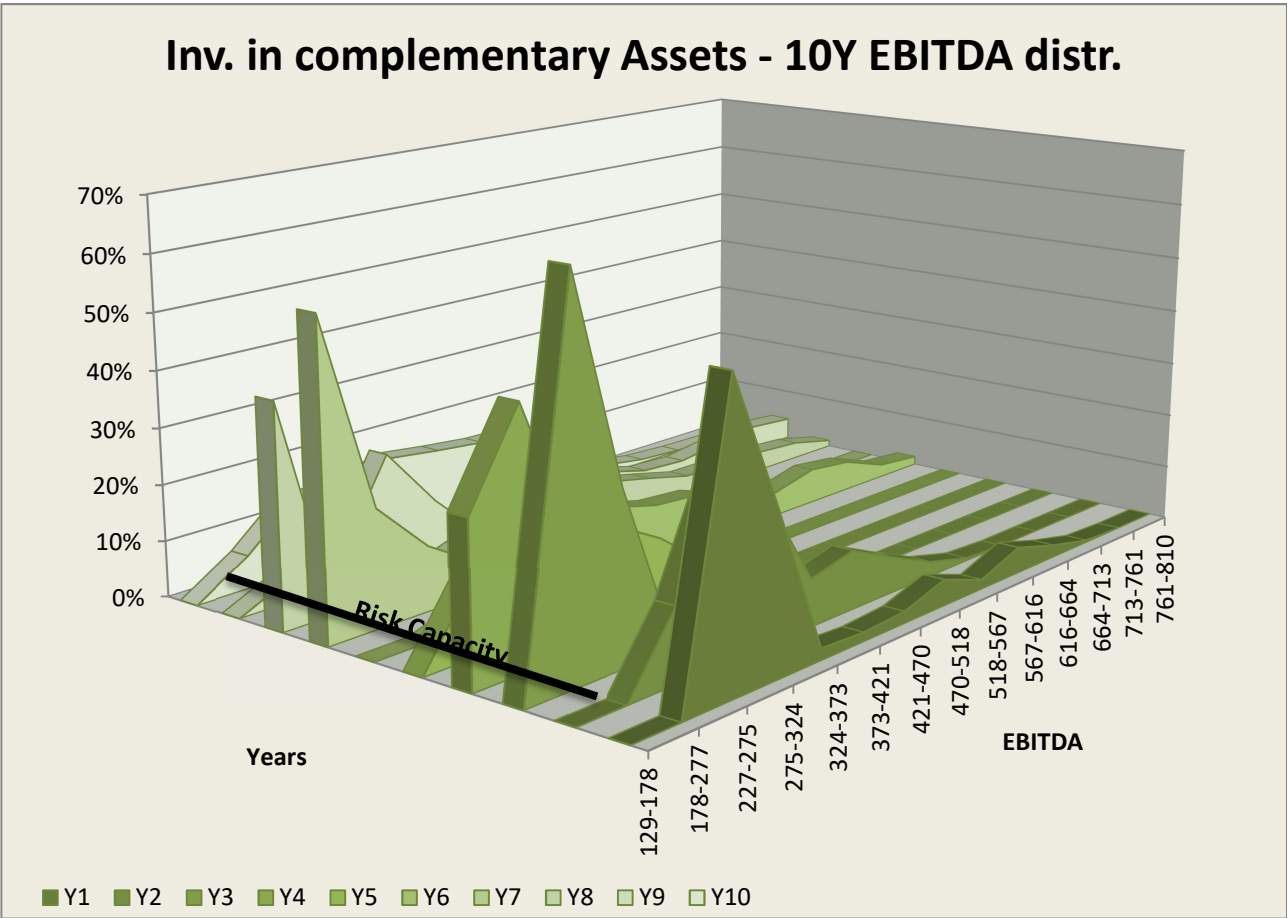


In figure 1 the vertical axis shows the probability of each class of EBITDA scenario, the first horizontal axis shows the years, with the first year on the right, the last horizontal axis shows the classes of EBITDA, starting from the Euro 125 – 156 thousand class. In nearly all scenarios the company's EBITDA is above the



