

# **Sustainable Development Innovation and Multinational Firms: Contrasting Corporate Approaches**

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Prepared for:  
International Research Colloquium on Multinational Enterprise and Sustainable  
Development: Strategic Tool for Competitiveness  
Center for International Business Education and Research

Georgia Tech  
October 19-20, 2006.

**Abstract:** A multinational firm can decide to adopt sustainable development strategies in order to respond to stakeholders' pressures, to gain a competitive advantage, or to satisfy its ethical concerns. In order to adopt these strategies under competitive, environmental, and social pressures, investing in SDI could be an adequate strategy to be used by these companies.

Managing SDI is extremely important for a multinational firm since it can cause its success and its failure. In addition, such management could be extremely difficult and risky. In fact, there is a risk that employees do not understand the benefit of implementing SDI projects, which could result in resistance from them and consequently to considerable complications inside the multinational.

In the previous research about SDI, many researchers studied the impact of the stakeholders on SDI. Other researchers were interested in the marketing aspects of SDI. The goal of this paper is to help understand how to implement a SDI in a multinational firm.

We demonstrate that in order to successfully implement SDI, multinationals should promote information sharing between employees, decentralize decision making, encourage continual interaction with corporate marketing, and evangelize the importance of sustainable development policy.

## **Introduction**

Considering the pressures that multinationals and their subsidiaries face, one way in which they can compete more effectively is to adopt sustainable development strategies. Adoption of such strategies can open up new opportunities for productivity, growth, and profits. In order to adopt these strategies under competitive, environmental, and social pressures, investing in “Sustainable Development Innovation” (SDI) (Hall and Vredenburg, 2003, p.61) could be an adequate strategy to be used by these companies.

Managing SDI could be extremely important for a multinational firm, whose efficiency and success often depends on adopting new strategies. Managing SDI in an efficient way can make the difference between success and failure for multinational firms. Because SDI can lead a multinational to be more competitive and more successful, several international firms are investing in this direction. However, managers of multinational firms may face significant challenges while attempting to integrate SDI into their current strategies. In fact, managing such projects could be extremely risky since employees may not understand the utility of investing in SDI and may consider such investment a loss of time and money.

There are many important dimensions in managing SDI. Most of the researchers who were interested in SDI wrote about the impact of the stakeholders (Hall and Vredenburg, 2003; Hall and Kerr, 2003) and the marketing of the SDI (Ottman, Stafford and Hartman, 2006; Hall and Kerr, 2003). This research, in the other hand, has a goal to help understand how to implement a SDI in a multinational company. In the other words, the challenge is how to communicate with the employees and how to inform them about these projects, how to motivate employees, and how to make them feel part of the project.

The goal of this article is to make the implementation of an SDI project more accessible to multinational managers who seek to improve their sustainable development image and to be more competitive.

In order to do so, this article will first present why multinational firms are adopting sustainable development strategies and how they are implementing them. Then we'll explain SDI, its importance, and the challenge of its management. This paper will also study the Shell Case in order to show the difficulties of SDI management and the Air Liquide Case to demonstrate an example of such management.

### **1. Multinational Firms and Sustainable Development**

Because of the economic evolution characterized by globalization and the absence of an international regulatory system, multinational companies are receiving many pressures from the stakeholders in order to adopt a responsible behavior and conform to certain ethical norms (Christman and Taylor, 2002, Hartman and Stafford, 2006). In fact, the absence of an international regulatory system could tempt multinational firms to adopt unethical behavior especially in developing countries where governments compete with each others to attract many of these companies. Nike, for example, ignored having Asian sub-contractors using young workforce. Therefore, non governmental organizations are increasing their pressures for social responsibility on multinational firms. Greenpeace, for instance, opposed the use of hydrochlorofluorocarbons (HFCs) by Coca cola in Sydney, Australia during the 2000 Olympics due to the fact that using these chemicals is harmful and helps accelerate climate change. In response to these pressures, Coca Cola promised to stop buying hydrochlorofluorocarbon, to increase its investigation of other refrigerants, to ask its suppliers to cease the use of HFCs by 2004, and to

decrease its use of energy by 40% before 2010 (Hartman and Stafford, 2006).

Greenpeace also protested the British Shell company's decision to sink the oil tanker, Brent Spar, in the North Atlantic in early 1995. Consequently, the sales at German Shell dropped by approximately eleven percent in June 1995, leading to the reversal of Shell subsidiary's decision to dump the oil (Christman and Taylor, 2002). Because consumers can react very quickly in consideration of any firm's lack of social responsibility, Stakeholders' pressures and especially NGO's pressures have very strong impact on multinational firms. In fact, these organizations can easily improve or destroy an international company's reputation. Therefore, these pressures are considered one of the important drivers of adopting sustainable development strategies.

Stakeholders' pressures are not the only motivation that can drive multinationals to adopt sustainable development strategies. These companies often decide to adopt ecologically friendly behavior in order to gain a competitive advantage, to benefit from economic opportunities, or to respond to its ethical concerns. In fact, previous researchers on business and environmental behavior have distinguished different motivations for ecological conduct: stakeholders' pressures, competitive advantage, legislation, economical opportunities and moral concerns (Dillon and Fischer, 1992; Lampe et al., 1991; Lawrence and Morell, 1995; Vredenburg and Westley, 1993; Winn, 1995). Indeed, implementing sustainable development strategies helps the multinational improve its image and attract green consumers. By adoption of such strategies, companies can considerably improve their reputation and be more competitive. In addition, multinationals with sustainable development policies are able to reduce their waste of energy and increase their revenues. For all of these reasons, multinationals can decide to

adopt sustainable development strategies. Furthermore, multinationals can be motivated by different drivers at the same time. According to Bansal and Roth (2000), a company can have mixed motivations. They claimed that companies can adopt ecological behavior in order to respond to mixed and dominant motivations.

According to Berry and Rondinelli (1998) who evoked the 21st century industrial revolution, companies are changing their strategies from regulatory compliance to environmentally proactive. The transformation was made through three steps: During the sixties and the seventies companies were trying to manage the environmental damage. During the eighties, companies started to obey environmental regulation, which was continually changing, and to limit the costs of their adjustment. During the nineties, the companies started adopting a proactive environmental strategy. By adopting such strategies, companies are anticipating the environmental effects of their activities, trying to limit their waste of energy and reduce their pollution before having any legislative pressure. Today, sustainable development strategies are an integral and important part of the company management and culture. The most challenging part for the company now is to make a decision about which measures and projects to follow and what are the best ways to pursue them (Hart and Milstein, 2003).

