

Environmental Performance Companies and Sustainable Development: The Case Of Nestle El Jadida

O. El Gueddar, T.Aarab, A. Sahib Eddine, F. Rahmouni, A. Ajjane

Laboratory of Marine Geosciences and Soil Sciences (LGMSS: Unit Associated to CNRST URAC 45),
Faculty of Science, ChouaibDoukkali University, El Jadida, Morocco.

Correspondence author: oumelbanineelgueddar@gmail.com

Safty service,hearth, Environment; Nestle factory El Jadida, Morocco.

Laboratory of Odo and Research in Economic Science and Management, National School of Business and
Management, ChouaibDoukkali University, El Jadida, Morocco.

Laboratory of Odo and Research in Economic Science and Management, National School of Business and
Management, ChouaibDoukkali University, El Jadida, Morocco.

Laboratory of Marine Geosciences and Soil Sciences (LGMSS: Unit Associated to CNRST URAC 45),
Faculty of Science, ChouaibDoukkali University, El Jadida, Morocco.

Abstract:

Environmental performance of the enterprise is a central concept in management science. This notion is mobilized in the management literature to assess the implementation of recently announced by the company's sustainable development strategies.

The evaluation of environmental performance requires the implementation of tools to produce and provide information on the environmental impacts of and the measures taken to address the scarcity of natural resources. Among these tools, environmental indicators are increasingly used by companies as recommended by the ISO 14001 standards, they allow managers to assess the level of environmental performance of their business and identify potential areas for improvement.

The research at the Nestle factory El Jadida demonstrates that the assessment of environmental performance based on environmental indicators allows, while respecting the environment, economic gain and social emergence in the context of new governance for sustainable development.

Keywords:Environment, environmental performance indicators, ISO 14001, Sustainable Development, Nestlé factory -El Jadida.

I- Introduction:

In the management literature, the concept of corporate performance has preoccupied many researchers (Bouquin 1986; Bescos and al.1993; Bourguignon, 1995; Lebas, 1995; Bessire, 1999 ...), and Quairel Capron (2005) defines performance as an implementation of the announced by the company's sustainable development strategies the performance environmental.

According Desmazes and Lafontaine (2007), evaluation of environmental performance requires the implementation of tools more or less innovative. These tools can produce and provide information on the environmental impacts of and the measures taken to limit the depletion of natural resources. Environmental indicators are increasingly used by companies as recommended by ISO standards, they enable leaders to "assess the level of environmental performance of their

business and identify potential areas for improvement" (ISO 14031, 1999).

II - Theoretical background of the study :

In our study we are interested in the environmental performance which is defined as the measurable results of Environmental Management System (EMS) in relation to the control of the company 's environmental impacts based on its environmental policy (Klassen and Whybark, 1999). This performance is the result of various practices implemented by companies: measuring pollution, waste treatment, recycling, eco-design and life cycle analysis of products, changing production processes to make them more energy efficient.

Previous reviews of the literature have proposed syntheses for managers to help them enhance their environmental performance (Azzone and al, 1996. Henri and Giasson, 2006; Jabbour and Santos, 2006; Molina- Azorin and al, 2009; Rahman and Post, 2012; Schultze and Trommer, 2012; Turki, 2009).

Other research has highlighted the importance of the role of assessment of environmental performance in the evaluation of overall performance of the company (Dohou -Renaud, 2009a) and their use in studying the empirical research relationship between environmental and financial performance (Molina- Azorin et al, 2009).

For Lebas (1995), the performance does not exist unless it can be measured and this can by no means be limited to the knowledge of a result. It should then assess the results achieved by comparing them to the desired results or standards (Bouquin, 2004) results.

II -1 - Environmental indicators:

Companies that adopt an Environmental Management System according to ISO 14001 systems typically use environmental indicators to measure environmental performance. These indicators are carriers of information to be transmitted to one or more targets. They reduce the number of parameters to account for often complex environmental situation.