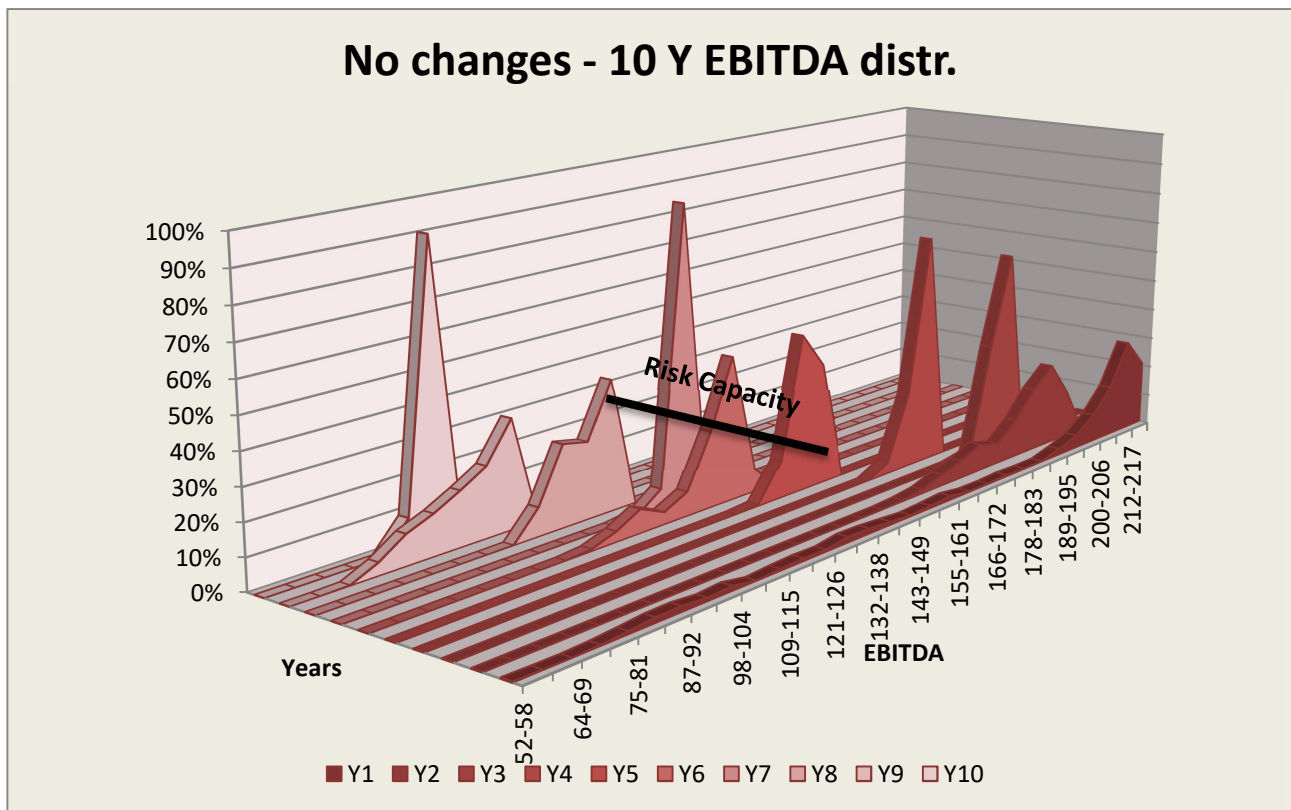
risk capacity limit ( “ the maximum amount of risk an entity is able to absorb” COSO) and the conversion of the activities allow the company to earn an acceptable EBITDA, even if the profits are partially eroded.

Figure 2: The company invests assets whose production is complementary to locally distributed production



In all scenarios the company’s EBITDA is above the risk capacity limit and the new assets allow the company to earn an acceptable EBITDA, even if the profits are partially eroded.

Figure 3: The multi-utility does not take any decision, waiting for further technology advances



During later years most scenarios show an EBITDA lower than risk capacity limit.

#### 4 Risk treatment – how to maximize its advantages with limited resources

In case of limited resources ERM should increase the use of “inexpensive” treatments , treatments with a lower immediate outflow and maximize the efforts for an effective negotiation with insurances.

##### 4.1 “Inexpensive” treatments of risks

The “inexpensive” treatments are risk avoidance by termination of activities which do not bring an acceptable risk remuneration, legal transfer of responsibilities to third parties, natural hedges, cheaper prevention and protection measures, predictive maintenance.

When some activities do not have particular potential opportunities or an appropriate risk reward, their dismissal reduces the risks taken and therefore free some risk appetite for other activities which could bring more opportunities or have a higher risk remuneration. As an example, simple post metering services face the competition of individual plumbers, therefore have very limited margins and considerable risks, balanced only by a slight increase of the control of the customer base, therefore their risk based remuneration is usually negative.

Legal transfer of responsibility to third parties may be a really interesting option when the company has the power to modify the contracts with no price reductions and without losing customers. Liability restrictions in cases of service disruption are an example.

Natural hedges may take place when changes of a position are compensated by opposite changes of another position. These natural hedges must be recognized and protected. An example are the variation of consumptions occurring in residential customers and those occurring in commercial ones, the former are driven by changes in climate conditions, the latter are driven by economic trends, both are not correlated and often can compensate each other.

Cheaper prevention and protection measures should be increased in order to free risk appetite. An example could be the revamping of used parts to increase readily available spare parts.

#### 4.2 Optimization of the cost of risk and lower immediate outflow.

The optimization of the cost of risk is driven by competition between insurers, optimal choice of policy limits, lower deductible and direct handling of high frequency claims.