According to Chudnovsky and Lopez (2003), multinational companies were assumed to invest in developing countries for the purpose of taking advantage of those countries' lack of socially responsible regulations. By taking advantage of these situations, the multinationals significantly benefit from those countries' lack of concern for their environment. Additionally, these companies profit from the relatively cheap

local workforce while using less costly but environmentally damaging technologies. Today, multinational firms are considered as a significant source for the diffusion of environmental friendly policies and technologies. However, managers of multinational firms may face significant challenges while integrating sustainable development policies into their current strategies.

## **2. Sustainable Development Innovation**

In order to attain sustainable growth under competitive, environmental, and social pressures, multinational firms invest in innovation. SDI is defined as *innovation* that leads to improved *sustainable development* strategies. SDI has to consider environmental and social issues and to consider the needs of future generations. Therefore, SDI is generally more difficult and more complicated than market innovation (Hall and Vredenburg, 2003).

One of the important notions in the existing literature about technical innovation is the difference between the improvement of an ‘accessible design’ and the ‘creation of a new model’ (Mansfield, 1968; Moch and Morse, 1977; freeman, 1982; Henderson and Clark, 1990). With an ‘incremental innovation’, the existing product receives minor changes (Nelson and Winter, 1982; Ettlíe, Bridges and O’Keefe, 1984, Dewar and Dutton, 1986, Tushman and Anderson, 1986, Henderson and Clark, 1990). However, new scientific standards and new engineering technologies are necessary for a ‘radical innovation’ (Dess and Beard, 1984; Ettlíe, Bridges and O’Keefe, 1984; Dewar and Dutton, 1986; Henderson and Clark, 1990).

Many researchers agree that technical innovation is one of the best ways to help multinational companies decrease their environmental impact while concurrently avoiding further damage to the Earth's ecology (Caincross, 1991; Green et al, 1994; Ashford, 1993; Hall and Kerr, 2002). Other researchers claim that technical innovation could be both a cause and a therapy for environmental problems (Kemp, 1993; Kemp et al, 1998; Hall and Kerr, 2002). Additionally, even though innovation is considered an industrial growth factor, it is also a primary source of environmental damage and social trouble (Hall and Vredenburg, 2003). For a multinational company, technical innovation could be viewed as a "sustained competitive advantage" (Hall and Vredenburg, 2003, p.62) as well as a significant cause of problems and complexities.

Because the implementation of such a radical change is difficult, complex and fraught with barriers (Henderson and Clark, 1990; Hall and Kerr, 2002; Hall and Vredenburg, 2003), not many multinationals have been investing significantly in SDI (Hall and Vredenburg, 2003). Nevertheless, most of the top 100 companies in the world known for sustainable development have been investing strongly in *SD Innovation*. In support of this claim, we selected ten multinational firms from the 2006 global 100 list of the "most sustainable companies in the world", and we reported for every multinational selected a recent innovation project. The data describing the SDI projects were collected from their annual report or from case studies found online.

**Table #1: The Ten Multinationals Selected**

<b>Company Name</b>	<b>Country</b>	<b>Industry</b>
Adidas Salomon Agency	Germany	Textiles, Apparel & luxury goods
Bp PLC	Great Britain	Oil, Gas & Consumable Fuels
Canon Inc	Japan	Office Electronics
Coca Cola Company	United States	Beverages
Henkel AG	Germany	Households products
Hewlett-Packard Company	United States	Computers & Peripherals
Intel Corp.	United States	Semiconductors & Semiconductor Equipment
Vodafone	Great Britain	Wireless telecommunication service
Philips Electronics KON	Netherlands	Households Durables
Toyota Motor Corp.	Japan	Automobiles

**Table #2: The Ten Multinational Cases**

<b>Multinational</b>	<b>Innovation Project</b>
<b>Toyota</b>	<p>Toyota, a multinational that fabricates and sells cars, has actively implemented several sustainable development policies and created technologies that helped in adding new energy sources.</p> <p>Toyota developed the hybrid technologies, which consist of combining a motor and an engine in order to deliver drive power economically, regain kinetic energy while decelerating, and translate it into electrical energy to stock it up in a battery. Not only do these technologies considerably improve the efficiency of the fuel consumption, but they also make exhaust emissions much cleaner.</p> <p>In the beginning of 1990, Toyota collected staff members from different departments with the goal of creating an automobile that would use less fuel. In January 1994, the team began working on the veritable project, and in 1997 they started the eco-project that has the goals of decreasing the CO2 emissions and increasing the hybrid vehicle development. Finally, in March 1997, Toyota declared the creation of the Toyota Hybrid System, which is a power train with an electric motor and a gasoline engine and does not necessitate external charging (WBCSD, 2005).</p>
<b>Coca Cola</b>	<p>Coca Cola Beverage Hrvatska (CCBH) of Croatia succeeded in changing its wastewater treatment and its drainage system, which allowed the company not only to save money, but also to reduce the exploitation of drinking water. Because CCBH accords a huge importance to the sustainable development policies, the company put all its efforts in order to accomplish this project. From 1996 to 1999 CCBH rebuilt its drainage systems and constructed a new treatment facility of wastewater. The system consists of removing the mechanical impurities and treating the water chemically in an equalization tank and biologically by aerobic dissolution. In addition, CCBH built fish tanks and a reservoir to collect purified wastewater of the site. Cosequently, water pollution was considerably reduced, wastewater quality was greatly improved, and treated wastewater was finally utilized for additional purposes (WBCSD, 2003).</p>