Academic research has mobilized various indicators to measure environmental performance:

- Indicators that reflect the pollution generated by the company (Jaggi and Freedman, 1992; Whybark and Klassen, 1999; Madsen, 2008; Spicer, 1978).

- Indicators that measure specifically GHG emissions or carbon (Aragon - Correa and Rubio -Lopez, 2007, Bush and Hoffmann, 2011; Earnhart and Lizal, 2007)
- Indicators that are based on the reporting that companies must complete (Clarkson et al, 2004. Cordeiro and Sarkis, 2001; Dooley and Lerner, 1994; Hamilton, 1995)
- Indicators that considers environmental communication made by the company in its annual report (Blacconiere and Patten, 1994; Freedman and Patten, 2004, Wu et al, 2010).

The environmental indicators are quantities, derived from observable or calculable quantities, reflecting various possible ways impacts caused by a given activity (Tyteca, 2002) environment. These indicators can be gathered in a Green Dashboard which organizes synthetically for internal use (Desmazes and Lafontaine, 2007).

II - 2 Objective of the study:

The theoretical study showed that the assessment of environmental performance is a tool designed to piggyback on standards EMS: it enables the collection, monitoring and utilization of environmental data of the company, for the construction of indicators of environmental performance, to synthesize information, and to give it meaning.

The objective of the study is to analyze the impact of the assessment of environmental performance in the Nestle factory El Jadida on sustainable development in the region.

III - Presentation of the field of study :

With its ideal location on the Atlantic coast, its agricultural potential, fish, fisheries and tourism, the region of Doukkala must be the second national industrial center after the Greater Casablanca, Table 1 shows the economic contribution of the region into the national economy :

Table 1: Contribution of Doukkala in the national economy in 2009

	Region	Nation	Region/nation
Investment (10³ DH)	2 571 455	24 184 433	10,63
Personnel costs (10³ DH)	1 557 848	31 388 770	4,96
Export (10³ DH)	10 018 111	65 820 000	15,22
Production (10³ DH)	17 929 035	265 660 909	6,74
Turnover (10³	21 071	312	6,56

DH)	511	028 235	
Actual permanent employees	10 941	459 652	2,38
Number of establishments	169	7 922	2,13

Source: Statistical Yearbook of Morocco 2011

Agriculture is an important activity in the region which explains the implementation of large multinational specialized in the food industry Table 2 shows the typology of agro-food products in the region.

Table 2: Types of Food Industries identified in 2008 in the Doukkala (in millions of dirhams)

Food industries Industrial	
production in the region	4 118 726
Industrial exports in the region	483 380
Capital expenditure in the region	290 746
Industrial turnover in the region,	4 313 205
Industrial added value in the region	944 780

Source: Provincial Delegation of Trade and Industry

The Nestlé Company operates in the food industry, mainly produces dairy and nutritional products, has chosen to settle in the area of Doukkala because of its agricultural potential. Indeed, the region has extensive background and holds 8.74 % of the workforce dairy cattle (Table 3). Note that all the cattle in the region is an improved breed. This proportion is due to the modernization of farming methods practiced and forage crops grown on irrigated perimeter.

Table 3: Number of livestock thousand head for 2010

	Cattle	Goat	Sheep
El Jadida	4,5	657,5	253,3
Nation	5 685,7	18 283,7	2 895,8
Region/Nation (%)	0,079	3,596	8,747

Source: Statistical Yearbook of Morocco 2011

Nestlé factory in El Jadida currently has one of the larger units in the region:

Table 4: Overview of Nestlé factory in El Jadida

industry	Food industry
Launch Date of the project in	1992

Date of entry in activity	Décembre 1992
Legalstatus	Société Anonyme (SA)
Investment	675 MDH
share capital	313.866.000
Employees of El Jadida plant	246permanent
Area	6 Ha
Adress	B.P 123 – Industrial Zone, EL Jadida 24000
Registered Office	Park Casa Nearshore shore 10, No. 401-402-502, 1100 Bd AL Quds, 20-270 SidiMaarouf, Casablanca. Morocco
certification	ISO 14001, Nestlé standards, OHSAS 18001

