

ENVIRONMENTAL CERTIFICATION OF THE MUNICIPALITY OF CESANA: A COST/BENEFIT ANALYSIS

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Abstract: The work refers to the cost/benefit analysis of the environmental certification of a mountain Municipality, more specifically the Municipality of Cesana Torinese, one of the sites of the 2006 Olympic Winter Games.

INTRODUCTION

Commitment to application of a correct environmental policy implies awareness of the need, in some cases, for major investments for protection of the environment. Application of an Environmental Management System means inserting the environment variable in all investment decisions and therefore precise knowledge of “environment-related” costs in order to permit correct accounting of these (table 1). On the other hand, a number of international surveys have identified various certification-linked benefits. For example, Wittmann’s [1] survey of 25 EMAS-certified German companies indicates an effective improvement in company image in 62% of the cases but an increase in revenues in only 17% of the cases (and a reduction in 8%). Also, at two thirds of the companies, certification made it possible to pinpoint various possibilities of rationalizing procedures whereas the immediate effect in terms of cost reduction was less noticeable (there was a reduction in costs in 56% of the cases compared with an increase in costs in 26% of the companies). Lastly, a survey of 140 EMAS-certified companies, revealed that the most significant benefits were cost reduction (31%), an improvement of company image (29%), and aspects tied to improvement of procedures[2].

EXPERIMENTAL

This aim of this study is to identify the costs and possible benefits of ISO 14001 certification, in this case not of a manufacturing company but of the

Municipality of Cesana Torinese, one of the sites of the 2006 Olympic Winter Games.

Table 1. Examples of Environmental Costs [3]

<i>Potentially Hidden Costs</i>		
Regulatory	Upfront	Voluntary
-Notification	-Site studies	-Community relations outreach
-Reporting	-Site preparation	-Monitoring/testing
-Monitoring/testing	-Permitting	-Training
-Studies/modeling	-R & S	-Audits
-Remediation	-Engineering & procurement	-Qualifying suppliers
-Recordkeeping	-Installation	-Reports
-Plans	Conventional Costs	-Insurance
-Training	-Capital equipment	-Planning
-Inspections	-Materials	-Feasibility studies
-Manifesting	-Labor	-Remediation
-Labeling	-Supplies	-Recycling
-Preparedness	-Utilities	-Environmental studies
-Protective equipment	-Structures	-R&S
-Medical surveillance	-Salvage value	-Habitat and wetland protection
-Environmental insurance	Back-End	-Landscaping
-Financial assurance	-Closure/ decommissioning	-Other environmental projects
-Pollution control	-Disposal of inventory	-Financial support to Environmental groups and/or researchers
-Spill response	-Post-closure care	
-Stormwater managem	-Site survey	
-Waste management		
-Taxes/fees		
<i>Contingent Costs</i>		
-Future compliance costs	-Remediation	-Legal expenses
-Penalties, fines	-Property damage	-Natural resource damages
-Response to future releases	-Personal injury damage	-Economic loss damages
<i>Image and Relationship Costs</i>		
-Corporate image	-Relationship with professional staff	-Relationship with Lenders
-Relationship with customers	-Relationship with workers	-Relationship with host communities
-Relationships with investors	-Relationship with suppliers	-Relationship with regulators
-Relationship with insurers		

The cost items, split into macro items, are shown in figure 1:

1. Costs of **implementation** of the ISO 14001 system broken down into costs for:

- Carrying out an initial environmental review (**IER**).
- Preparation of the cost/benefit model of the certification.

- Environmental Management System Planning (**EMSP**) i.e. identification of areas of improvement, drafting of environmental policy, etc.
 - Design and Implementation of the Environmental Management System (**EMS**), i.e. identification and formal definition of the management procedures and operating instructions, personnel training.
2. **Costs for certification** of the EMS (Certification Authority - **EMSC**).
 3. “Post certification” costs, i.e. those following **the coming on stream** of the Environmental Management System (EMS) for **maintenance** of conformity (**EMSM**), i.e. personnel training costs, the cost of the time dedicated by the EMS manager, the costs of auditing and controls.