<b>Henkel</b>	<p>The site of Henkel Consumer Adhesives is a division of the Henkel Group KGA, located at Winsford, Cheshire, and has 450 staff. The company fabricates different branded products such as Loctite, No More Nails, Solvite, Pritt Stick, UniBond, Nitromors Paint Stripper, and Sellotape. In order to reduce its hazardous waste volume, Henkel reviewed its strategies. The review showed that an important waste came from the production of the Nitromors. Indeed, adding the methylene chloride to the raw material leads to the creation of a waste product considered as toxic. Five Nitromors blends are produced from the three production lines. Every line requires a washout before its transformation in blend. In the past, the residues of production line were “washed” with 210-liter of steel drums and stocked on-site about three months in anticipation of the collection of sufficient amounts.</p> <p>In order to reduce its waste, Henkel introduced a new system to collect the washout. In result, specific blends are now collected from washouts and the product is re-mixed back in blenders, creating other raw material for next production. Since the implementation of the new system, the company has benefited from the reduction of its washout waste for about 1650 liters a month, additional feedstock providing from the waste product recycled, optimization of the production and minimization of the waste due to the special training focused on technical and environmental strategies, and the reduction of the environmental risk due to the storage of dangerous waste. By introducing the new system, the company allows the environment to be less risky and save raw materials, more energy and 20,000 liters of dangerous waste (BCSD-UK/ MEB,C 2006).</p>
<b>Hewlett Packard</b>	<p>HP introduced a hardware that contains recycled material. Indeed, several engineers working on different product lines cooperated with “HP’s Planet Partners” recycling team in order to fabricate a plastics formulation that is able to substitute virgin plastic.</p> <p>The team succeeded to develop the “Recycled Polyethylene Terephthalate” (RPET) Material, which contains plastic recycled from the print cartridges of HP and recycled plastic from post-consumer drinking bottle. HP used RPET for the cover of two scanners and the 4500 and 5550 Scan Jet, which decreases the use of virgin materials, and can lead to reduce the general cost. In 2004, the company launched two other scanners that use RPET. One of them is planned, into two years, to utilize approximately 100 tonnes of the recycled material (WBCSD, 2005).</p>
<b>Adidas</b>	<p>Adidas has chosen Molten as its principal supplier for balls during four years. These two companies have created a technology that changed the production of a ball. Their standards were to limit the utilization of harmful substances. Therefore, they forbade the utilization of toluene, which is a necessary ingredient for patching ball teams.</p> <p>In the summer of 2004, Molten succeeded to eliminate toluene and to replace it by other less damaging solvents. Finally in September 2005, Molten had totally removed toluene from its production method and got its ISO 14001 Certification (<a href="http://www.adidas-group.com">http://www.adidas-group.com</a>).</p>
<b>Intel</b>	<p>In 2000, Intel created a new technology called “Intel SpeedStep” that allows the processor to adjust its speed depending on the user’s application that is running and the processing power needed. In fact, the speed step technology of Intel enables the user to optimize its mobile device power consumption, leading to the extension of its battery life and to the saving of power.</p>

	<p>In addition, Intel created the M processor Pentium, the primary mobile processor released by Intel in 2003 from the ground up for wireless laptop. In fact, the M processor of Intel joined to its 855 chipset family and its connection called PRO/Wireless construct the “key building blocks of the Intel Centrino mobile technology” (p.1). The features of this mobile characterized by the energy efficiency and the power of its management helped improve the mobile processors’ environmental footprint. In short, the new mobile enhances performance and makes battery life longer (<a href="http://www.intel.com/intel/other_ehs/product_ecology/Energy.htm">www.intel.com/intel/ other ehs/product_ecology/ Energy.htm</a>).</p>
<b>BP</b>	<p>BP plc is a large petroleum and petrochemical multinational. Its main activity consists of exploring and producing natural gas and crude oil; refining, selling, providing and transporting, manufacturing and promoting petrochemicals. BP is developing its activities in power, gas, and in solar power.</p> <p>The project of innovation that BP worked on consists of delivering a large solar project in Latin America. To achieve this project BP cooperated with the government, global business, and local NGOs. BP and its partners are setting up solar photovoltaic at about 1850 schools located in the Northeast of Brazil, which will provide extremely needy rural communities with solar energy.</p> <p>In fact, the majority of people in Brazil don’t have access to electricity. They live in the needy developed and isolated rural communities, especially found in the Northeast of Brazil. In this project, the schools selected are using a weak index. Therefore it is installing solar packages that will distribute energy for refrigeration, lighting, and television.</p> <p>This project meets the sustainable development principles, which include:</p> <ul style="list-style-type: none"> <li>• Providing renewable energy to poor rural community</li> <li>• Improve educational conditions in rural areas</li> <li>• Enhance access to essential health services in rural areas.</li> </ul> <p>In addition, this project contributes to slow the climate change by reducing the emissions of carbon dioxide and air pollution. The whole system is being established by local business, which improves local employment and enhances training in order to attain the standards imposed by BP’s project.</p> <p>In order to ensure that the project responds to the requirement of the Brazilian government, an independent audit is being performed during this process and another audit of every school will be conducted by the Government (<a href="http://www.article13.com">www.article13.com</a>)</p>
<b>Canon</b>	<p>Canon designed a digital multifunction device called iR6570/imageRUNNER 6570 that is characterized by the efficiency of its energy consumption. Canon was able to attain this efficiency by decreasing the warm-up time in comparison with the preceding model.</p> <p>In addition, the exterior casing of this machine is made from recycled plastic, which makes this product greener. The multifunction device is also characterized by a high durability with great performance for a long time (Sustainability report, 2006).</p>
<b>Vodafone</b>	<p>The research and development group and the local companies of Vodafone are working on the creation of technologies allowing individuals to use their personal cell phones in order to manage and control their health.</p> <p>Vodafone Spain has created a facility that allows people with diabetes to control their level of sugar frequently. In fact, they developed a monitoring device that evaluates the sugar level in the blood and allows the patients to read the information on their cell phones. In addition, the phone can mechanically transmit the information to a file accessible by the patient’s medical doctor, which allows him/her to act quickly in case of a danger or</p>

	<p>an emergency.</p> <p>In addition, the vitaphone service offered by Vodafone allows individuals having heart conditions to measure the rate of their heart by using their cell phone, which allows an early diagnosis and identification of complications. The handsets used could be easily situated via GPS in case of any emergency, which allows patients to feel more secure, especially when they live by themselves or when they are not home (Corporate responsibility report, 2006).</p>
<b>Philips Electronics Kon</b>	<p>Philips Electronics Kon started in 1892 fabricating luminous lamp in the Netherlands. Over the years, with the time they diversify their activity by including electric shavers and radios, medical equipment and television, kitchen appliances, consumer electronics and semiconductors. Philips is considered, today, one of the largest electronic multinationals in the world with 160,000 personals and more than 30 billion euros sales.</p> <p>One of the most important innovations created by Philips electronics is the woodstove, which decreases toxic emissions and smoke. Indeed, the huge number of persons that is cooking every day on a “wood-burning stove”, increases smokes, the blackening of ceilings and walls, ash on the ground of the kitchen, and the waiting time for the reliable temperature of the stove for cooking, resulting in polluting the air with poisonous emissions and killing about 1.6 million a year from respiratory and cancer diseases.</p> <p>The Philips woodstove is used in developing countries in order to decrease the emissions of organic volatile and pollution. It could also decrease the consumption of fuel if used properly.</p> <p>The positive effect of the woodstove in the developed countries is clear. However, the customers for this product in the aim markets are not aware about the health related concerns. Therefore, Philips has to teach and build education. Its marketing plan consists of training and cooperating with NGO partners who are able to take care of the marketing of the project (Kleisterlee, 2006).</p>