The company may decide to enrich the information memorandum prepared for insurers in order to satisfy the requirements of the greatest number of insuring companies and obtain the maximum number of insurances quoting.

Through simple scenario analysis the company may gain a clearer view of the policy limits to be required in insurance contracts and of actions to put in place to reduce those limits.

The insured company may decide to increase the deductible as long as it helps in reducing the cost of insurance. This partly reduces the anticipated outflow of the cost of risk and partly reduces the total cost of risk. A higher deductible means that the company will directly pay a higher number of claims, therefore in case of perfect pricing and absence of taxes there is not a reduction of the cost of risk, but the outflow is partially postponed. The total cost of risk will be reduced both in cases of expensive pricing of the deductible and when overhead expenses and taxes can be saved. When the company has properly trained personnel the direct handling of claims reduces the people involved in the activity, therefore overhead costs will decrease. In addition, the direct handling of high frequency claims can provide the company with the data necessary for a root cause analysis.

Great benefits can be achieved by a centralized negotiation of insurances, because a bigger value of each contract and a lower total number of contracts, let the company gain a better market power, reduce its and the insurance's overhead costs, therefore, everything else being equal, obtain lower costs.

All described actions will bring a better benefit when more are applied at the same time.

The following table n.5 gives examples of how to treat the events listed in table n.2

Tab.5: Examples of how to optimize the cost of risk

Event	Reputation	Revenue	Risks for Margins	Financial Balance
<b>Interruption of distribution of power or natural gas</b>	Contractual limits of liability, social services are consulted to provide assistance for more sensible people ( i.e. elderly, those who use mechanical ventilation)			
<b>Interruption of supply of power or natural gas</b>	Same as before			
<b>Metering</b>	Controls of metering devices, irregular consumptions, reconciliation sales/purchases	Same as beside		
<b>Extension of grid or other works on the grid</b>	New personnel is properly trained, works are controlled			

Event	Risks for			
	Reputation	Revenue	Margins	Financial Balance
Natural gas uncontrolled dispersion	Grid control, quick response to emergency calls	Same as beside		
Water contamination	Frequent Controls of water			
Interruption of supply of water	Contractual limitation of liability			
Uncontrolled dispersion of drinking water	Grid control	Same as beside		
Uncontrolled dispersion of waste water	Grid control			
Stop in the production of electricity		Predictive maintenance, Insurances	As beside	
Difference between reserved and actually purchased natural gas or power			Mix of retail and commercial customers in the same area	
Ineffective hedge of power or natural gas sales			Controls	
Trading of natural gas or power			Controls	
Uneconomic assets			Active management of the forward curve	
Waste disposal	Protection and prevention		Same as beside	
Delay in waste collection	Spare parts for collection devices			
Data protection	Procedures and Controls			
Events listed in D.Lgs 231/01 (limited to Italy)			Implementation and monitoring of preventive model	
Damages to assets			Prevention & prot., predictive maintenance and insurances	
Margin call			Control of the forward curve	
Credit Risk			Predictive models for retail customers	
Covenants in financing			Controls	Renegotiation
Market abuse	Controls of compliance		Same as before	
Loss or theft of data	Back up and protection against cyber attacks		Same as before	
Loss of control of assets due to cyber attacks	Protection against cyber attacks		Same as before	

#### 4.3 Active management of the forward curve

Shifts in the forward curve may compromise the profitability of some assets or open opportunities, which could be taken by competitors, if not quickly sensed, therefore it is necessary to deeply analyze and understand the possible shifts and trends of the forward curve in order to optimize the asset profitability. When the company is used to purchase electricity and natural gas, the purchasing/trading department usually has a clear view of the trend of real time market, day ahead market and forward market based on their knowledge of technical factors, market imperfections or possible manipulations and fundamentals, such as balance of supply and demand in a particular marketplace. Unfortunately they may be less experienced in geopolitical risks, technology developments, regulatory and legal developments. That's why an efficient sharing and analysis of this information could optimize the management of risks and the company in a whole.

In the short term the company could benefit from a better management of the assets. For example when the market price is lower than the marginal price of the plant, but prices are expected to change their trend, the company may decide to close a toll contract or to temporarily stop production; in the opposite case, when no price increase is expected in the future, reconversion or dismantlement of the plant may be considered. In between ancillary services may be evaluated.

In the long term the forward curve used by the purchasing department could be revisited with wider information provided by other departments.

#### 5 Conclusions

When a company suffers periods of high volatility and deep changes, disruptions and sharp reduction of the profitability may take place, which may induce the management to cut controls. However controls and, in particular, Enterprise Risk Management should be adapted to the reduced resources, rather than cut, because Enterprise Risk Management offers a concrete support to the management in analyzing changes and uncertainties thus providing a more cost effective and efficient solution to Risk Management.

Paola Radaelli (ERP) has worked as both a chief financial officer and an enterprise risk manager in the Italian power market. She is currently an ERM consultant.