Nestlé factory -El Jadida works with a traditional hierarchical organization rake kind. The unit is divided into four clusters each specific manufacturer brand products manufactured in the industrial unit of El Jadida

- Pole 1: dairy products (NIDO, NIDO strawberry NIDO1 +).
- Pole 2: soluble coffee (NESCAFE)
- Pole 3: food products (soup and broths MAGGI beef, mutton, chicken).
- Pole 4: lacteal flour (CERELAC wheat, fruits, honey and dates).

Milk is provided through a network of 15.000 farmers and producers, and the Doukkala -Abda region Chaouia. Financial assistance is made available to enable the construction of collection centers whose management was later entrusted to producer cooperatives from the villages. In total more than 170 collection centers that were created by Nestlé around its plant in El Jadida.

IV - methodological approach:

The theme of our study environmental aspect, pushes us to seek information from the Service Safety, Health and Environment; The service 's main tasks are the implementation, monitoring, maintenance and improvement of management systems of Health, Safety at work and business environment, including the implementation and maintenance of standard ISO 14001 and other standards (standards Nestlé , OHSAS 18001) .

For data collection, we made visits to the company and conducted a series of interviews with officials and departments concerned, based on an interview adapted to the nature of the

information sought guide. We also used the annual reports of the Company and its Quality Manual. The guide questions can advance gradually to finally arrive at concrete and specific questions related to the operation of the Company and its degree of involvement in the spirit of sustainable development.

V - Environmental practices of the Nestlé factory -El Jadida :

Nestlé is deploying a system of Environmental Management as required by ISO 14001 and Nestlé instructions standard, based on the following principles:

- Compliance with local laws and regulations promulgated, and other regulations, which Nestlé adheres relation to its environmental aspects;
- Improving the overall environmental performance continuously ;
- Pollution prevention and management measures required to minimize the impact on the environment

The company is embarking on environmental management in diverse hopes and gains selected to work seamlessly on four areas:

1 A legislative and regulatory axis: that is a staple of EMS. This area is rich and complex. The environmental manager will be responsible for legislative and regulatory developments which will require to identify, list all applicable documents in the company, taking into account : location, activities, processes and products used and / stored ;

A 2 axis pollution prevention: the company at these events has an impact on the environment. An environmental approach will lead each company to define and identify and control its significant adverse impacts: pollution of water, air, energy and water consumption, odors and noise, waste pollution ... This commitment to pollution prevention is a technical aspect of environmental management. Must be evaluated methodically quantify the impacts and eliminate / reduce / control;

A 3 -axis performance improvement: the EMS commits the company in a spirit of continuous improvement of its environmental performance. Among the areas for improvement include the economic issues related to cost control, an environmental management system helps prevent incidents and minimize their impacts through

preventive actions, a possible return on investment through a better economy of consumption and waste - waste, improved corporate image a particular motivation.

4. axis heritage conservation in industrial business.

In our work on the basis of the axis 3 we will try to study assessing the environmental performance of the mill Nestlé El Jadida by monitoring key environmental aspects as to say; Reducing consumption of raw materials (water and energy), and the reduction of air emissions, liquid and solid . Table 5 gives the results of the study of environmental aspects 5.