Since reputation has a huge influence on the economic choices of stakeholders (Benjamin & Podolny, 1999; Dollinger et al., 1997; Deephouse, 2000), a link between a firm’s reputation and competitive advantage has been shown by many studies (Barney, 1991; Hall, 1992; Rindova et al., 2005). This link relating firm’s reputation to competitive advantage could explain why the ten companies selected in this paper are investing a huge amount of money, time, and human resource capital in innovation projects. In fact, most of the annual sustainability reports of these multinational firms contain a whole section on SDI showing how they are replacing their raw materials by recycled materials, improving their product in a way that reduces its consumption of power, or inventing new methods that allow them to limit their waste of energy. By

investing in such projects, these companies are participating not only in protecting the environment but also in improving their efficiency, their image, and their market position. They are considering innovation as one of the main drivers for success and progress. A link between investing in SDI and being ranked among the most sustainable companies in the world could be possible since the ten multinational firms chosen were selected from the global 100 most sustainable companies in the world. According to Hart and Milstein (2003), technological invention and innovation are important keys to the sustainable development activities.

Many multinationals are looking to invest in SDI because adopting SDI can lead to be ranked among the most sustainable companies in the world. However, managing sustainable development innovation is not an easy task. In fact, managing such projects could be extremely risky. The challenge that supporters of SDI face is to convince the boarder organization that their projects are interesting and to lead them to finance their ideas. In addition, developing a radical technology could be particularly complicated since it necessitates the destruction of the current knowledge and may also involve the implementation of new management, policies, and strategies. For this reason, companies often have a preference for incremental innovation, which allows them to continue using their established technology and the same organizational strategies (Hall and Vredenburg, 2003). Managers of SDI are also challenged to assure the communication of the necessary information to the employees, to motivate them, and to make them feel part of the project. A lack of communication in this domain can lead the employees to a situation of stress, tension, and frustration, which could result in a resistance from them and, consequently, to considerable complications inside the company. Therefore, successful

implementation of such projects necessitates that the multinational change its current practices (Howard-Grenville and Hoffman, 2003) and adopt new strategies.

### **3. Difficulties Associated with Managing SDI**

An example of sustainable development innovation project is the Closed Loop Cleaning Project (CLC) project, which was developed by Shell Chemicals and particularly by the Higher Olefins and Derivates business unit in the United Kingdom. The project's objective was to centralize the laundry service and to invent the technology that recycles detergent, water, and energy. The project also included the collection of the customers' dirty laundry and the development of a technology that allows the cleaning of every customer's laundry separately. The development of the CLC project would allow customers to decrease their costs because traditional domestic laundry requires a large investment in buying the necessary machines, having the space for them, and accessing the utilities. Furthermore, this project would reduce the detergent packaging cost and its waste in the environment (Wei-skillern, 2004b).

**Table # 3: Chronological Matrix** (Wei-skillern, 2004b)

<b>Dates</b>	<b>Events</b>
1998	The launch of the CLC project: a team of seven was working full time on this project.
October 1998	Because the group was having financial difficulties, Shell Chemical was divested for about 40%, but the CLC project was still in development.
April 1999	The team had fixed 5 major orientations that would influence their business and worked on a project that assembles those orientations.
Latter half of 1999	The financial situation of Shell Company had improved significantly.
August 1999	The team started pilot tests for picking up and delivering of home laundry in a small region of metropolitan Miami.
May 2000	In order to further test the business model in the US, a business pilot was initiated with a national laundry-service existing there.
Summer 2000	The team added a further pilot business in Mexico City in order to try the project in an emerging country.
October 2000	The team starts measuring the customer acquisition, which was about \$300 per customer.
April 2001	The rates of acquisition by customer were about \$78.
Spring 2001	The project pilot had about 8,200 clients, which generates approximately 4000 orders/ month.
Later	The committee decided to abandon the CLC project.

Since this research is trying to understand how to manage an SDI project, the analysis will be centered on the management of this project and its weaknesses in order to understand why this project was abandoned in spite of the large amount of effort and money spent on it. Different reasons can explain why this project was abandoned such as the idea of the project in itself, and the customer's interest. However, since this study is trying to understand how to manage SDI inside a multinational firm, our analysis will be focused on the employees' behavior.

The implementation of the CLC project faced a resistance from the employees who didn't see the benefit of the project and didn't understand the purpose of sustainable development strategies. *“Many employees felt that they already did their utmost to act within regulatory and legal guidelines to minimize waste of resources, and did not see*

*how sustainable development was different from what they had always done*” (Wei-Skillern, 2004b, p.8). Despite the effort made by Shell in order to keep the employees aware of the importance of sustainable development strategies (Wei-Skillern, 2004a), they were still struggling to understand the utility of adopting such strategies, which shows the difficulties of adopting such strategies in a multinational such as Shell.

In addition, several employees were not convinced of the usefulness of the project and protested it. *“Most of the team’s colleagues in Chemicals did not understand nor support what the team was doing. Many thought the project was simply a waste of money”* (Wei-Skillern, 2004b, p.6). This reaction indicates a lack of communication inside the multinational. The team working on the project was communicating with the Executive Committee, but the information wasn’t well communicated to the other employees. In fact, Paul S. Goodman showed in his book *Missing Organizational Linkages* (2000) how communication between different work sections (horizontal) and hierarchical stages (vertical) improve or worsen firm performance (Reported by Goodman and Rousseau, 2004).