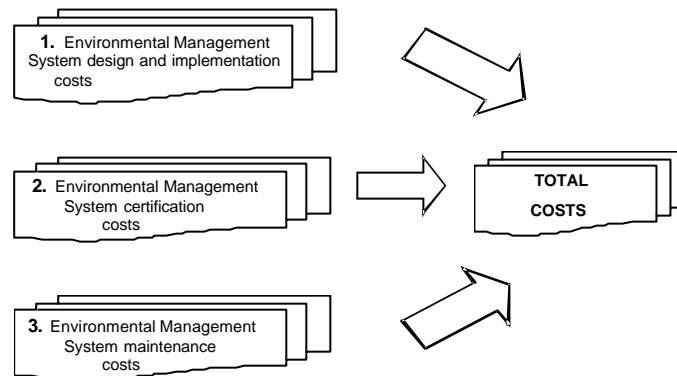


Figure 1. Certification costs

The costs were recorded **through direct analysis and using a computer-based procedure** which included processing of sheets structured both according to the phases and subjects involved in the project, namely the Municipality of Cesana Torinese, the Georesources and Land Department of Turin Polytechnic (DIGET) in the EMS implementation phase, the Department of Commodity Sciences (DSM) in the certification cost/benefit analysis, the RINA certification authority. The costs were determined calculating the **man/hours** at a different hourly cost according to the subject involved.

This survey made it possible to determine total certification costs as the sum of the implementation costs (EIR + Cost/benefit analysis + EMSP + EMS), the certification (EMSC) and maintenance costs of the Environmental Management System (EMSM), the percentage weight of which is indicated in figure 2, with a total commitment of **952 man/hours**, the spread of which in the various phases is shown in figure 3. The costs, expressed in % of the total and the corresponding man/h have been identified in figures 4 and 5 respectively.

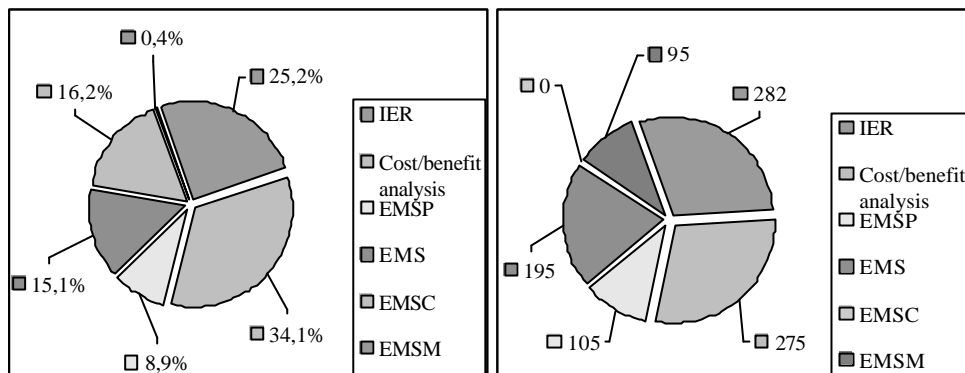


Figure 2. Certification Costs (%/total costs) Figure 3. Commitment in man/hours

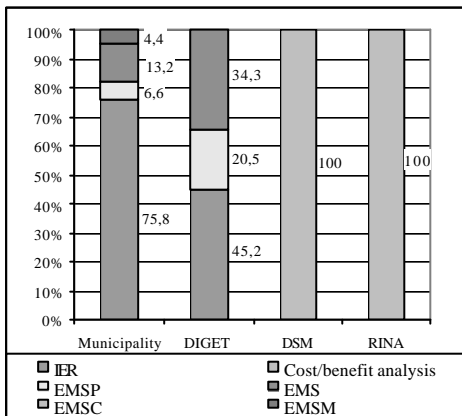


Figure 4. Costs by subjects involved

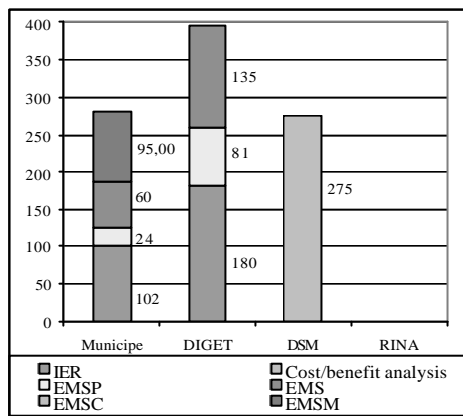


Figure 5. Man/hours by subjects involved

With regard to the costs indicated in table 1 (conventional costs), on the basis of the initial analysis of the Municipality, the physical costs of consumption (water, electric energy, fuel oil, other resources) and the physical costs of discharges in the environment (dumps, waste, emissions) were highlighted and partially quantified, proceeding with great difficulty to allocate these to the different activities managed by the Municipality. The Municipality will try to overcome this restriction by recording and updating the data regarding consumption of resources, in particular, fuel and electrical energy. As regards quantification of consumption in monetary terms, the 1999 accounts of the Municipality were used whereas for the discharges, referring to the environmental cost items highlighted by the EPA, the management costs, which have been expressed as % of total management costs recorded, were traced in the 1999 accounts. Table 2 identifies the possible **benefits** of an EMS.