**Table 5 :Table environmental edge of the Nestlé factory -El Jadida
Compiled from company data**

Environmental	2010-	2011-	2012-	2010-
EnergyGj T	-5.68	3.03	-2.46	3,22
Water	-6.98	-9.67	5.98	12,96
CO2 emission	-0.99	-3.20	-8,69	-7,70
Strong T	-13.13	11.62	-0.78	12,35
Liquid discharg	1,36	-16.05	0.62	-14

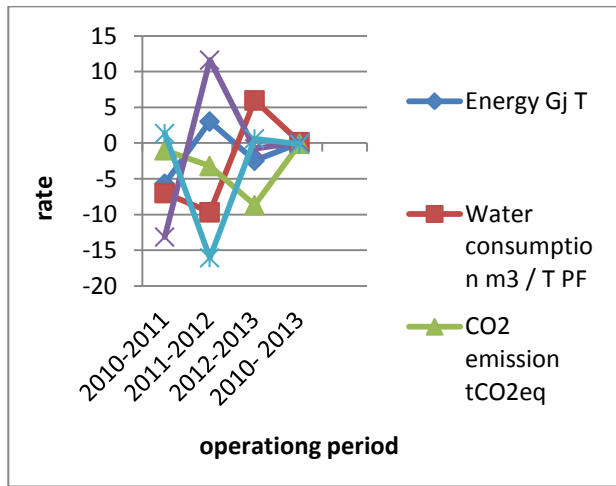
VI - Discussion :

Nestlé factory -El Jadida is engaged in the process of certifying its EMS under ISO 14001 V 2004. In January 2011, the efforts of the company and led it manages to certify its environmental management system according to ISO 14001 for the whole factory of El Jadida in a cycle of certification:

- Pre- audit: gap analysis and diagnosis of the current situation compared to the standard requirements,
- Initial Audit: To verify the implementation of the EMS document databases (significant impacts, regulatory compliance ...)
- Senior Audit to audit the implementation on the ground,
- Certification Committee and certificate issuance, surveillance audits to ensure continuous improvement of the system, New certification contract, after a period of 3 years (Bureau Veritas)
- Periods of certifications: January 2011/January 2012/March 2013/June 2014

Figure 1 shows a remarkable reduction in the consumption of raw materials and waste.

**Figure 1: environmental aspects
Nestlé factory -El Jadida**



We note that these reductions are achieved while the Nestlé factory in El Jadida is expanding its production capacity (Table 6).

Table 6: Evolution of milk production Nestlé factory in El Jadida

year	2010	2011	2012	2013	2014
Production (tonnes)	1565	1635	1543	1432	649
n	9	8	8	5	9

These reductions are the result of actions by the factory as part of its environmental management system as per ISO 14001 and above for answers to undertakings established by the environmental policy of the Nestle factory El Jadida.

• **Energy Management** :3.22% reduction in energy deployed for the operation of the factory consumption :

- Monitoring of energy consumption,
- Implementation of corrective and preventive action plans,
- Installation of an energy-saving system for boilers,
- Choice of machines with low power consumption suitable for new processes.

• **Water management**: 12.96% reduction in the consumption of water for all the manufacturing process,

- Change processes for water treatment
- Recycling of water production.

Note that the factory is supplied water and energy by RADEEJ, this reduction allows the economies of these resources for other purposes.

• **Management of CO2 emission**

• Reduction of CO2 emissions by 7.70% ;

- By the use of furnace filters which allows the contribution to emission reduction Gas Greenhouse.

- Optimization and monitoring of combustion systems in the factory.

• **Solid waste management** :Reducing solid rejection of 12.35% solid waste is collected and sorted according to their degree of harmfulness :

- Waste from coffee production , food , milk, cereal , central laboratory , social and administrative offices , canteen, are collected at the dump of the general store and transported according to their nature or by a subcontractor or by landfill sites CET in the vicinity of the industrial zone.

- *The grounds*: powered by coffee production is transported directly from the silo to the composting center by a customer in the Doukkala region.

- *Waste from the technical department*: are collected at the local dump.

- *Hazardous waste*: The Company is currently discussing the terms of disposal of such waste by the return of packaging chemicals suppliers. This case is currently being processed at the purchasing department to negotiate with suppliers.