Moreover, the employees didn’t feel like they were part of the project. In fact, a team of seven was working solely on the CLC project and the rest of the employees weren’t involved in this activity, which could have lead the employees to resist the CLC project : *“The team was kept entirely separate from other Shell projects”* (Wei-Skillern, 2004b, p.2). In addition, the relationship between this team’s employees and the rest of the employees was tense: *“One team member explained that the Fast Forward team was viewed by some as a ‘virus’ and had to be incubated from the antibodies that are trying*

*to eliminate you*” (Wei-Skillern, 2004b, p.6). In short, the rest of the employees who were not working on the project could barely understand the idea and the goals of the CLC project, which could have lead them to feel as the project was imposed on them and to resist it, especially when the company was having financial difficulties and a significant amount of money was being spent on this project. Indeed, the employees needed to feel ownership of the project in order to support it. Their reaction showed that Shell had a communication problem due to a lack of information sharing with the employees about the different projects in the company. According to Goodman and Rousseau (2004), the asymmetry of information can cause a great amount of ambiguity for decision-makers. In other words, when employees in different sections don't share the same information and understanding regarding specific projects or operations, management could become extremely complicated. Such situations could be a huge source of stress and tension for the employees and the managers.

Furthermore, the decision maker wasn't completely convinced by the idea of the project, which could explain the abandonment of the project. In fact, a commitment from the decision maker is necessary for the continuity of the project. Therefore, the team working on the innovation project has the ultimate responsibility to sell and convince the decision maker with its creative ideas. *“Despite what Caps considered to be huge potential for the CLC technology, he could not help feeling some anxiety about the fact that the project's future hinged on the committee's support”* (Wei-Skillern, 2004b, p.1).

#### **4. In-depth Qualitative Case-Study**

In order to explain how to manage an SDI project, we studied in this research two multinational firms: Air Liquide and Novelis.

##### ***4.1. Air Liquide Inc***

Air Liquide Inc provides an excellent example of how to manage sustainable development innovation. This company, which is a multinational specialized in the production and the distribution of industrial and medical gases, has many activities oriented to the preservation of the environment. It started innovating in sustainable development around twenty years ago. However, until three years ago, these activities haven't been analyzed, quantified, or called sustainable development activities. Air Liquide has 14 research sectors such as health, hydrogen, energy, and combustion. Every research group has a committee that evaluates every year the different innovation projects by following a specific process. In fact, two reviews of all the research projects are held every year. During these annual meetings, the Specific-Sector R&D Managers spend a day meeting with the Global R&D Manager and evaluating all the projects in order to decide whether to expand, or to stop them. The Global R&D Manager has for research budget of approximately 160 million euros. In fact, 50% of the research budget is reserved for SDI projects. Of the 550 researchers working on innovation projects, approximately 250 researchers are working on sustainable development projects.

According to Nathalie Simon De Kergunic, Communications Director for Worldwide Research and Development at Air Liquide, "*The goal of all the research*

*projects is to respond to customers' need*". In fact, the research and development center frequently interacts with corporate marketing in order to gain understanding of what the customers need. This continual interaction with corporate marketing leads the research and development centre to change its orientation from time to time. Therefore, all the research projects are oriented to a specific goal specified in advance by corporate marketing.

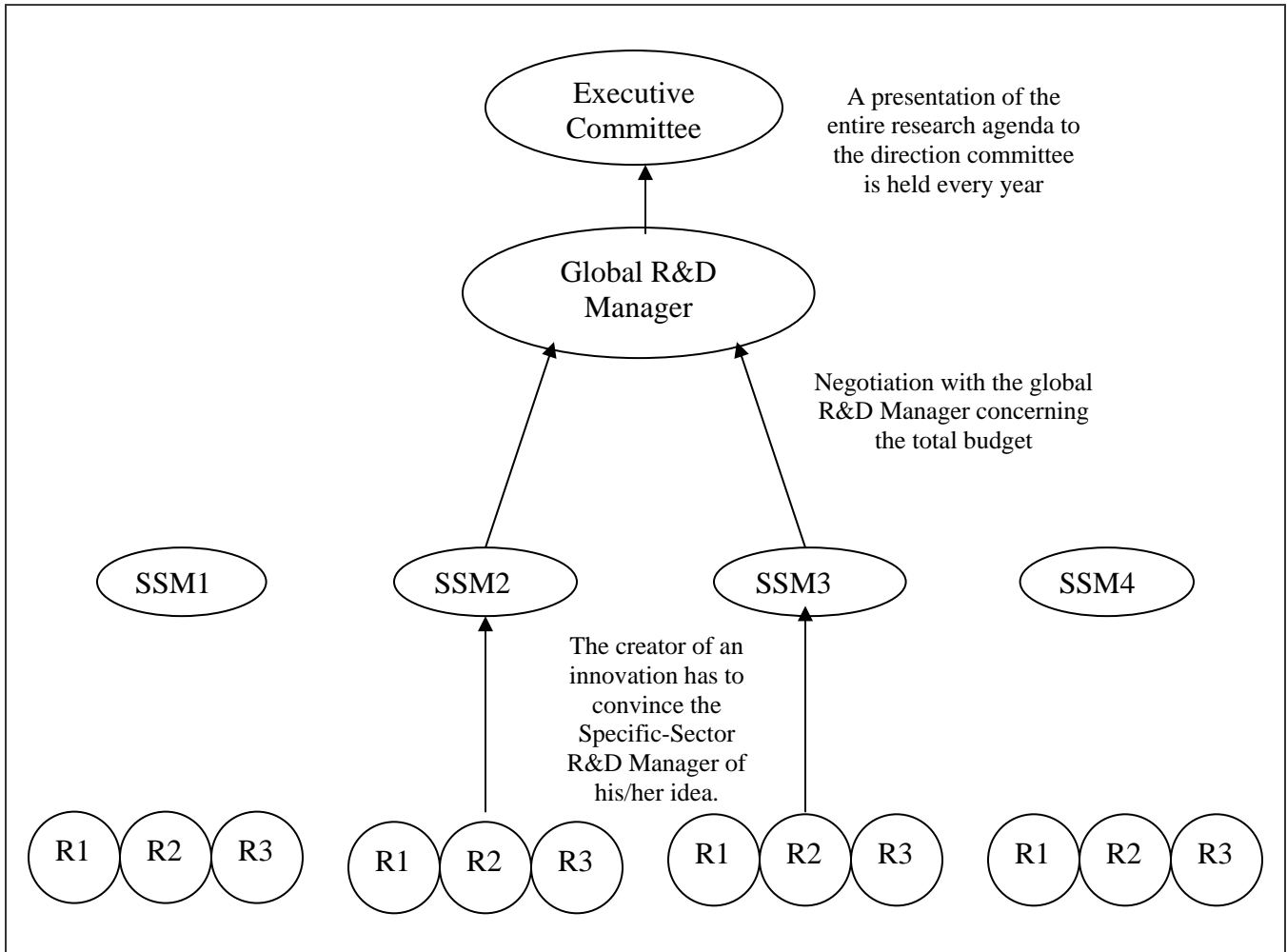
It can take a long time to implement a sustainable development innovation project. According to Xavier Drago, the Director of Sustainable Development in the head office in Paris, the implementation of a SDI project could take about five to ten years.