Table 2. Benefits of certification: analytical outline

<i>Internal Benefits</i>	
1. Improved performance of the EMS, with optimization of the use of resources	
2. Benefits in the form of costs avoided, if environment-compatible forms of behavior are applied:	
- Costs of non-conformity with regulations: fines, penalties, insurance costs, etc.	
- Costs tied to any accidents: reimbursement of damages, remediation, etc.	
- Costs relating to relationships with suppliers whose services cause management problems	
- Costs of reimbursement of personal injuries and damage, insurance costs.	
<i>External Benefits</i>	
3. Improvement of relationships with:	Benefits
Banks:	Easier access to credit
Public Authorities:	-Streamlining of permit procedures and -Simplification of controls and forms of auto-certification -Fast lanes for access to loans
Public opinion:	<u>Tourists</u> : improved image and increased influx <u>Residents</u> : involvement, increased satisfaction and therefore greater commitment to pursuing environmental objectives.
Insurance companies:	Reductions on premiums

The following can be highlighted with regard to Cesana:

1. First of all, it must be noted that the certification project has resulted in the insertion of a new figure, responsible for all environmental certification issues.
2. It will be possible to quantify the improvements in efficiency stemming from rational use of resources following application of the EMS using the specific schedules of the economic/environmental balance sheet. It is not possible to estimate these at the moment, as the system is in the start-up phase.
3. The Environmental Analysis did not reveal any non-compliance with the law which means costs avoided for non-applicability of fines.
4. The external advantages stem mainly from an improvement in relationships between the Municipality and its external interfaces:
 - a. parties interested in financial aspects (banks, employees, suppliers, etc...);
 - b. parties interested in local and regional aspects (local communities, etc.);
 - c. parties interested in environmental policies (Governments, etc.).

Analyzing the individual interfaces, as far as the *banks* are concerned, no credit facilities have yet been established with regard to the Town Councils. The same can also be said as regards the *Public Authority*, which envisages incentives only for certified companies whereas, as yet, no mention has been made of facilities for the certified Municipalities or Territories except for the “Notification for the co-financing of programs for sustainable development and implementation of local Agendas 21” of the Ministry of the Environment which envisages co-financing of projects for the diffusion of sustainable development at local level [4]. With regard to *public opinion*, that is to say, residents and

tourists, the importance of encouraging participation and of systematically providing citizens with information must be stressed as this could improve their satisfaction, promote sharing of environmental objectives and stimulate greater commitment in pursuing these. As far as the tourists are concerned, it is becoming ever more difficult to attract these and certification of the Municipality, which reflects an environmentally valid management of the territory, could contribute to boosting the influx of tourists and also attract operators in this sector. To this end, initially a questionnaire has been prepared to assess the environmental sensitivity of the inhabitants of the Municipality of Cesana, divided into residents, traders and tourists, and to obtain information regarding the aspects with the highest potential impact and of major interest to those interviewed. Following the reproposal and implementation of the EMS, this questionnaire, to which 43% of the population responded, could be used as a yardstick to measure the extent to which perception of the “state of health” of the environment has changed, concurrently with achievement of environmental objectives. As far as the *tourists* are concerned, the undeniable return in terms of image stemming from a promotional activity has been calculated, from an economic point of view, as the sum of potential tourist revenues (the product of the average daily per capita spending of a tourist, 130,000 liras [5], average stay in hotels, 3.9 days in '98 [6], and potential number of new tourists given by the product of *Potential targets* and *% Acknowledgment*, where the potential targets are the possible persons who receive the information, which was determined referring to the circulation of the newspapers, participants at the Conference, etc. and the % of acknowledgement is a parameter, taken from a survey of sector operators, for assessing the number of persons who could represent tourists) and the value of the promotion, to be interpreted as “opportunity revenue” in that the publication of an article about Cesana or a Conference guarantees a visibility of this equal to that which can be obtained from an advertisement, the cost of which stems from a survey at the editorial offices of the individual newspapers.

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