• **Liquid Waste Management** :Wastewater from the factory flows by gravity into a neutralization basin located to the enclosure of the factory and are then pumped through an underground pipe to the WWTP. The wastewater treatment plant consists of:

- *Basin EQ*: The equalization tank can stabilize the flow of liquid effluents before they pass to the aeration basin. It also helps to neutralize the pH of the water with stirring using a floating aerator.
- *Aeration*: This basin allows the development of bacteria. Firstly supplied water to be treated and secondly by oxygen of the air intakes. Bacteria suspended in the pool water, are in

constant contact with pollutants which they feed and the oxygen necessary for their assimilation.

- Decanter: This book allows the separation of treated water sludge. The separation is done naturally by gravity sedimentation after a defined residence time. The decanter also has a scraper for separating suspensions whose density is less than that of water.
- Station sludge recirculation: To maintain a constant and adequate supply of bacteria in the aeration tank, a large part of the extracted sludge from the clarifier is recycled to the aeration basin. A small portion of this sludge corresponding to the increase of stock for a given period, the circuit is evacuated aeration tank and directed to the thickener: This sludge fraction constitute the "excess sludge".
- Thickener: The thickness allows to concentrate the sludge, separating the liquid phase and the solid phase. The water will be recycled to the aeration tank through a pump, the concentrated sludge is transferred to the drying bed.
- drying beds: These devices are used to dry the sludge before being transferred to the landfill site.

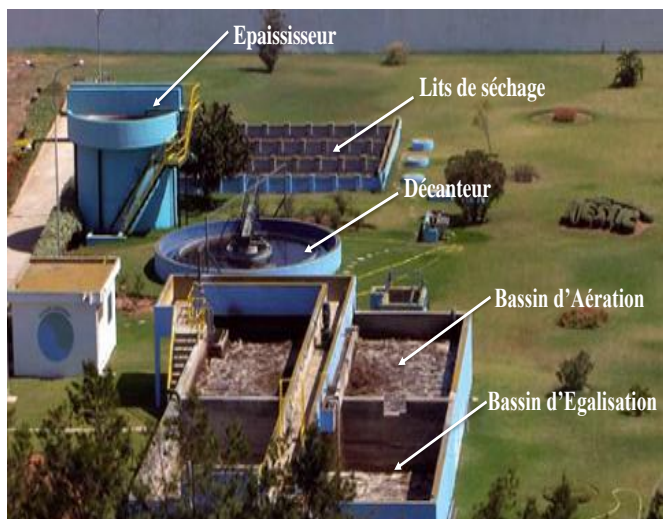


Figure 2: treatment plant to clean waste water factory

Technologically, the Nestlé El Jadida shall maintain a constant upgrading and continuous unit but a company engaged in the continuous improvement process and wants to improve its environmental performance, can not succeed without the commitment of all staff, management at the base. For this purpose , unity Nestlé El

Jadida sessions environmental awareness are cascaded to all staff , contractors and third parties operating the site for or on behalf of the factory including staff and subcontractors working at the site, during the session of integrating new hires.

The training objectives are listed as follows:

- Assist staff to understand their role in minimizing the environmental impacts of their activities achieved by the change in their behaviour;
- Present the operation of the EMS, including environmental policy, the new procedures and the annual environmental action plan in 2014 ;
- Expand the role of each employee for the entire EMS or on a given operation ;
- Clarify a particularly important point related to the environment , for example the inclusion of a new regulatory requirement , or to explain the inclusion of one or more significant impacts identified in the environmental analysis ;
- Advice generally on issues related to the environment at each department.

The entire staffs are concerned:

- Operator : Scrap, distorted or contaminated products , water and energy consumption;
- Technicians : Waste maintenance, water and energy consumption;
- Managers: the water and energy consumption (water sanitation, computers ...).

Thus, trained staff on the impacts that may be caused by their business environment following are certified on their ability to control the activities related to these environmental impacts.