The decision making process is based on the decentralization principle and the independence of every department. In fact, the executive committee doesn't intervene in every decision and isn't involved in the details of the research program. Xavier Drago claimed that in a multinational such as Air Liquide, all the decisions cannot be made centrally. Indeed, the creator of an innovation has first of all to ensure that the project fits the research budget and has to convince the R&D Manager of a specific-sector who makes decisions concerning SDI of its sector. These decisions are followed by a negotiation with the Global R&D Manager concerning the total budget. In addition, a presentation of the entire research agenda is made to the direction committee every year. In short, the idea comes from the researchers and goes up to the Global R&D Manager in order to be approved.

Only 10% to 15% of the research projects succeed. Sometimes, researchers find an outstanding idea that cannot be profitably implemented, so it is discarded. According

to Xavier Drago “the most challenging part in the implementation of an innovation project is to convince the Sector-Specific R&D Manager by a new idea. If this executive is convinced, the project goes by itself”.

**Figure #1: The decision-Making in Terms of Sustainable Development Innovation**



**SSM:** Specific-Sector R&D Manager  
**R:** A Researcher

Since Air Liquide is a large multinational firm with 6000 employees spread over 70 countries, this company uses virtual communication means to inform its employees

about its different sustainable development innovation projects. The size of the multinational limits the means of communication with the employees. Indeed, Air Liquide publishes 30,000 copies of an international journal every month in 12 different languages. This journal contains a chapter on sustainable development describing the strategies adopted by the multinational. Air Liquide communicates also to its employees through the annual report, the Internet, and the Intranet. According to Xavier Drago: “*With 6000 employees in 70 countries, Air Liquide has to use more Internet and Intranet methods in order to inform its employees about its sustainable development projects*”. He added Air Liquide didn’t have any resistance from the employees in the domain of sustainable development: “*The employees are in general very open to sustainable development innovation projects, especially because sustainable development domain is considered as a consensus topic*”. In addition, when the information is communicated to the employees, the Sector-Specific R&D Manager tries to make it simpler in order to help them understand the goal of an SDI project.

#### ***4.2. Novelis***

Novelis, a multinational firm that started its activities as a Canadian company in January 2005, is specialized in producing rolled aluminum, and it is the world’s largest recycler of beverage cans. This company has presence in 11 countries and has around 12,500 employees. Novelis continually seeks to satisfy its stakeholders, to preserve the environment in which it operates, and to help improve the quality of life through its output and its actions ([www.novelis.com](http://www.novelis.com)).

Novelis is extremely innovative, especially in sustainable development domain. This company considers innovation as a main driver to survive over the long term. By innovating in sustainable development domain, Novelis is meeting its vision and values, which necessitates being environmentally conscious, socially responsible, and helpful to future generations.

Novelis has a specific process for innovation that gives everyone inside the company the opportunity to be creative. In fact, asking every employee to be innovative is challenging, especially with 12,500 employees spread over 11 countries. Therefore, Novelis invented the iDrive process, which is a first step of its innovation procedure. The iDrive consists of asking every single employee working in the company to raise new ideas by sending them a worksheet that in one side educates them about the company's vision and values and about the new technologies being launched in it and in the other side asks them to work through a nine-step exercise. The employees are thus asked to describe a personal experience that happened to them in the past, but that didn't work out as they hoped. They are asked in several steps to describe how they feel, which makes the exercise more personal and emotional. Consequently, the employees are guided through the nine-step-process to talk about various aspects of their experience and to think about how they can redesign their experience and make it successful. Then they have the opportunity to name their idea and to draw a picture of it. Roy Stever, Vice President in Strategic Marketing, gave an example of an employee's experience: *“One response comes from an employee who looks after his aging parents, who is really frustrated with the design of wheel chairs... So he has all kinds of experience and very passionate things that he's willing to tell us about: How difficult it is to get his father around using his*

*wheel chair, and how we would redesign the wheel chair and furthermore it may relate back to a specific application for aluminum, which at the end of the day is our business.”*

In order to explain the iDrive procedure, the work sheet, and the techniques of innovations in the company, Novelis is organizing meetings at each location with strong support from local management.

Novelis believes that the company should not limit the employees in their creativity and ask them, for example, to innovate for sustainability. The employees should first be asked to suggest ideas for innovation. Then managers can select only the ideas that respond to sustainable development or other company goals.

The second step of the innovation process that follows the iDrive procedure is called the SolutionsMap. During this step, the ideas suggested by the employees get screened for its technology and market feasibility. In fact, the ideas suggested are sent to the best host, which is considered the best group of employees within the company that could bring the idea to completion. The host group could be any group within the organization structure such as the marketing group based on a specific market segment like automotive, printing, or beverage packaging, the R&D group that has a particular expertise related to the idea suggested, or the environmental, health, and safety group if the idea is related to this domain. According to Roy Stever: *“2000 ideas can go to 40 different hosts, and they will look at these ideas and say “there is something I haven’t thought about” or “I like this idea, but we can combine it with another idea to make an even better idea.”* In short, during the SolutionsMap, the host group takes beginning ideas and makes them stronger and relevant to trends and needs.

The SolutionsMap is followed in some cases by the Dashboard of Innovation Game, which is a third step of the innovation process. During this step, a multidisciplinary team sits around the table, plays the idea around a game board, and looks at it from different angles such as trends, market conditions, and competitive conditions. During this step, the team makes sure that the idea fits with the *value-based management* of the company, which is well described with specific conventions. In fact, the company has a *safety system*, which is very rigorous and known to every employee working in Novelis. According to this system, the employees have to work safely and to respect specific conventions. The company has another important initiative called Continuous Improvement (CI), or lean Six Sigma, that requires the employees to follow specific metrics and processes. After making sure that the idea proposed fits all the conditions required by the company, the idea is played through a number of hurdles or gates and at each stage, employees can challenge the idea, or build on it. Consequently, during this step the idea can be thrown-out or strengthened.

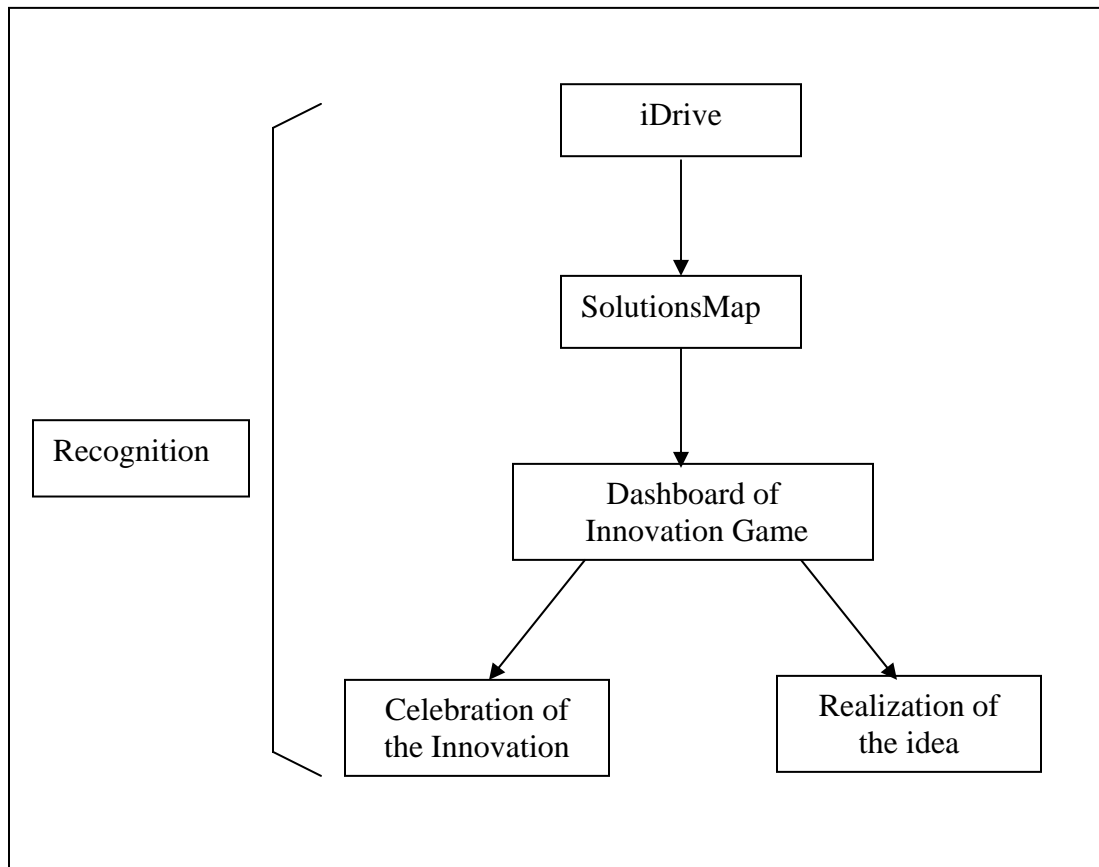
Each time the game is played, the idea is referred to the best group of employees to start realizing it. This group of employees, called operating group, could be different from the host group described earlier. This group is charged to invest in the idea, to build it, and to package it.

The idea is communicated to the other employees through the monthly newsletter of the company and through the periodical meetings in the different business units. In fact, the company has for each continent in the world, where it is present, a regional communication leader. These executives, present in North America, South America,

Europe, and Asia, are responsible for maintaining contact with all the business units in those areas through meetings, emails, and phone calls. In short, the successful ideas are celebrated in Novelis in both the written and the spoken words.

In addition, employees in Novelis are recognized all the way along the innovation process. If an employee creates a new idea, or has a large participation in the iDrive, he/she is recognized right away. Typically, employees are recognized for their contributions through meeting with senior executives who may thank them and express his/her gratitude. However, the company doesn't have any financial award. In fact, being creative, innovative, and sustainable is considered by Novelis as part of every employee's job.

Figure #2: The Process of Innovation in Novelis



This process of innovation is not the only way that could be used to innovate inside the company. In fact, within any given business unit, if any employee has an interesting new idea, he/she is not going to wait for the iDrive, but he/she will nominate the idea and discuss it within the business unit.

All the new ideas will be collected and published in an innovation agenda, which is a portfolio of ideas that the company is working on. The agenda is thus an inventory of items that every business unit has in its innovation agenda. Collecting all the ideas in an

agenda is very important for Novelis since it could inspire the reader to come up with new ideas and inform him/her about all the innovations in the company.

According to Roy Stever, the most challenging part of the implementation of SDi is to educate and involve as many employees as possible in the innovation process. In fact, it is extremely difficult in a 12,500-employee-company to send a clear and consistent message to every body. Many employees can face a huge challenge in order to really understand the vision and value-based management and to include them in their job. It is also difficult for the employees to make the difference between incremental and radical innovation.

Different reasons can lead employees to frustration and resistance. Employees could become frustrated because their ideas didn't lead to success. They could also get frustrated because they feel like their managers are asking them for an extra job when they ask them to innovate. *“Some people say I don't want to participate in that because somebody is going to take my great idea and make millions out of it and then at the end of the day I will have the compensation that I always have”*. In addition, sustainable development is not an easy domain. Employees have difficulty introducing such priorities in their daily job. *“When the employees are really busy with their daily activity, somebody comes in, and says we want to innovate for sustainability... It is like may be I don't have time for this. It's just a little less natural to pick that up.”*

In order to reduce resistance, Novelis tries to anticipate the employee's reaction. In fact, it always tries to make the employees understand that all the ideas submitted are interesting, and that Novelis needs their ideas in order to flourish. In other words, it

makes them feel like they are part of an important process that assures the company's future. In addition, the company is motivating the employees and encouraging them to innovate by recognizing the employees who submit a useful idea. Furthermore, periodical meetings are held in every location in order to sensitize the employees about the company's vision and values, and make them understand the importance of SDI for the company.

## **5. Discussions and Implications**

This study makes the process of implementing an SDI project less complex and more accessible to the multinational firms' managers who seek to improve their sustainable development image and to be more competitive. In addition, it encourages them to invest in SDI since it shows that not only does investing in sustainable development have a positive effect on the environment, but it could also help the company improve its sustainable development reputation and its market position.