VII - Outlook:

As part of the continuous improvement of environmental performance, the Nestlé factory in 2015-2016 provides for the installation of biomass boiler that recycles coffee grounds to produce energy this process will allow a reduction of 20% the energy consumption of the RADEEJ.

Nestle factory El Jadida studied UCAID a project for the conservation of water , the goal was to reuse water from the WWTP for irrigation of farmland in the vicinity but the problem for the realization of this project was administrative (overlapping areas of expertise : ORMVAD, RADEEJ , Delegation of equipment ...) .

According to this study and as previously mentioned, the evaluation of environmental performance is based on indicators reflecting the level of pollution generated by the company and the rate of consumption of the raw material. Thus, environmental performance at the Nestlé factory - El Jadida can be analyzed as the result of crossing two axes (Table 7) that would emerge four dimensions.

Table 7: Matrix Environmental Performance
Nestlé factory -El Jadida
 (after Henri and Giasson, 2006)

axis	Internal	External
process	Product Improvements and processes	Relations stakeholders
results	regulatory Compliance and financial impacts	environmental Impacts and corporate image

VIII - Conclusion :

The environmental management system allows the factory Nestlé El Jadida to develop and implement its policy and objectives which take into account legal requirements and information about significant environmental aspects as recommended by ISO 14001.

Protecting the environment is everyone's business. Each employee, associate, or person working on behalf of Nestlé will ensure the application of the principles of environmental protection, including the objectives, compliance with procedures, instructions and adherence to workers' continuous improvement of environmental aspects for better environmental performance.

The overall objective is to balance environmental protection and pollution prevention with socio - economic needs in the context of new governance for sustainable development.

Bibliography:

Azzone, G., Noci, G., Manzini, R., Welford, R., and Young, C.W.(1996). Defining Environmental Performance Indicators: An Integrated Framework. *Business Strategy and the Environment*.

Bescos P., Dobler P., Mendoza C., Naulleau G. (1993), *Contrôle de gestion et management*, Montchrestien, 2ème édition.

Bessire D. (1999), Définir la performance, *Comptabilité Contrôle Audit*, septembre.

Bouquin H. (1986), *Le contrôle de gestion*, Presses Universitaires de France.

Bouquin H. (2004), *Le contrôle de gestion*, Presses Universitaires de France, Collection Gestion, 6ème édition, Paris.

Bourguignon, A. (1995). Peut-on définir la performance? *Revue Française de Comptabilité* 269 (juill-août).

Blacconiere, W. G., & Patten, D. M. (1994). Environmental Disclosure, Regulatory Costs, and Changes in Firm Value. *Journal of Accounting and Economics*.

Capron M., Quairel-Lanoizelee F. (2005), « Evaluer les stratégies de développement durable des entreprises : l'utopie mobilisatrice de la performance globale », *Journée Développement Durable- AIMS – IAE d'Aix-en-Provence*.

Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2004). The Market Valuation of Environmental Capital Expenditures by Pulp and Paper Companies. *The Accounting Review*.

Cordeiro, J. J., & Sarkis, J. (2001). An Empirical Evaluation of Environmental Efficiencies and Firm Performance: Pollution Prevention Versus End of Pipe Practice. *European Journal of Operational Research*.

Desmazes J., Lafontaine J-Ph, (2007). « L'assimilation des budgets environnementaux et du tableau de bord vert par les entreprises », publié dans "« *Comptabilité et environnement* », France (2007).

Dohou-Renaud, A. (2009b). Le système de management environnemental comme moyen de contrôle de la déclinaison et de l'émergence des stratégies environnementales Thèse de doctorat en Science de Gestion Université de Poitiers.

Dooley, R. S., & Lerner, L. D. (1994). Pollution, Profits, and Stakeholders: The Constraining Effects of Economic Performance on CEO Concern with Stakeholder Expectations. *Journal of Business Ethics*.

Earnhart, D., & Lizal, L. (2007). Effect of Pollution Control on Corporate Financial

Performance in a Transition Economy. *European Environment*.

Freedman, M., & Patten, D. M. (2004). Evidence of the Pernicious Effect of Financial Report Environmental Disclosure. *Accounting Forum*.

Gendreon C. (2004), La gestion environnementale et la norme ISO 14001, *Les Presses*

Universitaires de Montréal, Montréal.

Hamilton, J. T. (1995). Pollution as News: Media and Stock Market Reactions to the Toxics Release Inventory Data. *Journal of Environmental Economics and Management*.

Haut-Commissariat des plans, Monographie de la région de Doukkala-Abda 2011.

Henri, J-F., & Giasson, A. (2006). Measuring Environmental Performance: a Basic Ingredient of Environmental Management. *CMA Management*.

Hoffman A.J. (1999), «Institutional evolution and change: environmentalism and the U.S. Chemical Industry» *Academy of Management Journal*, Vol. 42, No. 4.

ISO 14001 Norme internationale (2004), Systèmes de management environnemental-Exigences et lignes directrices pour son utilisation, AFNOR.

ISO 14031 Norme internationale (1999), Management environnemental, Evaluation de la performance environnementale, lignes directrices, AFNOR.

Janicot, L. (2007). Les systèmes d'indicateurs de performance environnementale (IPE) entre communication et contrôle. *Comptabilité-Contrôle-Audit*.

Jabbour, C., & Santos, F. (2006). The Evolution of Environmental Management within Organizations: Toward a Common Taxonomy. *Environmental Quality Management*.

Jaggi, B., & Freedman, M. (1992). An Examination of the Impact of Pollution Performance on Economic and Market Performance: Pulp and Paper Firms. *Journal of Business Finance & Accounting*.

Klassen, R. D., & Whybark, D. C. (1999). The Impact of Environmental Technologies on Manufacturing Performance. *Academy of Management Journal*.

Lebas M. (1995), Oui, il faut définir la performance, *Revue Française de Comptabilité*, juillet- août.

Marion A., Asquin A., Everaere C., Vinot D., Wissler M. (2012). « Diagnostic de la performance d'entreprise, Concepts et Méthodes », Dunod 2012.

Madsen, P. M. (2008). Environmental Regulation as a Link Between Corporate Environmental and Financial Performance. *Academy of Management Proceedings*.

Molina-Azorin, J. F., Claver-Cortés, E., Lopez-Gamero, M. D., & Tari, J. J. (2009). Green Management and Financial Performance: a Literature Review. *Management Decision*.

Spicer, B. H. (1978). Investors, Corporate Social Performance and Information Disclosure: An Empirical Study. *The Accounting Review* 53.

Schultze, W., & Trommer, R. (2012). The Concept of Environmental Performance and its Measurement in Empirical Studies. *Journal of Management Control* 22.

Salgado M. (2013). « La « performance » : une dimension fondamentale pour l'évaluation des entreprises et des organisations ».

Rahman, N., and Post, C (2012). Measurement Issues in Environmental Corporate Social Responsibility (ECSR): Toward a Transparent, Reliable, and Construct Valid Instrument. *Journal of Business Ethics*.

Renaud A. (2009). « Le rôle des outils de mesure de la performance environnementale : le cas des audits et indicateurs environnementaux dans dix entreprises françaises certifiées ISO 14001 », *Management & Avenir* 9/ 2009 (n° 29).

Turki, A. (2009). Comment mesurer la performance environnementale? *Gestion*.

Tyteca D. (2002). « Issue of environmental indicators and sustainable development. " Congress SIM (Society of Mineral Industry) 2002 Workshop 5, "Sustainable development and its indicators," Liege Palais des Congres, 8-11 October 2002.

Wu, J., Liu, L., & Sulkowski, A. (2010). Environmental Disclosure, Firm Performance, and Firm Characteristics: an Analysis of S&P 100 Firms. *Journal of Academy of Business and Economics*.