In addition, by discussing and analyzing the Shell Case study, this research discusses some of the problems that could be faced while trying to implement an SDI project such as the problems of communication inside a multinational firm. By discussing these difficulties, this paper makes the managers more aware of these issues and helps them avoid such complexities.

One of the problems encountered by Shell is that many employees weren't aware of the importance of sustainable development policies for the company and saw those projects as a waste of time and money. To avoid having such difficulties, a company

should explain to its employees the meaning of sustainable development policies, and its motivation for adopting such strategies. The company should explain if it is adopting these strategies to improve its sustainable development image, to attract a new category of customers, or to be in advance in comparison with its competitors. It is not sufficient to tell the employees that the motivation for SDI is solely for more efficient use of energy and water. Reducing the waste of energy is not a new strategy for the employees since they are accustomed to control their use of energy. Therefore, managers need to be more specific about their reasons for adopting such strategies.

Another problem encountered by Shell is the lack of communication between the employees, which was a source of frustration, stress and tension for the employees. Such feelings led the employees to be unmotivated and to resist the SDI projects. To avoid such complexities, implementation of sustainable developing innovation should be based on the sharing of information and communication between employees. If the employees don't have any information about the other projects in the company and if they feel that these projects were imposed on them, they will resist them and will not feel motivated to work on them. The employees need to feel ownership of a given project and to feel like they have contributed to it in order to work on it enthusiastically. To achieve this, the managers of a multinational firm could prepare a questionnaire and send it to the different employees of the multinational asking them about their opinions and suggestions concerning the implementation of a specific innovation project in the domain of sustainable development. By asking the employees about their opinions and considering their suggestions, these workers can feel like they contributed to the decision-making and consider themselves as part of the project even though the multinational didn't choose to

follow their recommendations. Indeed, it is important to make the employees feel like they contributed to the SDI project in order to avoid their resistance.

The study of Air Liquide and Novelis Cases shows two real examples of how to manage an SDI project. In multinational firms such as Air Liquide and Novelis, communicating the information to every employee in the company is not any easy task. Indeed, the large size characterizing a multinational firm and resulting from its important number of subsidiaries and employees speaking different languages and having different cultures makes the communication between the different employees more difficult, which could easily increase their stress, frustration, and feeling of being rejected. Such impression could decrease the motivation of the employees and lead them to resist certain projects, of which they don't see the benefit. An excellent communication is thus recommended in order to avoid such reactions. Therefore, managers should use different communication means inside the headquarter and between its different subsidiaries around the world. They should also multiply communication means such as meetings, Internet, Intranet, an annual report, and an internal journal in different languages.

Furthermore, employees working in large companies need to be considered as part of a group and recognized for their effort. A lack of consideration and recognition could be a source of trouble and frustration for the employees. Therefore, managers should always anticipate the employees' reaction. They should find a way that allows them to involve all the employees in the SDI innovation projects and make them understand that the company needs their ideas, opinions, and suggestions in order to survive. By following this strategy, the employees will feel like they are part of an essential process

that is necessary for the success of the company. The iDrive procedure followed by Novelis, could be a good example of this strategy. The managers of a multinational firm should also introduce a recognition program for every employee who suggests a useful idea. Introducing such a program can motivate the employees and encourage them to be more creative.

Moreover, the principle of the decentralization of the decision-making is viewed by many researchers as a motor of motivation for the employees. By giving certain executives the freedom to make decisions, the managers are giving them a great deal of responsibility and motivation. The employees can thus be more creative and more responsible. In addition, the executive committee should not intervene in the details of the research program. Indeed, in a huge organization, such as Air Liquide and Novelis the executive committee should decentralize the decision making. Decentralizing the decision-making not only allows to motivate the employees and make them feel responsible, but also speeds up the process of the decision-making.

In addition, asking employees to innovate in sustainable development domain or to work on such projects may not be easily accepted by many employees since they don't see the benefit of these projects and they don't understand the reasons of investing in them. In order to overcome these difficulties both Air liquide and Novelis are increasing their communication means in this domain. Managers of multinational firms should thus be more informative about this topic. They can schedule periodic meetings on this topic in order to discuss its principles and to communicate the company strategies in this domain. They can also include a whole section on sustainable development every month

in an internal journal in order to make the employees understand the principles of the sustainable development strategies and the priority of such strategies for the multinational. They should communicate to the employees the precise reasons why the multinational is adopting such strategies and why it chose to implement and invest a huge amount of money in SDI projects. Providing such explanation helps the multinational avoid the lack of understanding of employees for certain SDI projects and the lack of communication inside the company.

Moreover, both companies Air Liquide and Novelis are innovating in sustainable development domain with the goal to respond to the customers' unmet needs. Indeed, every research project launched in Air Liquide has to answer to specific customers needs claimed by the marketing department. Similarly, by following the iDrive procedure in Novelis, the managers are responding to the customers' unmet needs. In fact, developing the employees' ideas that result from their personal experience allows the company to respond to the customers' needs. Consequently, continued interaction of the research for innovation with the customer's needs allows the SDI to better satisfy these needs and consequently to be more successful, which reassures the employees and reduces the risk of their resistance. In fact, knowing that all the research projects are oriented towards satisfying specific needs claimed by corporate marketing or by the employees themselves leads to convincing them by the utility of the projects conducted by the research department.

## **Conclusion**

The implementation of an SDI can lead the company to improve its sustainable development image and consequently to be more competitive. In the other hand, implementing such projects can be a source of trouble, stress and tension for the employees and for the managers if it is not well managed. In fact, employees often resist these projects, which can lead to their abandonment and to a loss of money and time. In order to avoid this complexity, the implementation of SDI should be based on the share of information between employees, decentralization of the decision-making process, continual interaction with corporate marketing and awareness of the employees about the importance of sustainable development policy for the multinational.

Since each firm possesses its own characteristics and its own perception of what is a problem and what is an opportunity, no recommendation will suit to every situation (Howard-Grenville and Hoffman 2003). However, this paper is a first step toward understanding how to manage an SDI project. It presents some difficulties that can be encountered while attempting to implement an SDI project and propose certain solutions and recommendation in order to overcome them. This study should be completed by studying other companies in order to find out new difficulties that could be encountered while attempting to adopt SDI. This study could also be completed by interviewing different employees working in the same company where a specific SDI project is getting implemented to understand their feelings and their reactions.

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